

# Research on the Quality Evaluation Index Model of Ideological and Political Construction of University Curriculum Based on OBE

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## Abstract

Based on the concept of OBE, the system dynamics model of quality evaluation of ideological and political construction of university curriculum is constructed by adopting the tools of complex science management system thinking and the principles and methods of system dynamics. The optimization model is based on AHP to obtain the comprehensive weights of key factors; the weights and related parameters are substituted into the system to simulate the change trend of evaluation of ideological and political quality of curriculum with the object of engineering certification class courses in a college, and the incentive mechanism measures are proposed.

## Keywords

OBE; Evaluation of ideological and political quality; System dynamics.

## 1. Introduction

The Guidelines for the Construction of Civic and Political Education in Higher Education Programs, issued by the Ministry of Education in 2020, states that the cultivation of talents in higher education is a process of unifying the cultivation of people and talents. In order to build a high-level talent training system, the ideological and political work system must be integrated into it, and the construction of the ideological and political construction of the curriculum must be well grasped in order to solve the problem of the "two skins" of professional education and ideological and political education. The ideological and political construction of the curriculum is an important task for comprehensively improving the quality of talent training, and a sound quality evaluation system for the construction of the ideological and political construction of the curriculum should be established[1-4].

OBE (Outcome based education, OBE) education concept, also known as outcome oriented education, competence oriented education, goal oriented education or demand oriented education, is a kind of construction concept of curriculum system that is outcome oriented, student oriented and adopts reverse thinking. From the perspective of OBE theory, it emphasizes "student-centered" and takes "result-oriented" and "continuous improvement" as the basic idea, and it is a kind of evaluation mode based on output result orientation. It is an evaluation mode based on output-oriented results, which runs through the whole process of students' cultivation. The purpose of teaching Civics in professional courses in colleges and universities is not only limited to interpreting and teaching the basic theories of the profession, but also requires college students to know and do what they know, apply what they have learned, and improve their ability to distinguish right from wrong[5,9,10].

This paper takes the author's university as the research object, based on the complex scientific management system thinking tool - exploration diagram, constructs the preliminary system model of the quality evaluation of the construction of the university course of civics and politics

based on OBE; on the basis of this, in-depth research on the status quo of each sub-system of the teachers, students, supervisors, teaching management, the evolution of the law, and feedback and role mechanisms between the sub-systems. On this basis, the current situation and evolution law of each sub-system of teachers, students, supervisors and teaching management as well as the feedback mechanism between each sub-system are studied in depth, and the dynamics model of the quality system of the construction of the university course of ideology and politics is constructed; the trend of the quality of the university course of ideology and politics under different policy parameters is simulated through the regulation of the parameters, and the measures of the incentive mechanism for the evaluation of the quality of the curriculum and politics are proposed.

## 2. A Preliminary System Model of Ideological and Political Education Quality Evaluation Based on OBE

An exploratory map is a map created by a researcher using the Complex Science Management System mode of thinking by examining the overall environment and using the perspective of a larger contextual consideration of the problem based on their own experience, the knowledge and information they possess, and their creative imagination. The formation of this diagram is a collective creative process that shows all of the factors that would or could affect the research topic.

The steps to form the exploratory map for evaluating the quality of the construction of the university program Civics are as follows:

**Table 1.** Quality Evaluation Index system of ideological and political construction of curriculum

Evaluation of ideological and political quality of curriculum	Teacher assessment	Educational background	Supervisory evaluation	Instructional objectives and design
		Teachers' morale and ethics		Educational content
		Teaching methods and academic competence		Teaching process
		Evaluation and quality feedback		Teaching effect
		Teaching reflection and improvement		
	Student assessment	Learning Objectives	Informatized teaching environment	Software resource
		Learning content		Fixed assets
		Learning outcomes		Smart learning environment
		Teachers' image		

