

# Research on teaching design of cost class courses in higher vocational colleges under the background of “classroom revolution”

*Yan Shi*

(Heilongjiang institute of Construction Technology, Harbin 150025, China)

**Abstract:** Under the background of national vocational education reform, this paper relies on the teaching of cost courses in higher vocational colleges, aiming at the problems that need to be solved urgently in higher vocational colleges, such as insufficient integration of courses, insufficient integration of three new courses, lack of integration of students before class, during class and after class, and traditional infusing teaching mode, and studies the reconstruction of course module content through “double docking” of course content, so as to let X skill - digital cost enter the classroom. To realize the integration of classes, posts, competitions, and certificates; Change the teaching strategy, adopt “three stages and eight rings” to achieve three stages of collaborative education; Innovation “1234” curriculum ideological and political model; Construct a three-dimensional comprehensive evaluation system; Emancipate the classroom and return students to an open, relaxed, free, interesting and lively classroom environment, so that classroom teaching can promote vocational education back to the standard.

**Key words:** teaching mode; Double docking; Three sections eight rings; Vocational education

In order to implement the requirements of the “Action Plan for Improving the Quality of Vocational Education (2020-2023)” on the implementation of the “three education” reform of vocational education, the first thing for vocational colleges to do is to find their own crux, and then crack layer by layer, and finally the “three education” reform of vocational education will be smoothly landing. At present, there are many problems in the teaching process of vocational colleges, such as students’ low interest in learning, large differences in the structure of students, and disconnection between teaching content and post standards. The reform of vocational education needs to start from the reconstruction of basic teaching design.

## 1. Urgent problems to be solved at present

### 1.1 Solve the problem of insufficient integration of “courses, posts, competitions and certificates”

With the rapid technological progress of the construction industry, traditional teaching content does not match the future job demands, and classroom teaching content cannot keep up with the industrial technological progress, that is, there is a problem of mismatch with job standards, skills competition rules and content, and 1+X skill level certificate standards, etc. Through the integration of classes and posts, classes and certificates, the module content is reconstructed. Effectively realize the integration of “class, post, competition and certificate”.

### 1.2 Solve the problem of insufficient integration of the “three new”

In the teaching process, it does not keep up with the progress of technology, the pace of tracking cutting-edge information in the industry lags behind, the degree of informatization in classroom teaching is not enough, and the integration of new standards, new technologies and new norms is insufficient. By selecting typical cases that integrate new standards, new technologies and new norms, the teaching content is optimized to solve the problem of insufficient integration of “three new”.

### 1.3 Lack of “three stages” of integrated education before class, during class and after class

In the traditional teaching concept, emphasis is placed on the teaching design in class and only emphasizes the education in the first class, ignoring the use of pre-class task guidance to cultivate students’ ability of data collection and analysis, ignoring the requirements of after-class knowledge development training and innovation and entrepreneurship training, and failing to form a collaborative education mechanism before class, during class and after class. Through the three-stage integration, the problem that knowledge and ability learning is limited to the first class and innovation and entrepreneurship cannot be integrated into teaching is fundamentally solved.

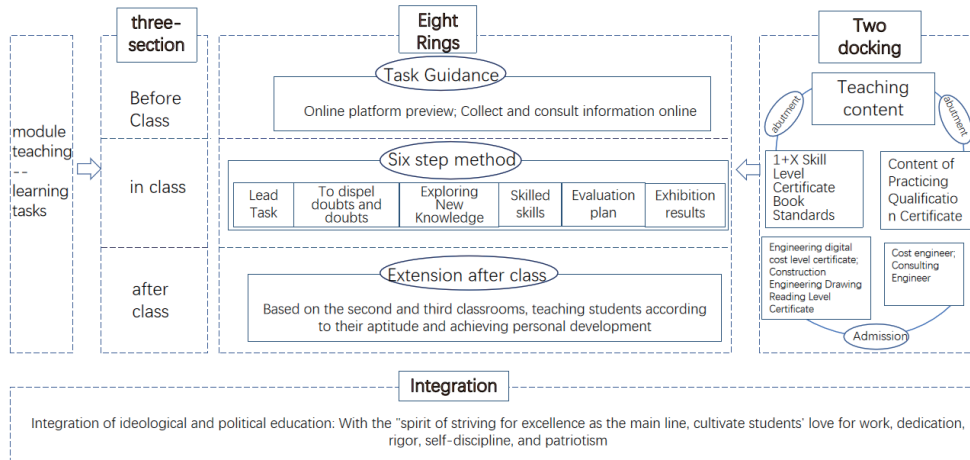
### 1.4 To solve the problem that the traditional infusing teaching mode seriously inhibits the endogenous motivation of students

The traditional teaching mode usually adopts the infusing teaching mode, which emphasizes “teaching” as the center, and this simple knowledge breakthrough seriously inhibits the endogenous learning motivation of students. How to make students change from passive receivers of knowledge to active constructors of knowledge is a problem that must be solved at present. By constructing new learning mode, the principal position of students is highlighted. The above problems can be fundamentally solved.

