

Research on the construction of ideological and political evaluation index system of electronic and information courses of vocational undergraduate based on CIPP

Xin Li

Shenzhen Polytechnic University, Shenzhen, China

Keywords: Vocational undergraduate; Electronic and information category; Curriculum thought and politics; Evaluation index

Abstract: In order to comprehensively understand the situation of ideological and political education in professional undergraduate electronic and information courses, and build a scientific and reasonable evaluation index system, this paper, based on the CIPP evaluation model, takes the commonality and particularity of ideological and political education in courses as the starting point, and takes the background, resources, process, and results as the entry points, to construct a course ideological and political education teaching evaluation index system with 4 first-level indicators, 10 second-level indicators, and 25 third-level indicators. The construction of this system will promote the closed-loop iteration construction of course ideological and political education, and provide data basis for scientifically evaluating the implementation quality of ideological and political education in professional courses.

1. Introduction

Curriculum thought and politics is a solution to the dilemma of "two layers of skin" of ideological and political theory courses and specialized courses and the "island" of ideological and political education^[1]. The "Overall Plan for Deepening the Reform of Educational Evaluation in the New Era," issued by the CPC Central Committee and the State Council, proposes that "full play should be given to the guiding role of educational evaluation, guiding the establishment of scientific educational goals and ensuring the correct direction of educational development"^[2]. The ultimate goal of electronic and information major education in vocational education undergraduate is to cultivate high-quality technical and technical talents in the field of electronic and information. Therefore, the ideological and political construction of electronic and information courses is very important. According to the newly released Catalogue of Vocational Education Majors (2021) released by the Ministry of Education, the major of Electronics and information belongs to the category of engineering, including a total of 18 majors such as electronics and information engineering technology, integrated circuit engineering technology, and modern communication technology^[3]. Electronic and information major as a specialty with cross-disciplinary characteristics, its curriculum ideological and political construction has professional uniqueness. Finding and solving problems, making a scientific and comprehensive evaluation of the effect of curriculum thought and politics, giving full play to the

application value of curriculum thought and politics, and effectively improving the effect of moral education are the important links to improve and perfect the ideological and political teaching of electronic and information major.

At present, the effect of curriculum ideological and political teaching is mainly from the aspects of student satisfaction, system guarantee, teaching plan and other rough evaluation, in the evaluation content, method and main design lack of scientific, objective and pertinence. In addition, the existing evaluation system does not combine the uniqueness of the ideological and political curriculum of each major category, and lacks the evaluation system of the ideological and political curriculum determined by the major category as the basic analysis unit. The evaluation index system of the ideological and political curriculum of the electronic and information major of vocational education undergraduates is necessary.

2. The compatibility of CIPP model and curriculum ideological and political evaluation

Constructing a scientific and reasonable evaluation system is an important link in curriculum ideological and political construction. In view of the "recessive" characteristics of curriculum ideological and political elements, the implementation of curriculum ideological and political effects is not easy to show and other reasons, to build a practical and feasible professional curriculum ideological and political teaching evaluation system has become an important field of scholars. The scholars' research fields are concentrated in three aspects: how to build the course evaluation guidepost system^[4-5], How to define curriculum evaluation standards and subjects^[6], How to expand the curriculum evaluation method^[7]. Based on the existing research results, the author believes that curriculum ideological and political evaluation needs to follow three principles, namely, the diversification of evaluation indicators, the diversification of evaluation subjects, and the dynamic evaluation methods.

The roots of CIPP evaluation model can be traced back to 1966, which is an optimization-oriented evaluation system carefully constructed by American scholar Stufflebeam on the basis of Taylor behavior goal model^[8]. This model divides the evaluation process into four parts: background analysis, resource input evaluation, implementation process monitoring and outcome evaluation, and comprehensively covers the life cycle of the evaluation object, each part and its core elements. CIPP model not only shows a high degree of systematicness, but also highlights its accuracy and foresight in problem diagnosis, strategy adjustment and future development.

The CIPP model aims to provide decision-makers with valuable information resources, so that they can adjust the program more scientifically and enhance its implementation effect and impact. The philosophy deeply reflects the critical role of evaluation as a management tool in promoting the continuous optimization and higher quality development of educational programs or activities. The model is characterized by a holistic focus on the whole process. CIPP model attaches importance to formative evaluation, makes evaluation as a part of educational activities, and can carry out in-depth analysis and evaluation on the process of educational activities in an all-round way. It can effectively solve the problems such as unclear indicators, single dimensions and ineffective evaluation in the current curriculum ideological and political evaluation.