First, convene a meeting of 8-10 experts related to the research topic to discuss the decision-making problem to be made; second, the moderator asks questions based on the decision-making problem, and the experts think about it; third, the experts put forward their own views based on their backgrounds and experiences, and the moderator draws a number of ellipses on the paper to indicate the factors affecting the topic; fourth, after the experts have fully expressed their opinions, the ellipses indicate the area to be visually analyzed, and the factors of the same category are connected by a connecting line, and then the ellipses of the deleted factors are labeled; fifth, name each irregular circle, and add a label to the ellipses of the deleted factors. and synthesize the same ones, connect the factors of the same category with a connecting line, and then use irregular circles to connect all kinds of factors, and add a label to the ellipses of the deleted factors; fifthly, name each irregular circle, and use an ellipse to represent each one of them; sixthly, use two-way arrows to indicate the interaction between

factors, and get the classification interaction exploration map. After finishing, the exploratory diagram of the quality evaluation of the college course political construction is formed, which is also called the preliminary system model of the quality evaluation of the college course political construction, and the index system of the quality evaluation of the college course political construction is finally formed as shown in Table 1.

Among them, each measurement item of the supervisory evaluation is shown in Table 2 below:

**Table 2.** Each measurement item of the supervisory evaluation

Evaluation program	Evaluation criteria
Instructional objectives and design	Adhering to the principle of "making people moral" and "centering on students' development", integrating value shaping, knowledge imparting and ability cultivation, and giving full play to the role of curriculum in nurturing people.
	Teaching objectives are based on the nurturing characteristics of the program, and require clarity, science and accuracy in value shaping, knowledge transfer and ability cultivation, in line with the needs of the new era of innovative, complex and applied talent cultivation.
	The teaching design program is complete and clear, sorting out the important elements and dimensions of Civics in each chapter, accurately grasping the important and difficult points of the course, and being highly targeted.
	Appropriate and effective use of teaching methods and tools, and rational use of new media and technologies.
Educational content	Adhering to the unity of ideology and academics, the teaching content and resources are of high quality and applicable, and able to closely integrate Civic and Political Education with professional education.
	Adhere to the correct direction and positive orientation, in-depth excavation of the course itself contains the resources of the ideology and politics, and scientific and organic integration into the teaching content system, relevant and not abrupt, so that students resonate with
	Teaching content reflects new ideas and achievements in the development of the discipline, penetrates professional thinking, and meets the needs of the industry and society.
	Teaching content has depth and breadth, reflecting higher order, innovation and challenge
	Focusing on students' existing knowledge and experience, appropriate handling of key and difficult teaching points, clear organization, and skillful and comfortable use of teaching content.
Teaching process	Teaching is well organized, focusing on student-centered innovative teaching, reflecting teacher-led and student-led, and capable of integrating value guidance in the transmission of knowledge and the cultivation of abilities.
	Reasonable teaching arrangement, appropriate teaching methods, able to stimulate students' interest in learning and guide them to think deeply, reflecting relevance, interactivity and enlightenment
	The use of information technology is reasonable and effective, realizing the organic integration of information technology and classroom teaching, and strongly supporting teaching innovation
	Reasonable control of teaching time, classroom resilience, strict classroom discipline and effective classroom management
	Teaching assessment and evaluation are scientific in content and innovative in approach, focusing on all-round evaluation of students' quality, knowledge and ability, and on formative evaluation and generative problem solving and application
Teaching effect	Teaching content, methodology and implementation process follow the teaching philosophy, efficiently achieve the teaching objectives, and effectively realize the unity of teaching and educating people.
	Engaging classroom lectures, positive and enthusiastic classroom atmosphere, deep student involvement in the classroom, high level of motivation and activity, and development and enhancement of students' qualities, knowledge and abilities
	Formation of a teaching model that highlights the characteristics of the specialty and meets the characteristics of the students, which is of great value for reference and promotion.

