

Analysis on the Countermeasure of Cultivating Students' Innovation Ability in Higher Vocational Colleges

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ABSTRACT

In accordance with the basic task of cultivating students with moral quality, this paper expounds the priorities of colleges and universities in cultivating students' innovative ability, and analyzes existing situation and issues. The insight and countermeasures of cultivating students' innovation ability are also proposed to realize higher vocational colleges' specific role and quality connotation construction and development.

Keywords: higher vocational education, innovation ability, cultivation countermeasure

I. INTRODUCTION

Education in the new era, an intellectual supporter for the construction of a modern country with strong education and innovation, requires education reform and quality development. As gathering place for talents and innovative resources, institutions of higher learning aims to cultivate innovative, compound and applied talents. Colleges and universities should take advantage of great social development and transformation, and enhance their sense of responsibility and mission. The innovation-driven development strategy should be launched in colleges and universities to improve students' participation in learning, further cultivate students' innovation ability, and strengthen the construction of innovative talent team.

II. PRIORITIES OF COLLEGES AND UNIVERSITIES IN CULTIVATING STUDENTS' INNOVATION ABILITY

According to *National Vocational Education Reform Implementation Plan* released by the State Council in early 2019, vocational education should be given more prominence in national education reform and innovation as well as economic and social development. What's more, though different, vocational education and general education should be treated as equals. At present, higher institute of education in China offer higher education at and above the

undergraduate level, including higher education institutions in China and application-oriented institutions of higher learning, which nurture research-oriented and application-oriented talents respectively. Students who pass the examination are awarded academic and professional degrees. Higher vocational colleges mainly conduct higher vocational education to junior college students, cultivating personnel of technology applied type and skill type. The focus of school running has transformed from scale expansion to quality improvement, and school-running patterns has changed from emulation of general higher education to pattern involving social participation and characteristics of enterprises. Given their distinct in target students and training objectives, higher vocational colleges and undergraduate colleges enjoy different priorities in cultivating students' innovation ability.

A. Undergraduate colleges focus on creative thinking

Higher education institutions mainly nourish research-based talents with solid theoretical knowledge, systematic research methods, high-level scientific research and innovation ability, who are engaged in theoretical research and high-tech innovation in fields of social life. However, application-oriented institutions of higher learning train application-oriented talents with corresponding academic background, theoretical and professional knowledge essential for technical application, and the ability to solve practical problems on the spot through theoretical knowledge and professional skills.

Higher education institutions intended to improve students' innovation ability are required to develop creativity and inspire creative thinking. Pioneering

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work is taken as fundamental for the cultivation of innovation ability to nurture students with solid professional knowledge and ability to study and innovate theory and objective laws of things.

B. Higher vocational colleges focus on innovation and practice

Higher vocational colleges are supposed to provide high-quality technical personnel who work in the first, second and third industries or in the first line of production and can adapt to technological progress, industrial transformation and upgrading. In the cultivation of students' innovative ability, vocational colleges should take innovative thinking as the guide and innovative practice as the focus, enhance students' mastery of basic theoretical knowledge and professional technical skills, awareness of exploring problems and favorable practical ability.

Students in higher vocational colleges should engage in innovative practice, that is, to directly connect the basic theoretical knowledge they have learned with objective reality, and to explore and transform practical issues by means of innovative thinking and innovative methods. Since 2015, the State Council has elevated the second week of May every year "Vocational Education Week", which is the first state-level activity in the field of education. The trend of "valuing professional skills, relying on ability instead of sole academic qualifications" catch on, and the recognition of precious skills, labor glory and great creation has been promoted among society. The theme of Vocational Education Week varies from year to year. The theme of the first (2015) is "Support Made in China and Create Glorious Life", that of 2016 is "Promote the Spirit of Craftsmanship and Build a Country with Strong Skills", that of 2017 is Build a Vocational Education Dream and Welcome the 19th National Congress, that of 2018 is Forty Years of Vocational Education Reform, and Cultivation of Artisans Through Industry and Education Integration, and that of 2019 is Welcome the 70th Birthday of the Motherland, Display the Style of Vocational Education.

III. CURRENT SITUATION AND ISSUES OF INNOVATION ABILITY TRAINING IN HIGHER VOCATIONAL COLLEGES

The change of internal and external environment and the great complexity and ambiguity of innovation activities may lead to some new situations and problems in the aspects of "macro" and "micro", "point" and "surface" in the cultivation of students' innovation ability in higher vocational colleges.