This paper focuses on constructing an evaluation index system of electronic information courses for vocational undergraduate with clear objectives, multiple subjects, diversified indicators and strong pertinence. This system will be based on the theoretical basis and operational steps of CIPP evaluation model, make course evaluation cover the whole process of teaching, promote the closed-loop iterative construction of curriculum ideology and politics, and provide data basis for scientific evaluation of the implementation quality of professional curriculum ideology and politics through targeted investigation and interview of teachers, collection, analysis and processing of

relevant literature and data.

3. Construction of ideological and political index system of safety curriculum

3.1 Index Selection

1) Preliminary drawing of indicators. Based on the CIPP evaluation model, this paper divides the evaluation types of curriculum thought and politics into four dimensions: background, resources, process and result, and takes them as first-level indicators. On this basis, we made in-depth reference to authoritative policy documents such as the Overall Blueprint for the Reform of Educational Evaluation in the New Era and the Guiding Outline for the Construction of Ideological and Political Construction in College Curriculum, combined with diversified literature materials such as the specific policy orientation, development planning and curriculum standards for electronic and information engineering majors of vocational undergraduate courses, and carried out policy text analysis on the literature materials. According to the analysis results, a secondary index was constructed, and each index was transformed into a detailed observation point to form a tertiary index.

2) Expert opinion consultation. After the preliminary construction of curriculum evaluation index framework, the Delphi method was used to compile expert questionnaire to screen and determine the index. The objects of consultation include front-line teachers of related majors in the electronic and information category, teaching affairs office, teachers in the guidance office, department leaders and professional directors, etc., to carry out cognitive interviews and questionnaires on evaluation indicators, discuss and revise the initially proposed first and second level indicators, and form an evaluation index system of ideological and political teaching of related professional courses in the electronic and information category.

3.2 Determination of weights

In order to improve the practical application efficiency of the evaluation index system, we have implemented a refined index assignment process. Through carefully designed questionnaire survey, using five-level Likert scale system, corresponding quantitative values were assigned to each level of indicators. After eliminating invalid questionnaires, we successfully collected 28 valid questionnaires. Then, with the help of SPSSAU online analysis tool, we applied the entropy weight method, a scientific method, to carry out weight distribution. The result shows that at the level of first-level indicators, the weight of "background" is 19%, "resource" 21%, "process" 28%, and "result" 32%.

Following the same logic, we further refined and obtained the specific weights of each secondary and tertiary index. These weights have passed the strict consistency test of experts to ensure their scientific and reasonable. Finally, we built a detailed and structured curriculum ideological and political evaluation system, as shown in Table 1, where the numbers in brackets accurately reflect the weight distribution ratio of indicators at all levels.

Table 1: Evaluation index system of curriculum Ideology and politics

First-level index	Secondary indicators	Tertiary indicators
Background (19%)	Educational philosophy (51%)	Clear positioning of electronic and information discipline (50%); Integrating ethics into teaching (50%)
	Targeting (49%)	To realize the function of ideological and political education (43%); Diversified goals (32%); Be achievable and actionable (25%)

Resources (21%)	Ideological and political elements integrated into the curriculum (38%)	Integrating ideological and political elements into course materials (34%); Integrating ideological and political elements into course materials (33%); Integrating ideological and political elements into online courses (33%)
	Teacher building (32%)	Strengthen teacher team building (50 percent); Enhancing teachers' awareness and competence (50%)
	Platform and financial support (30%)	Set up special research funds (45%); Provision of teaching funds (55%)
Process (28%)	Teaching process (50%)	Scientific and reasonable teaching arrangements (45%); Diverse and appropriate teaching methods (25%); And student-centered content (30%)
	Learning process (50%)	Carefully complete the preview task (30%); Actively participate in class learning (40%); And completing after-school assignments (30%)
Results (32%)	Teaching effectiveness (40%)	The course achieved the ideological and political goals of electronic and information categories (55%); Remarkable teaching achievement (45%)
	Teaching impact (30%)	Good evaluation by supervisors, peers and students (60%); Radiation outreach (40%)
	Education effectiveness (30%)	Improving students' moral quality (36%); Mastering students' basic theoretical knowledge of electronic and information disciplines (32%); Improve students' technical ability (32%)

According to the constructed evaluation index system, the questionnaire scores are the scores of each three-level index, the scores of the second-level index are the weighted scores of each three-level index, and the calculation method of the first-level index and the total score is the same. In order to obtain the performance data of the index system, the scoring expression of the ideological and political courses of electronic and information major is calculated:

$$F = \sum_{i=1}^n \sum_{j=1}^i K_i \cdot X_i \quad (1)$$

Where: K_i is the weight of indicators at all levels, X_i is the score of indicators at all levels, n is the number of indicators at different levels, and i is the indicator data at all levels.