Each measure of teacher evaluation is shown in Table 3 below:

**Table 3.** Teacher Evaluation Measurement Item List

Evaluation Program	Evaluation Criteria
Pre-course preparation	Integration of the educational objectives of engineering certification personnel training into the course teaching
	Civic elements embedded in the chapters were sorted out, refined and summarized
	The objectives of the course in terms of knowledge, skills, emotions and literacy are clearly identified
Teachers' morale and ethics	Dedicated to their work and have good teacher ethics to lead the way
Teaching methods and academic competence	Creating a teaching context and introducing specialized knowledge and civic elements in a timely manner
	Combining theoretical and practical teaching to cultivate students' engineering practical ability
	Teaching can be integrated into the context of research, and the results of research on the teaching and learning of the course's ideology can be developed into a paper and published.
Evaluation and quality feedback	Harmonious and favorable classroom atmosphere, forming a community of teachers and students
	Assessment rules and scales are prepared for all types of assessment activities
Teaching Reflection and Improvement	Emphasize student and peer feedback and self-assessment reflection, and improve teaching in a timely manner
	Focus on reflecting on one's teaching skills, quality of thinking, professionalism and values

Each measure of the student evaluation is shown in Table 4 below:

**Table 4.** Each measure of the student evaluation

Evaluation Program	Evaluation Criteria
Learning Objectives	The instructor clearly articulates the performance requirements and standards for this course
	Teachers helped me to clarify the objectives of the course in terms of knowledge, skills, emotions and literacy
Learning content	Teachers have an accurate grasp of the philosophical ideas, emotional identity, and other civic elements embedded in course expertise
	Teaching mode and teaching methods are rationally chosen and suitable for the rules of teaching Civics in science and engineering courses.
Learning outcomes	Helped me understand the engineering aesthetics, professional ethics, and professionalism covered in the course
	Teachers facilitated my acquisition and development of dialectical, holistic, and systems thinking
	Developed my ability to apply theory to practical engineering problems in different scenarios
Teachers' image	Speak in Mandarin with clarity and precision
	Appropriate use of body language and a natural and generous teaching style.
	Dress neatly and solemnly, full of spirit and affable

### **3. Simulation Model for Evaluation of ideological and political construction of university curriculum**

#### **3.1. Research Methodology - System Dynamics Modeling**

System dynamics model refers to the theory and method of system dynamics as a guide, the establishment of computer simulation model system used to study the dynamic behavior of complex systems. Vensim simulation software is currently one of the world's more commonly used system dynamics simulation software.

The general process of system dynamics modeling is to: define the problem; formulate structural assumptions of the system; from the assumptions, design the causality diagram and flow diagram of the system with equations; define the parameters, model simulation, testing or modification of the model (parameters), strategic analysis and decision making.

#### **3.2. Simulation study assumptions and system boundary setting**

According to the steps of simulation model construction, we need to delineate the boundaries of the model, and the boundaries of the model system is actually just an abstract outline, need to circle the problems considered for the purpose of modeling into the system, and separate the other problems that are not considered, and the system boundaries should contain the concepts and variables involved in the important relationship with the problem under study within the system. Therefore, this study combines the system model analyzed in the previous section with the actual research object and the purpose of supply and demand optimization simulation model construction, selects the key factors according to the requirements of the SD simulation model, and researches the intensity of the role of different factors on the respective levels in order to dynamically predict the evolution level of course ideological and political quality.

The basic hypotheses of this study are as follows:

(1) The relevant factors of the quality evaluation system of the construction of the university curriculum of Civics and Politics are divided from the four aspects of teacher evaluation subsystem-student evaluation subsystem-supervisory evaluation subsystem-informatized teaching environment subsystem, and only the important factors after the research are taken into account, without considering other minor role factors;

(2) Although resource variables such as the rate of investment in teaching funds, the rate of investment in fixed assets, and the rate of investment in resources change over time, the rate of this change is slow, so they are entered into the model in the form of constants at a fixed rate, and do not change during the simulation period, but only change when the policy changes the regulation model;