A. The working environment of innovation ability cultivation needs to be improved

Most higher vocational colleges have established teaching and research offices or departments in line with their actual situation, which are responsible for the implementation of innovation and entrepreneurship education. The secondary schools and departments, combined with the characteristics of the major, enhance students' innovation ability, so that they will become the main force of technical personnel contributing to the transformation from "Made in China" to "Quality in China". However, some higher vocational colleges are also faced with the poor innovation methodology and atmosphere, shortage of innovation activities and special research funds, stereotyped teaching design and management, and unsatisfactory transfer of innovation fruits.

B. The working theory of innovation ability cultivation needs to be enriched

The results of periodical full-text database search on CNKI show that undergraduate colleges and universities first publish papers on cultivation of students' innovation ability in 1983, and the number of relevant papers increased gradually after 1998. Higher vocational colleges first published papers on innovation ability training in the journal Chinese Vocational and Technical Education in 1999. In 2008, master's theses on relevant research in higher vocational colleges were published. Papers involving such aspect also mount gradually. But generally speaking, no complete innovation theory is found in the new era, neither systematic innovation guiding concept in the new stage. The demands of national economic and social development and people's pursuit for a happy life have undergone new changes, which allows leeway for higher vocational education researchers to conduct research on basic theories and practical experience.

C. Students' participation in cultivation of innovation ability needs to be improved

Students' participation refers to the time and energy spent by students in and out of class and in effective educational activities, as well as the conditions and services created by higher vocational colleges to promote students' participation in effective educational activities. Teachers in higher vocational colleges are encouraged to establish online and offline teaching resources. Students are stimulated to participate in innovative activities, and to firmly believe in dedication, patriotism and innovation. However, only some teachers in higher vocational colleges have received systematic training in innovation theory and practice. The cognitive level of both teachers and students leads to uneven teaching effect, which will cripple students' efforts in face of difficulties, failures or setbacks, as well as their optimism and initiative.

D. The practice platform of innovation ability cultivation needs to be expanded

Vocational colleges mainly employ Productive Practical Training Base (PPTB), vocational education teacher training base, skill master studio, virtual simulation training center and other platforms for daily teaching and experiment, and cultivate students' innovation ability through multiple channels, including skills competition, Innovation and Entrepreneurship Competition, etc. However, higher vocational colleges chasing quick success such as honors at all levels emphasize point: technical and skill innovation, over surface: reorganizing and managing service innovation, which weakens the efforts to enhance students' initiative learning and deep thinking and innovation.

E. The evaluation orientation of innovation ability cultivation needs to be adjusted

Thanks to the efforts of higher vocational colleges in connotation construction in the new era, a large number of national model higher vocational colleges have been established. 2019 witnessed the official launch of the first round of "Double High Plan" construction projects, focusing on areas where there is a shortage of technical and skilled personnel such as modern agriculture, advanced manufacturing, modern service and strategic emerging industries. Efforts are pooled to establish about 50 high-level vocational schools and about 150 high-level specialty groups, leading to the formation of a vocational education development model with Chinese characteristics. However, how to better grasp the development trend of higher vocational education quality concept and reflect on the evaluation advocated by new quality concept still need to be better analyzed, studied and understood. Instead of focusing on the investment on hardware facilities, more attention should be paid to the evaluation of education quality, such as teacher-student interaction and students' participation, as well as the evaluation of results, such as the improvement of students' technical skills and the formation of core values.

IV. INSIGHT ON CULTIVATING STUDENTS' INNOVATION ABILITY IN HIGHER VOCATIONAL COLLEGES

The cultivation of students' innovation ability in higher vocational colleges requires the establishment of closed-loop management thinking, which goes round and round. The first is to set up working organization, allocate working staff and clarify working responsibilities, analyze the requirements of positions for student in innovation, and formulate training objectives. The second is to finish curriculum standards of corresponding majors, and adjust curriculum setting based on previous plans and future development. The

next step is to adopt high-quality teaching materials and information platforms, select teachers who are competent for the teaching tasks of innovation ability training, and build an innovation practice platform. The final is to track teaching effect, evaluate the quality of innovation ability cultivation, complete feedback and evaluation, and revise teaching management system as appropriate.