Based on the above analysis and calculation, this study constructs a comprehensive evaluation index system of college curriculum ideology and politics, and the evaluator inspects the current situation of curriculum ideology and politics teaching of the evaluated colleges and universities or teachers one by one, and scores each observation index according to the actual situation according to the five-level gradient scoring system. It is specifically divided into five grades: excellent (90 ~ 100 points), good (80 ~ 89 points), medium (70 ~ 79 points), poor (60 ~ 69 points) and poor (0 ~ 59 points).

4. Analysis of scoring results

In order to deeply and comprehensively examine the current ideological and political implementation of electronic and information courses, we have used a carefully constructed evaluation index system, and carried out specific application practice and evaluation analysis in a

number of vocational undergraduate colleges. The objects of questionnaire survey were teachers of relevant disciplines in vocational colleges. A total of 200 questionnaires were sent out, recovered and screened, and 163 valid questionnaires were finally obtained. According to scoring results, the ideological and political situation of electronic and information courses was comprehensively evaluated. The total score was 5 points, and the actual score was 3 points, indicating that the overall construction was in good condition, but there was still room for improvement. As can be seen from Table 2, the scores of the first level index are "resources" (3.5632 points), "results" (2.942 points), "process" (2.825 points) and "background" (2.7345 points) in order from highest to lowest. This indicates that the resources invested in ideological and political education of electronic and information courses are relatively solid, but the educational concept and target orientation still need to be strengthened.

Table 2: Scores of primary and secondary indexes of ideological and political evaluation of electronic and Information courses

Primary indexes	Secondary indexes
Background (2.7345)	Educational Philosophy (3.2)
	Goal setting (2.25)
Resources (3.5632)	Ideological and political elements into the curriculum (3.42)
	Teacher building (3.23)
	Platform and financial support (4.1)
Process (2.825)	Teaching process (3.12)
	Learning process (2.53)
Result (2.942)	Teaching effectiveness (3.50)
	Teaching impact (2.54)
	Education effectiveness (2.6)

Background indicators mainly reflect the integration of curriculum thought and politics in disciplinary background and educational philosophy. The score of this index is relatively low, which may indicate that the top-level design of curriculum ideology and politics and the integration of educational concepts and subject characteristics need to be strengthened. It is necessary to further optimize the educational concept and clarify the positioning and role of curriculum ideology and politics in electronic and information disciplines.

The resource index covers aspects such as financial support and teacher staffing. The higher score of this index indicates that the electronic and information disciplines are relatively abundant in terms of resource input. However, it should also be noted that the resource allocation is uneven. In the future, more resources should be invested, especially in ordinary vocational undergraduate colleges, to ensure the balanced development of ideological and political education in courses.

The process index mainly evaluates the implementation of curriculum ideology and politics in the teaching process. The score of this index is in the middle level, indicating that in the teaching process, curriculum thought and politics have been paid some attention and implemented, but there are still shortcomings. It is necessary to further optimize the teaching process, strengthen the innovation of teaching methods, and improve the pertinence and effectiveness of curriculum ideology and politics.

The result index reflects the effect and influence of curriculum ideology and politics. The score of this index is slightly lower than that of the resource index, indicating that the outcome output and social impact of the curriculum ideology and politics need to be strengthened. It is necessary to establish a more perfect evaluation mechanism, implement a periodic evaluation and feedback machine for the effectiveness of curriculum ideological and political education, and constantly optimize and enhance the overall efficiency and influence of curriculum ideological and political

education

To sum up, the course ideological and political construction of electronic and information subjects in vocational undergraduate colleges performs well in terms of resource investment, but still needs to be strengthened in terms of background, process and result. In the future, we should continue to strengthen the ideological and political construction of the curriculum, starting from the following aspects: ① Optimize the top-level design. It is necessary to make clear the position and function of curriculum ideology and politics in electronic and information disciplines, and formulate a scientific and reasonable curriculum ideology and politics construction plan. ② Strengthen the input of resources. While maintaining current levels of resource investment, further allocate resources towards ordinary institutions to ensure balanced development of ideological and political education in curricula. ③ Innovate teaching methods. Combining the characteristics of electronic and information disciplines, innovative teaching methods and means to improve the pertinence and effectiveness of curriculum ideology and politics. ④ Improve the evaluation mechanism. It is necessary to establish a more perfect evaluation mechanism, conduct regular evaluation and feedback on the effectiveness of curriculum ideology and politics, and timely adjust teaching strategies and methods. ⑤ Strengthen teacher training. In order to ensure high-quality implementation of ideological and political education in curricula, the training and management of curriculum ideological and political teachers need to be strengthened, and teachers' ideological and political literacy and teaching ability need to be improved.

