

Research on Innovation and Efficiency of Practice Mode of Ideological and Political Education for College Students from the Perspective of Collaborative Education

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ABSTRACT Under the requirements of moral education and the comprehensive reform of “three-pronged education”, collaborative education has become a central path for improving the pertinence, effectiveness, and attractiveness of ideological and political education for college students. Current practice still faces insufficient subject coordination, fragmented fields, scattered resources, unsmooth mechanisms, solidified practice models, and difficulty in quantitative evaluation. Based on system theory, synergy theory, and ideological and political education theory, this study reconstructs the logic of practice-oriented ideological and political education with full participation, whole-process integration, full coverage, and all-element collaboration. It analyzes the collaborative mechanisms among universities, governments, enterprises, communities, and families, and proposes a five-in-one practice model covering classroom teaching, campus culture, social practice, cyberspace, and community-family participation. A multidimensional evaluation system is further built to measure ideological guidance, value shaping, practical development, growth progress, and collaborative support. The model can be extended to wireless-networked education platforms and electromagnetic-compatible digital interaction spaces used in smart campuses.

INDEX TERMS collaborative education, ideological education, practice mode, wireless network, dynamic evaluation

I. INTRODUCTION

A. RESEARCH BACKGROUND AND SIGNIFICANCE

SINCE the new era, the Central Committee of the Communist Party of China has attached great importance to ideological and political work in universities, emphasizing the integration of moral education throughout the entire process of education, promoting the construction of a comprehensive and all-round education pattern for all staff, the entire process, and all aspects, building a “big classroom”, a “big platform”, and a “master capital”. Synergetic cultivation, as the core implementation mechanism of comprehensive education, emphasizes the linkage of multiple subjects, the integration of multiple fields, the sharing of multiple resources, and the guarantee of multiple mechanisms, which is the key path to solving the pain points of current ideological and political education[1,2].

The current practice of ideological and political education in universities still faces many structural contradictions: firstly, the main body of education is fragmented, with ideological and political course teachers, professional course

teachers, student work teams, and external forces fighting independently, making it difficult to form a joint force; Secondly, the educational field is fragmented, and there is a lack of linkage between classroom teaching, campus culture, social practice, cyberspace, and family communities; Thirdly, the traditional practice mode is single, mainly consisting of classroom lectures, themed class meetings, and volunteer services, with insufficient innovation, experience, and interaction; Fourthly, the collaborative mechanism is not sound, lacking institutional guarantees such as overall coordination, resource sharing, assessment incentives, and closed-loop evaluation; The fifth issue is the vague evaluation of educational effectiveness, lacking a quantifiable, comparable, and modifiable scientific indicator system[3].

At the same time, the ideological concepts, behavioral patterns, and value orientations of college students have shown new characteristics, and higher requirements have been put forward for the interactivity, experience, reality, and personalization of ideological and political education. In this context, it is of great practical necessity and urgency

to carry out research on the innovation and effectiveness of ideological and political education practice models for college students from the perspective of collaborative education, construct a systematic, innovative, and implementable collaborative practice system, and scientifically evaluate the effectiveness of education[4].

Theoretical significance:

Enrich the theoretical system of ideological and political education for college students in the new era, and improve the theoretical connotations of collaborative education and comprehensive education; Construct a theoretical framework for collaborative practice of ideological and political education that involves multiple stakeholders, the entire process, and the entire domain, and reveal the inherent mechanism and operational rules of collaborative education among multiple stakeholders; Establish a scientific and standardized evaluation system for educational effectiveness, expand the research boundaries of ideological and political education effectiveness evaluation, and provide theoretical support for the high-quality development of ideological and political education in universities[5,6].

Practical significance:

Promote universities to break down departmental barriers, integrate internal and external resources, and form a comprehensive ideological and political pattern of top-down linkage, left-right collaboration, and integration of internal and external resources; Innovate the practical forms of ideological and political education, enhance attractiveness, infectivity, and effectiveness; Enhance the ideological consciousness, moral literacy, practical ability, and sense of social responsibility of college students; To provide replicable and promotable practical paradigms for promoting ideological and political education reform, improving institutional mechanisms, and optimizing work processes in universities, and to help cultivate new generations who are responsible for the great task of national rejuvenation[7-9].

B. CURRENT RESEARCH STATUS AT HOME AND ABROAD

1) Current Research Status in China

China has achieved rich results in collaborative education, comprehensive education, ideological and political courses, and practical models of ideological and political education. Research generally believes that ideological and political education must follow the path of integration, synergy, and practicality, emphasizing collaboration between departments within the school, between families and schools, between schools and communities, and between schools and enterprises. Some universities have explored models such as curriculum collaboration, practical collaboration, network collaboration, and cultural collaboration, and established corresponding working mechanisms.

However, there are still significant shortcomings in existing research: firstly, collaborative education mostly remains at the level of conceptual advocacy and macro design, with

a lack of practical models that are operable, implementable, and assessable; Secondly, there is a lack of innovation in practical models, with prominent homogenization phenomena and weak pertinence, timeliness, and experientiality; Thirdly, the evaluation system for educational effectiveness is not sound, lacking quantitative indicators, closed-loop feedback, and continuous improvement mechanisms; Fourthly, there is insufficient research on the underlying issues of the operation mechanism, guarantee mechanism, and division of responsibilities of multi subject collaboration[10].