## 2. Research on teaching design of cost course in higher vocational colleges

In view of the analysis of the above problems to be solved, the reform of cost courses in higher vocational colleges first falls on the specific teaching design. On the basis of real cases of system engineering in installation engineering, it needs to “double docking” with X skill level certificates such as engineering digital cost, construction engineering drawing recognition, and cost engineer qualification certificate, so as to achieve the integration of post course competition certificate. Reconstruct the content of the course module, ensure the docking of the teaching process with the production process, and realize the docking of the teaching content and post standards; The teaching strategy of “three stages and eight loops” is adopted to guide learning by tasks before class. Six teaching links, including task introduction, puzzle solving and new knowledge exploration, are adopted to highlight students’ principal position. After class, students are taught according to their students’ abilities in the second and third classes to achieve personality development, effectively promote the coupling and harmonious resonance education of the three classes,

and complete the effective integration of teaching content before class, during class and after class. At the same time, in the whole teaching process to dig deeply ideological and political elements, combined with the school positioning, professional education goals and curriculum characteristics, according to the “one task, one integration” system to build curriculum ideological and political; The 1238 teaching model of “one integration, two docking, three stages and eight links” has been innovated and formed, as shown in Figure 1. We work together to promote project-based teaching, implement group learning, build a learning community, form a classroom of mutual help and mutual learning, and mobilize students’ enthusiasm for learning; Learning task decomposition is based on the accurate analysis of the status quo and needs of the industry, according to the actual work steps to design progressive task work order, and let the digital cost into the classroom, embedded in the task, to achieve the completion of the task to establish a cost quality awareness, and strive to create a new paradigm of digital construction classroom teaching, in other professional promotion and use.



**FIG. 1 1238 teaching mode of “One integrated into two docking three-stage eight-link”**

2.1 “Double docking” of course content to realize integration of classes, posts, competitions, and certificates

In the content design of the course, the “1+X” vocational skill level certificate standard and the content of the professional qualification certificate are connected, and the content of the course module is reconstructed. Through learning, students can seamlessly connect with the job needs of modern industries and enterprises, and can obtain the vocational skill level certificate of digital application of engineering cost, BIM modeling vocational skill level certificate, and construction engineering drawing recognition vocational skill level certificate. Can participate in BIM modeling skills competition, BIM5D application competition, construction engineering drawing recognition competition, because the competition standards should be formulated according to the vocational skill level certificate standards; You can take the cost engineer, consulting engineer and other professional qualification certificates, etc., to realize the integration of post course competition certificates.

2.2 Effective integration of “three stages and eight rings”, collaborative education before class, during class and after class

Under the background of classroom revolution, the teaching mode is reconstructed, the traditional teaching mode is changed, and the “three stages and eight loops” mode is innovated, that is, the “three stages” before class, during class and after class; Guidance before class, introduction, explanation, exploration, refinement, evaluation and exhibition during class, and extension of “eight links” after class, so as to achieve closed-loop collaborative education before class, during class and after class.

Before class, the learning task is released, and the students claim the task; Guide students to collect and consult relevant information, cultivate students’ ability to collect information and analyze problems, and have a preliminary cognition of new tasks; Finish the online tasks of the last class before class, or homework and tests after class to understand students’ grasp of the content of the last class, so as to put forward targeted teaching improvement strategies.

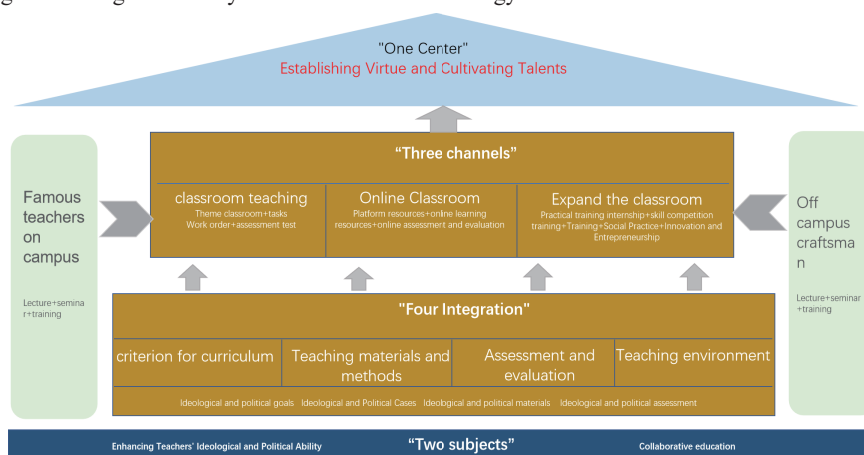
In class, loose leaf textbooks are used to carry out “six-step” learning according to class reform, that is, to introduce tasks, solve doubts, explore new knowledge, refine skills, evaluate schemes and display results, highlight students’ dominant position, take real projects as the carrier, integrate BIM new technology, teach basic theoretical knowledge of cost, and train BIM metrological and pricing skills. In the process of knowledge learning and ability training, The ideological and political elements such as students’ ability to explore independently, expand innovative thinking and teamwork consciousness run through the whole process of education and teaching.