5. Conclusion

This study focuses on the uniqueness of electronic and information courses in vocational undergraduate colleges. Based on the CIPP evaluation model, the evaluation index system of ideological and political teaching of electronic and information courses is carefully constructed from four dimensions: background, input, process and effect. The system covers 4 core first-level indicators, which are further refined into 10 second-level indicators, and under each second-level indicator, specific observation points are set up to comprehensively and deeply evaluate the integration effect of ideological and political teaching in the curriculum. Through comprehensive analysis of the evaluation results, the aim is to promote the reform and innovation of ideological and political teaching in electronic and information courses, strengthen the ideological and political literacy of professionals, ensure the deep integration of ideological and political education and professional knowledge, and realize the goal of leading the construction by evaluation and driving the improvement by evaluation.

At present, the construction of the evaluation index system of ideological and political teaching of electronic and information courses is still in its infancy, and it is faced with the need to improve the professional management mechanism, the relative lack of expert resources, the insufficient refinement of the index system and the urgent need to verify the reliability and validity of the evaluation. In view of this, future research will focus on further optimizing the system to ensure that it is more comprehensive, scientific and reasonable, and closely fits the development characteristics of electronic and information disciplines in vocational undergraduate colleges. At the same time, the practice activities of ideological and political teaching evaluation will be continuously enriched, and the statistical analysis and feedback mechanism of the result data will be strengthened, so as to provide solid support for the continuous improvement and high-quality development of ideological and political education of electronic and information courses.

Acknowledgements

2023 Education and Teaching Reform Research and practice project granted by Shenzhen Polytechnic University: "Research on the Construction of Ideological and Political Evaluation index System of Electronic and Information Major Courses for Vocational Education Undergraduates based on CIPP Model", (7021310031), Moderator: Xin Li.

References

- [1] Zhao Jiwei. *Course of the construction of the ideological principle, target and method* [J]. *Journal of South-Central Minzu University (humanities and social science edition)*, 2022, and (3): 175-180 + 188. DOI: 10.19898 / j.carol carroll nki. 42-1704 / c. 2022.0321.
- [2] The Central Committee of the Communist Party of China and The State Council issued the General Plan for Deepening the Reform of Educational Evaluation in the New Era [EB/OL]. (2020-10-13) [2024-06-22]. http://www.moe.gov.cn/jyb_xxgk/moe_1777/moe_1778/202010/t20201013_494381.html.
- [3] Ministry of Education of the People's Republic of China. Notice of the Ministry of Education on Printing and distributing the Catalogue of Vocational Education Majors (2021) [EB/OL]. (2021-03-12)[2022-03-26]. http://www.moe.gov.cn/srcsite/A07/moe_953/202103/t20210319_521135.html.
- [4] Hu Hongbin. *Toward the framework and mechanism of teaching evaluation for ideological and political education in curricula* [J]. *China University Education*, 2022, (04):66-74.
- [5] Guo Fang. *Construction of evaluation system of Ideological and political Education Effect of Vocational Education Courses based on the theory of Authenticity Evaluation* [J]. *Journal of Vocational and Technical Education*, 2022, 43(11):62-68.
- [6] LI Zhenyu, Xu Xuemeng, Su Yan. *An Analysis of Ideological and political Education Strategies for Mechanical Courses in colleges and universities* [J]. *Educational Theory and Practice*, 2023, 43(03):61-64.
- [7] Mao Jiaming, Li Fei. *Analysis and reconstruction of the evaluation system for ideological and political courses in higher vocational colleges under the "internet +" background* [J]. *Education and profession*, 2020, (13): 94-98. The DOI: 10.13615 / j.carol carroll nki. 1004-3985.2020.13.015.
- [8] Tong Ruipeng, Wang Leyao, Wang Lulu, et al. *Security discipline curriculum education based on CIPP evaluation* [J]. *Chinese journal of safety science*, 2022, 32 (12): 19-24. DOI: 10.16265 / j.carol carroll nki issn1003-3033.2022.12.0903.