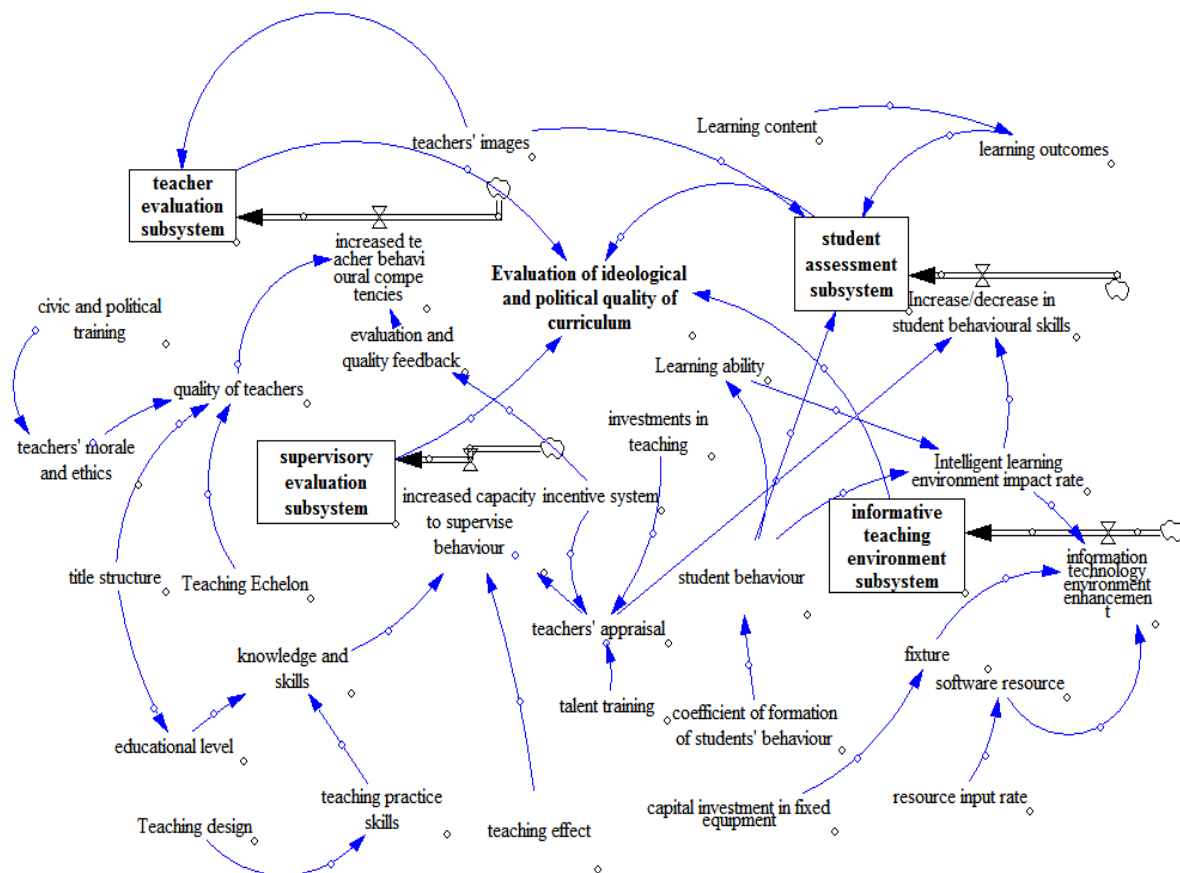
(3) The relevant variables in the informatized teaching environment subsystem are calculated only as auxiliary variables, not as state variables.

#### **3.3. Simulation flow graph model of university curriculum ideological and political quality evaluation**

In this paper, using the flow rate basic entry tree modeling method, the system is first divided into different subsystems, starting from the system of teachers, students, supervisors, informatization teaching environment and their interactions and mutual constraints, respectively, constituting four subsystems simulation flow diagram model, and then using matrix, feedback loop and other related theories to comprehensively integrate the subsystems to generate the college curriculum civic education construction quality evaluation simulation system dynamics Model.

