

# Exploration of the Reform Path of Practical Courses in Colleges and Universities Oriented by Innovation Ability

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**Abstract:** To cultivate high-quality innovative talents that meet the needs of economic and social development, the state continuously introduces relevant policies and measures. In this context, shifting the focus of higher education to fostering students' innovative thinking and capabilities through practical teaching is crucial for enhancing the nation's overall innovation capacity and competitiveness. Under the current trend of social development, cultivating innovation capabilities has become one of the key goals of higher education. This paper aims to explore the practical course reform path oriented towards innovation capabilities in universities, providing theoretical basis and practical guidance for the reform of practical teaching in higher education institutions, thereby promoting the comprehensive improvement of students' innovation abilities.

**Keywords:** Innovation capability; university practical courses; teaching reform.

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## 1. Introduction

Higher education needs to cultivate students' innovative thinking and abilities to adapt to the rapidly changing demands of society. The reform of practical courses in universities, guided by innovation capabilities, has significant research background and practical significance. Through the reform of practical teaching, it not only promotes the improvement of students' innovative abilities but also serves as an important measure for higher education to keep up with the times. Therefore, universities should actively explore paths for the reform of practical courses, leading with innovation capabilities, to continuously enhance the quality and level of talent cultivation.

## 2. The Present Situation and Problems of Practical Teaching in Colleges and Universities

In the current practice of higher education, although most universities have begun to focus on cultivating students' innovative and practical abilities and actively promote reforms in practical teaching, there are still some problems and shortcomings. First, the emphasis on practical teaching is insufficient, and the concept of innovation and entrepreneurship education lags behind. Some universities' professional teaching models exhibit a tendency to "emphasize basic theory and neglect engineering practice," which results in practical teaching failing to highlight its primary role in fostering students' innovation and entrepreneurship capabilities. The unfair distribution of educational resources also keeps practical teaching activities marginalized in some universities, directly impacting the enhancement of students' innovation and entrepreneurship abilities. Second, the methods and approaches for practical teaching are monotonous, lacking systematic design and comprehensive planning, leading to low effectiveness. Although some universities offer basic experiments, specialized training, and production internships as practical teaching components, these components lack effective

internal connections and organic integration, resulting in fragmented allocation of practical teaching resources. Third, practical teaching lacks guidance from systematic thinking and holistic optimization. Sometimes, practical teaching focuses on micro-level activities while neglecting the systematicness and coherence of the practical teaching system, leading to disordered allocation of practical teaching resources and a significant gap from the goals of cultivating innovative and entrepreneurial talents. Fourth, the closed and lagging nature of practical teaching components is also a crucial factor contributing to the lack of improvement in students' innovation capabilities. At present, most of the practical teaching methods are verification-based practical teaching, and the teaching methods of relevant knowledge that keep pace with the development of society are relatively old. Only in the laboratory can the theory on the book be verified, which is not conducive to the cultivation of students' practical ability.

These issues not only hinder the deep implementation of practical teaching reforms but also constrain the cultivation of students' innovative abilities. Therefore, universities should face and address these problems when promoting reforms in practical teaching, building a scientific, reasonable, and effective practical teaching system to provide strong support for fostering students' innovative capabilities.

## 3. The Implementation Path and Strategy of Practical Course Reform in Colleges and Universities Oriented by Innovation Ability

### (1) Reform of practical teaching content and methods

First, the course content is updated and optimized. The updating and optimization of course content is a critical component of practical curriculum reform in higher education institutions. Based on the needs of societal development, industry trends, and student demands, it involves updating and refining existing course content, introducing new knowledge, re-evaluating and integrating old knowledge, to ensure the advancement, practicality, and effectiveness of the

course content. The updated and optimized course content can effectively enhance the teaching quality of practical courses in higher education institutions and foster students' innovative capabilities, cultivating high-quality talents who can meet the needs of future social development [1].

Second, the innovation and practice of teaching methods. Under the current situation of educational reform, traditional teaching methods are difficult to meet the requirements of talent training in the new era. The innovation and practice of teaching methods is an important way for colleges and universities to improve the quality of education and cultivate innovative talents. To innovate teaching methods, teachers should not be accustomed to the "cramming" approach but instead explore more flexible and diverse teaching methods, such as project-based learning, inquiry-based learning, and flipped classrooms, to stimulate students' interest in learning and enhance their ability to learn proactively and solve problems.