After class, BIM skills competition project, innovation and entrepreneurship competition as the carrier, based on the third class to strengthen training, so as to promote teaching by competition, promote learning by competition, promote reform by competition, cultivate students’ innovation and entrepreneurship awareness and ability.

2.3 Innovate the ideological and political model of “1234” course, and take on the mission of promoting morality and cultivating people

“One Integration” is to integrate curriculum thinking and politics into the teaching of professional courses under the requirements of the curriculum reform, combine the education of Marxist standpoint with the training of scientific spirit, and improve students’ ability to correctly understand, analyze and solve problems; Pay attention to the training of scientific thinking methods and scientific ethics education, and cultivate students’ sense of responsibility and mission to explore the unknown, pursue the truth and climb the scientific peak; It also focuses on strengthening students’ engineering ethics education, cultivating students’ spirit of excellence as a national craftsman, and

inspiring students' feelings of serving the country with science and technology and sense of mission.



**Figure 2 “One center, two subjects, three channels, four integration” curriculum ideological and political model**

In order to achieve the goal of professional education, according to the characteristics of cost courses in higher vocational colleges, the formation of moral education as the center, with famous teachers in the school and famous teachers outside the school as the demonstration of collaborative education, based on classroom teaching, online classroom, expand the classroom three channels of education, curriculum ideology and politics into the curriculum standards, into teaching materials, into assessment and evaluation, into the teaching environment. Innovate the 1234 curriculum ideological and political model of “one center, two subjects, three channels and four integration”, as shown in Figure 2, to achieve the close integration of professional curriculum education and ideological and political education, to realize knowledge imparts, ability training and value shaping as one, and to build a comprehensive education pattern of the whole process of the staff.

2.4 Multi-dimensional assessment, the construction of three-dimensional evaluation system

According to the evaluation system of curriculum quality standards and the teaching concept of “student-centered”, the evaluation of theory and practice, in-class and extra-class, teacher and student, school and society, process and completion, student participation initiative and consciousness should be combined, and the evaluation of knowledge, skills, quality and other dimensions should be evaluated. Self-evaluation, mutual evaluation, teacher evaluation, enterprise evaluation, online evaluation, final result evaluation and other diversified evaluation, strengthen the full-time and whole process evaluation and result evaluation, pay attention to the individual differences of students, carry out value-added evaluation, and build a three-dimensional comprehensive evaluation system.

**3. Conclusion**

The “classroom revolution” of vocational education is to take the classroom as the main battlefield of teaching reform. Its core is to change the traditional teaching concept, teaching mode, evaluation system, etc. Teachers change their ideas and reconstruct their understanding of the classroom, liberate the classroom and return it to students, and jointly create a learning environment driven by internal driving force with students to form a smart and positive classroom culture. Therefore, the teaching design of professional courses in vocational colleges is particularly important. This paper studies the innovation of teaching mode, teaching method and evaluation system with the help of new information technology and new means, integrates ideological and political education with professional education, and returns students an open, relaxed, free, interesting and vivid classroom environment, so that classroom teaching can promote vocational education back to the standard.

**References:**

[1] Yu Wang. Analysis on Classroom Revolution of Vocational Education under the Background of Improving quality and improving excellence [J]. Journal of Guizhou Open University, 2023.31(02) : 23-28.  
 [2] Qingqing Liu. Theoretical Reconstruction and Practical Path of “Classroom Revolution” in Ideological and political courses in Higher vocational colleges [J]. Journal of Wuhan Shipbuilding Vocational and Technical College, 2023.22(02) : 58-61.  
 [3] Denghua Cao,Bei Liu. Research on “Classroom Revolution” of Vocational Courses based on Task worksheet [J]. Vocational Technology, 2023(08) : 75-81. (in Chinese)  
 [4] Jiaying Hu,Qingyu Xie,Xueyun Wang. Exploration and practice of “Information Technology” classroom Revolution in Higher Vocational Colleges [J]. Journal of Shandong Electric Power College, 2023.26(03) : 8-10+38.

Research projects: 2023 Heilongjiang Province Education Science planning key project “Higher vocational colleges installation cost course classroom revolution promotion Research and practice” (ZJB1423173); 2023 Heilongjiang Provincial Education Science planning key project “Ideological and political elements into the” Highway Engineering cost “course classroom revolution” (ZJB1423163).

About the author: Shi Yan, female, full-time teacher, senior engineer, national registered cost engineer. Research directions: Heating and ventilation technical direction, Construction equipment technical direction, installation engineering cost management.