First of all, the simulation flow diagram model of the four subsystems is constructed, and by the feedback influence and role mechanism between the subsystems, the four subsystems simulation flow diagram model is synthesized, and the simulation system dynamics model of

the quality evaluation of the construction of the college curriculum Civic and political construction is constructed as shown in Figure 1 below.



**Figure 1.** Dynamics model of the simulation system for evaluating the quality of the construction of the university program of ideology and politics

### 3.4. Simulation variable selection and system dynamics equation establishment

Based on the above figure, the main variables in the model are obtained:

Four horizontal variables: teacher evaluation subsystem, student evaluation subsystem, supervisor evaluation subsystem, and informationized teaching environment subsystem.

Four rate variables: increase/decrease in teacher evaluation ability, increase/decrease in student evaluation ability, increase/decrease in supervisor evaluation ability, increase/decrease in information technology teaching environment

The others are auxiliary variables and constants.

### 3.5. Simulation parameterization and model checking

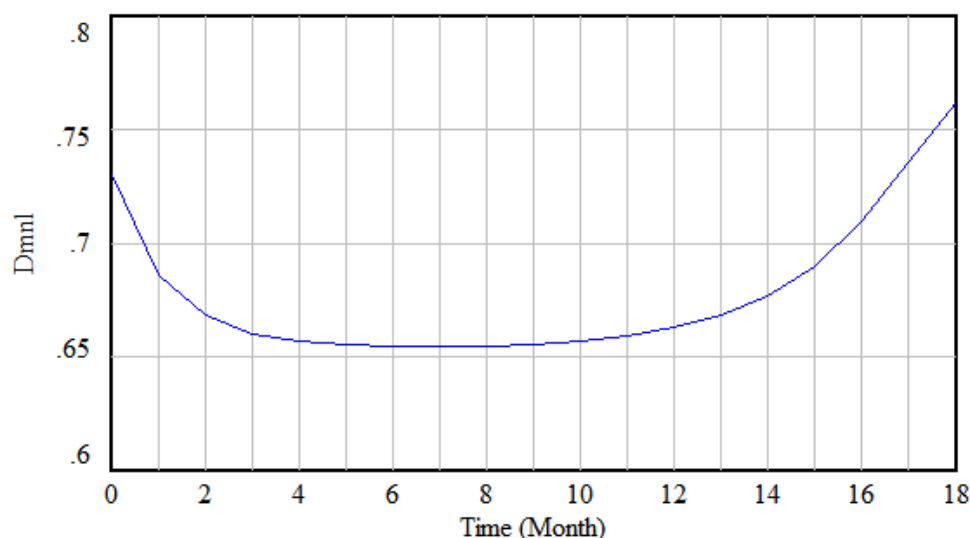
Determination of parameters in the model is the precise definition of the relationship between the role of each relevant variable, which is the basis of model utilization and simulation. The assignment of variables first requires the collection of a wide range of practical data, and then the use of relevant mathematical methods to deal with the need to meet the value of the system dynamics variables, and ultimately determine the parameter values, which are mainly involved in the determination of the value of the constant, the determination of the initial value of the level variable, the determination of the weights and other parameters of the simulation. The determination of weights involves several aspects of weights, first: the proportion of the teacher evaluation subsystem, student evaluation subsystem, supervisor evaluation subsystem, and informatized teaching environment subsystem in the whole course civics construction

quality evaluation system; second: the proportion of each influence factor in the teacher evaluation subsystem, student evaluation subsystem, supervisor evaluation subsystem, and informatized teaching environment subsystem is determined; and third: the proportion of each influence factor in part of the influence factor is determined. If the factor has more than one subordinate factor, the proportion of each factor should be determined. In this paper, the AHP method is used to obtain the comprehensive weights of key factors.