(2) Reform of the evaluation mechanism of teaching quality and students' ability

First, establish a diversified evaluation system. In the context of fostering innovation capabilities, the traditional "one exam determines everything" evaluation method no longer meets the needs of modern education. Establishing a diversified evaluation system is an essential means to improve the quality of higher education and promote students' all-round development. To this end, universities need to construct a multi-dimensional and diverse evaluation system to adapt to practical teaching reforms and more effectively motivate and guide students' innovative learning [2]. Firstly, a diversified evaluation system should include various assessments, such as evaluating students' knowledge acquisition, innovative thinking, and practical skills. Within this system, process-oriented and performance-based assessments can comprehensively reflect students' learning processes and levels of ability development. Process assessments focus on the implementation of project assignments, the standardization of experimental operations, and the coordination of teamwork during different stages of the learning process; performance assessments emphasize participation in classroom discussions, design of innovative experiments, and the originality of project proposals under specific circumstances. Secondly, the diversified evaluation system should incorporate assessments from industry experts and corporate mentors. Their professional perspectives and practical experience can provide more objective and genuine references for evaluating students' innovative capabilities. Additionally, the evaluation methods for different types of courses should also reflect the diversity of the evaluation system. In the teaching of relevant courses, in addition to traditional written exams, comprehensive evaluations can also be conducted through regular class attendance and performance, mid-term quizzes, and final exams. At the same time, participation in extension training and research projects can also serve as part of the evaluation, promoting the improvement of students' innovative thinking and practical skills. This system should integrate multiple aspects of evaluation content, including process and outcome, theory and practice, peers and experts, aiming to effectively enhance students' innovation and practical application abilities through comprehensive assessment, thus cultivating more high-quality talents with innovative spirit and practical capabilities for society.

Secondly, the implementation and feedback of the

evaluation system are fundamental guarantees for the success of teaching reforms. Implementing an evaluation system not only reflects the effectiveness of teaching reforms but also provides experience and evidence for future reforms. When implementing the evaluation system, it is important to introduce process-oriented evaluations and establish a scientific evaluation indicator system. Evaluation indicators should comprehensively consider students' innovative thinking, practical innovation skills, teamwork abilities, problem-solving capabilities, and other aspects of their abilities. Additionally, these indicators can be appropriately adjusted based on the characteristics of different courses and the needs for students' individual development. The implementation of process-oriented evaluations involves continuous tracking and recording of the learning process. It is not just about the final outcomes but also about whether students actively engage in innovative practices, think innovatively, and make innovative attempts. It also includes their insights and learning reflections during this process, which continuously promote students' proactive learning, active exploration, timely reflection, and adjustment of their learning strategies. Process evaluation should establish an open feedback mechanism, not just the simple transmission of evaluation results, but rather interaction with course design and teaching practices. The implementation of evaluations should fully utilize modern educational technology, using information technology to improve the efficiency and accuracy of evaluations. At the same time, it should better track the learning process, providing a basis for personalized teaching. The evaluation system should establish a continuous improvement mechanism; the implementation process is not a one-time activity but should continuously collect feedback information, combining the development of education and teaching with new requirements for subject development, to maintain the effectiveness and adaptability of evaluations [3]. The implementation and feedback of the evaluation system are a complex yet very important process that requires educators to attach great importance, make persistent efforts, and think seriously. Only by implementing a scientific, flexible, open, technologically supported, and continuously improving evaluation system can we promote practical teaching reforms in higher education institutions, cultivate students' innovative abilities, and lay a solid foundation for their lifelong learning and future development.

(3) Optimal allocation of teaching resources and conditions

The integration and utilization of teaching resources directly impact the improvement of practical teaching quality in universities and the cultivation of students' practical abilities. Practical teaching is not just about imparting theoretical knowledge to students; it also focuses on developing their skills in analyzing and solving problems. Therefore, resource integration and utilization are essential [4]. Practical teaching requires support from various resources such as practical teaching equipment, experimental materials, teaching software, online resources, and laboratory management systems. These resources must be integrated to ensure the quality and effectiveness of practical teaching. Universities need to improve and utilize their own practical teaching resources, conduct comprehensive evaluations and analyses, and identify strengths and weaknesses. They should develop resource integration plans, which mainly include optimizing resource allocation, updating and upgrading resources, and enhancing resource management, such as modernizing laboratory management systems. The

integration and utilization of teaching resources also depend on teachers' professional capabilities and the updating of their teaching philosophies. As implementers of teaching, teachers need to continuously enhance their practical skills and innovative awareness.

Secondly, the improvement and innovation of teaching conditions are crucial components of practical course reform. The enhancement of teaching conditions is primarily reflected in the updating and upgrading of hardware facilities and the optimization of software conditions. The improvement of hardware mainly involves configuring new experimental equipment and introducing advanced experimental tools to meet students' experimental needs, ensuring the safety and accuracy of experimental teaching; the improvement of software involves continuously updating experimental and teaching software, while also strengthening laboratory management, optimizing laboratory space layout, and enhancing the efficiency and safety of laboratory use[5]. The innovation of software conditions in teaching mainly manifests in the innovation of teaching content, methods, and evaluation. Teaching content innovation is demonstrated by integrating practical teaching content with real-world problems, enhancing the practicality and relevance of courses; teaching method innovation is shown through the use of project-driven and problem-oriented teaching methods, stimulating students' interest in learning and their innovative spirit; teaching evaluation innovation is reflected in establishing a diversified evaluation system, including assessments of experimental operations, project design, innovative design, and teamwork, comprehensively evaluating students' overall qualities and innovative capabilities.

## 4. Conclusion

College students are the reserve force for the country's future technological and economic development. Through practical education in universities, students can be cultivated with a stronger spirit of innovation and practical skills. This provides robust talent support for national technological innovation and industrial upgrading, which is beneficial to improving the quality of higher education and social evaluation, as well as promoting the long-term sustainable development of universities.

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