V. COUNTERMEASURES TO CULTIVATE STUDENTS' INNOVATION ABILITY IN HIGHER VOCATIONAL COLLEGES

In view of the increasing uncertainties in global economic and social development and the short cycle of changes such as new technological revolution, professional replacement, and industrial restructuring, higher vocational colleges should take the initiative to seek change amid new opportunities and challenges, in a bid to nurture high-quality technical and skilled personnel urgently needed in high-end manufacturing, modern service and strategic emerging industries.

A. Fostering favorable environment that encourages innovation

Higher vocational colleges are supposed to employ scientific and reasonable system, ensure the operation of students' innovative ability training system, optimize corresponding organization, launch innovation mechanism that stimulate the participation of both teachers and students, improve teaching management, fund research and innovation of teachers and students, support innovation transfer, and protect intellectual property rights. All sectors of society should also join in to encourage innovation and tolerate failure, so as to form an atmosphere featuring relax and order in which teachers devote themselves to work and students enthusiastically participate in learning.

B. Promoting programmes and projects involving research and innovation

Higher vocational colleges should clarify the demand of students' innovation ability based on the target and task of professional groups. Curriculum setting intended to cultivate students' innovation ability should also include courses on innovation and creation techniques. Teachers and students should participate in projects inside and outside the college, and take part in extracurricular innovative activities such as project research and project experiment, which should be taken as teacher's class hours or student's class hours. The authorized intellectual property rights, innovative results of experiments, and papers published in innovative activities should be converted into credits and workload. The cultivation of students' innovative ability requires teachers' systematic education and influence on students individually or collectively.

Teachers and students jointly discover meaningful new things, new knowledge, new ideas and new methods, analyze the basic laws behind such phenomenon, explore new theories on innovative ability cultivation in higher vocational colleges with Chinese characteristics, thus proposing new methods with reference significance and promotion value.

C. Developing driving force for students to participate actively

Higher vocational colleges should make use of empirical research to analyze the hierarchy of factors, establish hierarchy chart, clarify the fundamental factors affecting student participation, and further develop educational resources for student participation and innovation. Higher vocational colleges should strengthen the working principle and methodology of training innovation and creation to improve teachers' quality and teaching level before selecting teachers to take up posts. Teachers are encouraged to employ such methods as inspiration, discussion and research to facilitate classroom interaction, foster consciousness of innovative inquiry, better realize the integration of theory and practice, integrate teaching reform into all steps of students' innovative ability cultivation, and promote the growth and development of students' innovative ability in different aspects.

D. Expanding and upgrading platforms for innovation practices

Innovation practice can test students' innovation ability comprehensively, and serves as an important link for higher vocational colleges to train students. In addition to existing teaching and experimental platforms, higher vocational colleges should seek high-quality resources for industry-education integration and school-enterprise cooperation through government organizations and industrial enterprises, and build innovative practice platform for in-depth integration and win-win cooperation. The collaborative innovation center, teacher and student innovation space and innovation and entrepreneurship incubation base with higher vocational education characteristics are also included. At the same time, all technological reform, creative design and other achievements demonstrating innovation ability should be launched into the market without violation of law. Efforts should be made to incubate small and micro enterprises, and clarify rights and responsibilities to brave the market test. Higher vocational colleges can attract various resources to support innovative achievements that have social value but temporarily fail to be promoted to the market, so as to foster the principle of facing up to challenges.

E. Valuing feedback on teaching effect from multiple sources

The innovation ability expected from students in higher education colleges is far cry from that of scientists and entrepreneurs. The evaluation of teaching effect should include the feedback from educational administration department, the implementers and target students. Students, stakeholders of innovation ability cultivation, can evaluate the teaching process objectively and put forward opinions and suggestions that are conducive to improving teaching quality. Higher vocational colleges should understand the process and mechanism of students' effective learning, encourage upward spiritual outlook and active participation among teachers and students, promote higher vocational education to obtain development of the country, social progress and people's happiness.

VI. CONCLUSION

The cultivation of students' innovation ability in higher vocational colleges is a complex and systematic project which calls for the coordination and cooperation of units, departments and personnel. Based on moral education and scientific and reasonable system, higher vocational colleges attach great importance to favorable working atmosphere and enthusiasm of teachers and students to participate in learning and innovation. The construction of full-time and part-time teaching staff has been strengthened, and the innovative practice platform inside and outside the college has been set up to further sharpen the competitiveness of higher vocational colleges in the process of innovative practice. All these are of great significance for improving management and talent training of higher vocational colleges.

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