## 4. Simulation Scheme and Analysis of Simulation Results

### 4.1. Simulation run

The model is used to evaluate and simulate the quality of the construction of the Civic Government of a university's engineering accreditation program. The Civic Government of the university's engineering accreditation program will be fully implemented from June 2022, so the time boundary of the model simulation is from June 2002 to December 2023, a total of 18 months, and the running step is 1 month. Substitute the set initial value into the equation, click run a simulation and the system enters the simulation state, click on "Evaluation of the quality of the construction of the course's ideology and politics", and then click on the Graph button, which can form the simulation curve. From the graph, we can clearly see the change trend of the evaluation of the quality of the construction of course politics, as shown in Figure 2. The results show that the quality of the construction of the Civics and Politics of the engineering certification courses in the university first declined slowly, showed a period of leveling off, and then improved rapidly. Figure 2 shows that at the beginning of the implementation of the Civic Governance of the curriculum, engineering certification courses are generally professional courses, teachers were unable to understand the difference between the Civic Governance of the curriculum and the Civic Governance of the curriculum, and did not have a sufficient grasp of the introduction of Civic Governance content in the professional courses. The year 2022 was special, especially at the end of 2022 when students were at home "stopping classes and not going to school" and taking classes online, which caused the decline in the quality level of Civics in engineering certification courses to enter a plateau, and in 2023, the university increased the publicity of Civics in courses and the training of teachers, and the quality level of the construction of Civics in courses continued to climb.

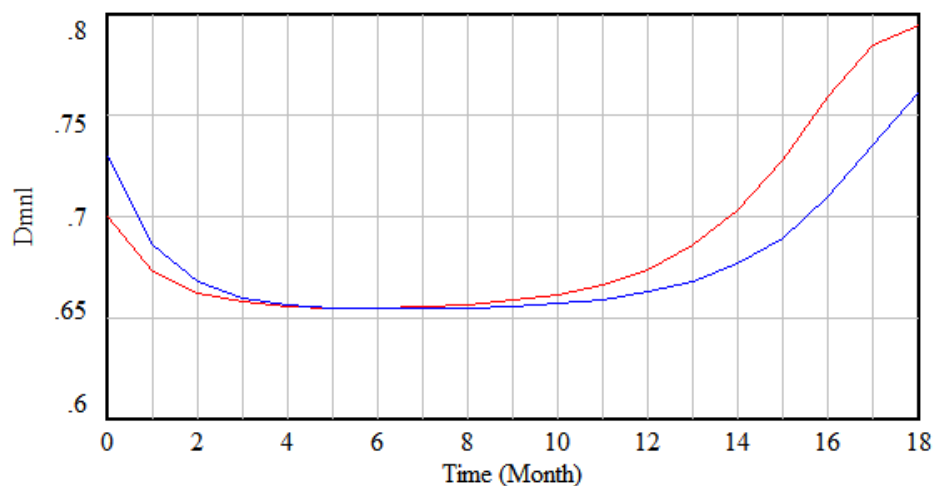


**Figure 2.** The evolution chart of the quality level of ideological and political construction



## 4.2. Options for regulating changes in variables

Under different policy conditions, the operation status of the evolutionary system of the quality level of curriculum ideological and political construction varies. In order to obtain strategies for improving the quality of curriculum ideological and political construction through the parameter regulation model, the measure of increasing the input of informatization fixed equipment and software resources (No2) is simulated to analyze the impact of different policy parameters on the quality of the construction of the course civics, and the simulation results are shown in Fig. 3. Obviously, the level of quality of curriculum Civics in this program is better than the current program.



**Figure 3.** Trend of the evolutionary program of the quality of the construction of the university curriculum in the field of philosophy and politics, 2022-2023

## 5. Strategies for Enhancing the Quality of Civics Construction in Colleges and Universities

The dynamics model of the evaluation system of the quality of college curriculum civics construction can not only evaluate the level of the quality of curriculum civics construction, but also predict the development and evolution trend of the quality of curriculum civics construction, and provide decision-making support for improving the quality of the quality of civics construction of engineering certification courses[6-7].

