# Research on the Construction of CIPP Evaluation System for Electronic Majors in Higher Vocational Education

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**Abstract.** Due to the deep alignment between the talent cultivation goals of higher vocational education and the talent needs of the human resource market, the development of vocational education has been highly valued. However, the students' sources and structures of higher vocational education is relatively diverse, and the implementation of teaching and the quality of education have been greatly affected. To improve the quality of education and help students of all types complete their studies with high quality, this paper studies the CIPP evaluation system for electronic majors in higher vocational education and provides practical and feasible measures. And through evaluation feedback, the implementation of teaching can be improved and the professional skills of talents can be enhanced. It has a positive impact on prosperity of the talent market and economic development.

**Keywords:** CIPP · Evaluation System · Feedback · Vocational Education · Electronic Majors

## 1 Introduction

Against the backdrop of economic and social development and transformation, as well as a significant gap in applied vocational and technical talents, it is necessary to promote the development of vocational education to alleviate employment problems and facilitate economic prosperity [1, 2]. Enormous opportunities also lie with such phenomenon for the development of vocational colleges. However, many challenges arise as well. The most practical problem is to lower the admission threshold to cultivate more skilled talents in vocational colleges. This will lead to a gradual diversification of the student source structure from high school graduates to high school graduates, vocational school students, retired soldiers, laid-off workers, migrant workers, etc. Diverse sources of students have varying educational backgrounds, skill levels, learning foundations, and admission requirements, resulting in complex academic situations [3]. Then, many difficulties have been caused in the formulation of learning objectives, content design, and effectiveness evaluation, which may directly lead to a decrease in teaching quality. This contradicts the original intention of developing vocational education. We should


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integrate skills education and academic education organically to achieve quality oriented enrollment expansion and help students with different goals and starting points complete their studies. It can be seen that the teaching quality of vocational colleges has always been the top priority, and the evaluation of teaching quality and its system construction are still important contents worth exploring.

For the electronics industry, various plans and policies continue to promote its development. Especially the development of 5G technology accelerates the continuous expansion of the electronic industry market. The huge market has caused a serious shortage of skilled electronic talents. Thus, studying the construction of teaching quality evaluation system for electronic majors in vocational colleges has important guiding significance for the differentiated teaching needs of student groups and the cultivation of high-quality skilled talents.

The evaluation of education abroad started early and the theoretical system of evaluation is also relatively complete. In 1929, American educator Taylor first proposed the concept of educational evaluation [4]. In 1967, Stufflebeam proposed the CIPP pattern and in 1971 22 different types of evaluation models were introduced in detail [5]. In 2000, Stufflebeam identified accountability assessment models, practical oriented assessment models, and others as the most suitable models for the 21st century [6]. The research on the CIPP model in China mainly includes two aspects: research on its content and characteristics, and application research. In 2003, Xiao's "Analysis of the CIPP Education Evaluation Model" was the most representative research on the content of the CIPP evaluation model in China [7]. In 2016, Zhang drew on the views of other scholars to explain the four evaluation elements of the model [8]. In 2017, Xie constructed a flipped classroom teaching evaluation system based on the CIPP model [9]. In 2021, Xu constructed a comprehensive evaluation system for ideological and political education in university courses based on the CIPP evaluation model [10].

Although the research on the CIPP evaluation model is relatively rich, these studies on CIPP have problems such as narrow evaluation scope, single evaluation themes, and overly quantitative evaluation method. The CIPP evaluation model emphasizes the formative function of evaluation, with decision-making as the center, and runs through the entire process of educational activities. Therefore, the evaluation subjects of the CIPP evaluation model need to be diversified and the evaluation indicators need to be comprehensively covered at different levels. However, the ultimate goal of evaluation is to improve students' subjective initiative in learning, enhance the quality of talent cultivation, and a diversified evaluation body should also be student-centered.

Therefore, this paper mainly studies CIPP evaluation system for electronic majors. Based on the four evaluation elements of the CIPP model, a positive interaction between teaching and learning is formed. Thus, the quality of technical and skilled personnel training in the electronics industry can be effectively improved.