Teachers should overcome their own limitations to improve the awareness and ability of moral education with curriculum Civics. Higher education teachers receive specialised academic training at the doctoral level and lack systematic training in education and teaching, not to mention the tradition of teaching reflection. Teachers' understanding of Civics mostly comes from the learning experience of previous ideological and political theory courses, and it takes a certain process to understand and grasp the connotation of Civics in a comprehensive and in-depth way, which requires teachers to study the laws of education and teaching, and to have a systematic and comprehensive understanding of the standards of the professional category, the objectives of talent cultivation of the university, the professional cultivation programme, as well as the status of the courses taught in the curriculum system, so that they can specify the goals of Civics for the courses taught and the teaching links to improve the awareness of moral education and moral ability. This is the only way to specify the objectives of the taught courses, sort out the teaching links and make scientific and reasonable evaluation of the teaching effectiveness[8,11].



Schools should strengthen the construction of dual-teacher teams, improve the training system for dual-teacher training, strengthen teaching reform and innovation, increase the investment in the curriculum civics and teaching reform projects, and promote the coordinated development of teachers' educational and teaching ability and professional practice ability. Administrators should adhere to the principle of classified policy in promotion, respect the characteristics of disciplines and professions, the attributes of types of courses, and the differences of student groups; they should focus on stimulating the initiative of disciplines and professions in terms of system design; and they should follow the laws of education and teaching.

## 6. Conclusion

This paper constructs a preliminary system model for the quality evaluation of the construction quality of the university course Civic and political construction based on the theory of complex scientific management. In this model, AHP was used to determine the parameter weights, and then simulation simulated the change trend of the quality evaluation of the course civic politics construction under different policy parameters, and proposed the countermeasures for the improvement of the quality of the course civic politics construction.

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## References

- [1] Zhao Jinting,Zou Xiang. The construction of quality evaluation system of course Civics teaching based on emotion, attitude and value[J]. Vocational Technology,2023,22(10):34-40.
- [2] Cheng Xiaodan,Qi Peng. Reflection on the current situation and system reconstruction of the evaluation of the quality of higher education courses on ideology and politics[J]. Jiangsu Higher Education,2023(07):91-95.
- [3] Feng Ying. Research on Quality Evaluation System and Incentive Mechanism of Civic and Political Construction of Undergraduate Courses of Tourism Management in Colleges and Universities[J]. Journal of Social Sciences of Jiamusi University, 2022, 40(6):208-210.
- [4] Zhang Li-Quan. A study on the impact of incentive mechanism and quality evaluation system on the quality of course civics construction[J]. Teacher, 2022(24):87-89.
- [5] Huang Yan. Optimization of the evaluation system of public security colleges based on the OBE perspective[J]. Jiangsu Education Research, 2022(6):5.
- [6] Liu Ziyi, Dong Birong, Wang Rong. Evaluation of the Effectiveness of Civic and Political Construction of Courses--Taking the Accounting Course of Nanjing Audit University as an Example[J]. Journal of Finance and Accounting, 2022(22):42-46.
- [7] benRong Mu.The Practice and Exploration of Curriculum Thought and Politics in the Course of "Physical Thinking and Scientific Research Accomplishment"[J].Creative Education Studies, 2020, 08(6):960-964.DOI:10.12677/CES.2020.86156.
- [8] Zhang S .Exploration and Practice of Curriculum Thinking and Politics - from the Perspective of Communication Electronic Circuit Curriculum[J]. Advances in Higher Education, 2019, 3(2):183.DOI:10.18686/ahe.v3i2.1443.

- [9] Li W .The Teaching Reform and Practice of International Trade Practice Course Based on OBE Concept[J]. Development, 2022.DOI:10.47297/wspiedwsp2516-250034.20220606.
- [10] Xia Xumei. Reflections on the teaching of curriculum Civics based on the concept of OBE[J]. Education Teaching Forum, 2020(34):2.
- [11] WU Yuju, HUANG Muqian, WEI Luyang, et al. Design and practical exploration of the evaluation index system of course ideology quality based on entropy power method--Taking government economics course as an example[J]. Chinese Science and Technology Journal Database (Full Text Edition) Education Science, 2022(2):239-242.