## 2 CIPP Model

The CIPP model was proposed by Stufflebeam, a scholar in the evaluation of American government education, and has broad influence and universal applicability internationally. The basic viewpoint of this model is that "the most important purpose of evaluation

is not to prove, but to improve." Therefore, the CIPP evaluation model is also known as the decision oriented or improvement oriented evaluation model. Different from other models, its evaluation elements have four aspects, including background evaluation (Context), input evaluation (Input), process evaluation (Process), and result evaluation (Product), in order to make value judgments on the evaluation object from multiple dimensions.

The core of the CIPP model lies in "improvement". On the one hand, based on feedback from various evaluation stages, CIPP takes four evaluation elements as steps. During the evaluation process, indicators that match the four elements are selected for different stages of teaching implementation, and the effectiveness of each element implementation stage is judged based on the evaluation feedback from different stages, in order to refine and improve the corresponding teaching implementation plan to achieve the expected goals. Background evaluation can include students' educational background and development needs, teaching resources and platforms that the college can provide, and the skill requirements of relevant industries for talents. Based on the evaluation results, teaching content and structure can be adjusted in a timely manner to ensure efficient teaching and learning, enhance students' learning initiative, reduce teacher workload, and improve the quality of college teaching. On the other hand, based on the overall feedback from all evaluation stages, talent cultivation is a long-term and continuous process, and the purpose of practical teaching is the same. The four evaluation elements of CIPP run through the entire teaching implementation process, and can widely obtain feedback information from different evaluation subjects and different aspects of evaluation. Analyzing the information that can interact between the four elements can promote the continuous improvement of the overall teaching plan implementation framework and rules, Continuously aligning with the teaching objectives of higher vocational education.

## 3 CIPP Evaluation System

The CIPP model, also known as the "decision oriented evaluation model," serves decision-makers, teachers, students, and others who need evaluation information, thereby better serving education. Ultimately, it is reflected in the quality of the talents cultivated. Therefore, in the entire evaluation process, attention should be paid to the diversification of evaluation subjects, evaluation indicators, and the verticality of the evaluation process. Thus, the evaluation system can cover the entire teaching process as comprehensively as possible. In addition, when constructing the CIPP evaluation system, enterprises and society are also considered as evaluation subjects in order to obtain more feedback. The construction of the CIPP evaluation model for electronic majors is shown in Fig. 1.

During the evaluation process, it is necessary to promptly track feedback on various evaluation elements, and improve corresponding indicators in a timely manner. The purpose of evaluation is not to prove education, but to improve education, so special attention should be paid to the feedback of evaluation, as shown in Fig. 2. Background evaluation, also known as diagnostic evaluation, is beneficial for the implementer of the plan to have a clear positioning of the various elements of teaching; Input evaluation, also known as feasibility evaluation, can provide a clear understanding of whether the implementation of the teaching plan is feasible, making more objective decisions for

the development of teaching activities and the selection of teaching strategies; Process evaluation refers to formative evaluation, which monitors and tracks the entire dynamic process of teaching implementation, providing a basis for improving teaching activities and further cooperation between teachers and students; Achievement evaluation is essentially a summative evaluation of educational programs, which improves teaching programs by measuring and analyzing the implementation results of the programs.

Each evaluation process complements each other, continuously improving the overall education plan and implementation rules, thereby improving the efficiency of teaching implementation, enhancing the process experience of teachers and students, improving students' subjective initiative in learning, and achieving teaching objectives.

Build a "CIPP Cloud Online Evaluation" platform to collect evaluation data. Therefore, the model can be accelerated and put into effect. It can distribute questionnaire and conveniently complete background, process experience, enterprise satisfaction, and other surveys; it can record information such as teachers and teaching equipment, and visually display existing human, material, and financial inputs; It can track the implementation process of teaching plans in real-time and record information such as students' online learning time, homework completion rate, interaction with teachers, attendance rate, etc., and teachers' teaching resources, teaching plans, teaching activities, etc.; it can calculate the final results and compare with the expected results using the platform's powerful data processing and analysis capabilities. The "CIPP Cloud Online Evaluation" platform provides great convenience, interactivity, and immediacy for the construction of the CIPP model, making the evaluation model have strong data support. Thus, it has more rationality and practical feasibility when applied.

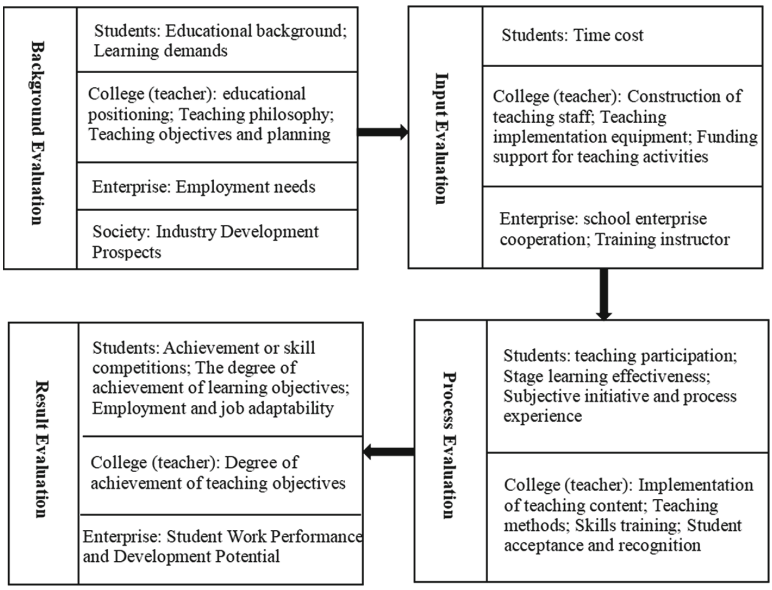


**Fig. 1.** CIPP evaluation model for electronic majors

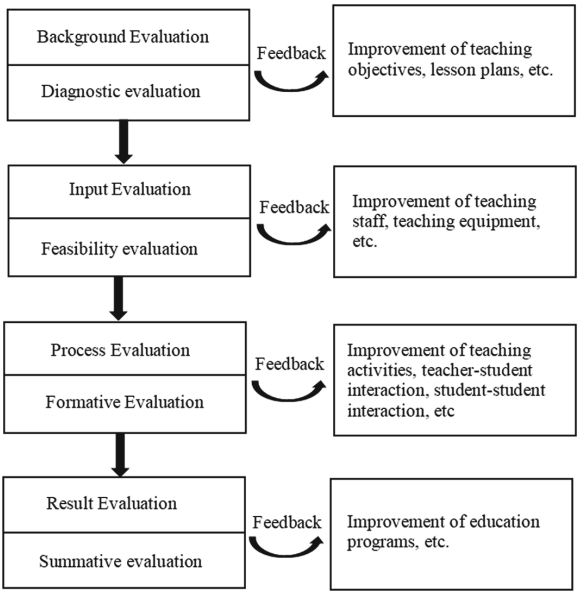


**Fig. 2.** Evaluation feedback effect

In addition, personalized, visual, and real-time electronic learning archives can be established for each student by recording information on the platform. This can help teachers to timely grasp students' learning progress and effectiveness, so as to reflect on teaching and adjust teaching strategies in a timely manner. Students can also pay attention to the dynamic changes in their own learning process, easily gain a sense of learning satisfaction and achievement, establish confidence in learning, or discover learning loopholes and make immediate improvements. The quality of cultivating skilled electronic talents has been greatly improved. Eventually a virtuous cycle between teaching and learning can be achieved through the "feedback chain".

## 4 Conclusion

By constructing such a CIPP evaluation system for electronic majors, the effectiveness of talent cultivation, talent cultivation plans, faculty structure, and curriculum implementation strategies have all been optimized. Especially for talent cultivation, students not only improve their skills, but also receive positive reviews in their work. This phenomenon has a good feedback effect on teaching. Thus, a good interaction between teaching and learning has been achieved. The CIPP evaluation system can also provide positive ideas and modes for the cultivation of other skilled talents in vocational colleges. The comprehensive literacy and core competitiveness of skilled talents can be enhanced. A win-win situation for students, teachers, universities, enterprises, etc. Eventually, it will make greater contributions to the development of the electronics industry and socio-economic development.

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