2) Current Research Status Abroad

Foreign universities focus on general education, value guidance, social practice, and service learning, emphasizing the collaborative participation of schools, families, and society in cultivating students' personality and civic education. They have formed educational models such as service learning, community participation, and school enterprise cooperation. But its value system, educational goals, and institutional environment are fundamentally different from those in China, making it difficult to directly copy.

3) Research Review

Overall, existing research provides a foundation for this article, but a complete integrated system of collaborative education practice mode operation mechanism effectiveness evaluation has not yet been formed, especially lacking innovative practice modes that are in line with the actual situation of Chinese universities, can be widely promoted, and quantitatively evaluated. This article is based on this blank to conduct systematic research[11].

C. RESEARCH CONTENT AND TECHNICAL ROUTE

1) Research Content

(1) The core connotation, theoretical basis, and internal logic of collaborative education and ideological and political education;

(2) Analysis of the current situation, collaborative difficulties, and causes of ideological and political education practices for college students;

(3) The mechanism, structure, function, and operational mode of multi-party collaborative education;

(4) The construction and implementation path of the five in one collaborative education ideological and political practice model;

(5) Evaluation system and methods for the effectiveness of ideological and political education in nurturing individuals;

(6) Empirical research, case analysis, and model optimization;

(7) Long term guarantee mechanism and countermeasures for collaborative education.

2) Technical roadmap

Following the technical route of “theoretical construction current situation analysis mode innovation efficiency evaluation empirical testing mechanism improvement”, a complete research system is formed through literature research, questionnaire surveys, in-depth interviews, case analysis, and empirical testing as the main methods[12,13].

II. THEORETICAL BASIS AND CORE CONNOTATION

A. COLLABORATIVE EDUCATION THEORY

Collaborative education is based on the theories of collaboration, systems, and holism, emphasizing the coordination of multiple subjects, resources, and fields under a unified goal to form a joint force and achieve overall functionality greater than the sum of parts. In ideological and political education, it is reflected as: full staff collaboration, full process collaboration, full domain collaboration, and full element collaboration.

B. THREE IN ONE EDUCATION CONCEPT

All staff education: Everyone is the main body of education, including party and government cadres, ideological and political teachers, professional course teachers, student workers, logistics services, and external forces;

Full process education: integrating ideological and political education throughout the entire cycle of enrollment education, curriculum teaching, internship practice, employment guidance, and graduation education;

Comprehensive education: integrating ideological and political education into various fields and links such as teaching, scientific research, management, service, culture, and social practice[14,15].

C. THEORY OF IDEOLOGICAL AND POLITICAL COURSES

The ideological and political education course emphasizes opening the door for ideological and political education, promoting the integration of ideological and political small classrooms with social large classrooms, coordinating on campus and off campus, online and offline, theory and practice, achieving resource integration, field expansion, mode innovation, and improving the effectiveness of education.

D. THEORY OF PRACTICAL EDUCATION

Practical education emphasizes receiving education, developing skills, and making contributions through practice. Through experiential, participatory, and immersive practical activities, it promotes students' integration of knowledge and action, transforms theory into belief, and transforms belief into action[16].

E. DEFINITION OF CORE CONCEPTS

Collaborative Education: Under the unified leadership of the Party Committee, multiple entities such as universities, governments, enterprises, communities, and families

work together to integrate resources, build platforms, share achievements, and jointly carry out ideological and political education for college students[17].

The practice mode of ideological and political education: a relatively stable structure, process, carrier, and method system for carrying out ideological and political education practice activities under certain concepts and mechanisms.

Educational effectiveness: The actual and comprehensive effects of ideological and political education in guiding ideology, shaping values, cultivating morality, enhancing practical abilities, and promoting personal growth and development[18].

III. THE CURRENT SITUATION AND CHALLENGES OF COLLABORATIVE EDUCATION IN IDEOLOGICAL AND POLITICAL EDUCATION FOR COLLEGE STUDENTS

A. RESEARCH DESIGN AND IMPLEMENTATION

By combining questionnaire surveys with in-depth interviews, research was conducted on students, ideological and political teachers, counselors, management personnel, and external cooperative units from multiple universities to systematically grasp the real situation of collaborative education and ideological and political practice[19].

B. RESULTS ACHIEVED

Universities generally attach great importance to ideological and political education and collaborative education, and have established relevant work systems; The ideological and political courses are gradually advancing in the same direction as the ideological and political courses; Regularly carry out activities such as campus culture, social practice, and volunteer service; Some universities have formed distinctive experiences in campus campus collaboration, school enterprise collaboration, and home school collaboration. Each department within the school operates independently and lacks coordination; Insufficient collaboration between ideological and political teams and professional teachers; Low family participation; The lack of motivation, unclear responsibilities, and unsmooth channels for external entities such as the government, enterprises, and communities to participate makes it difficult to form a diverse synergy, as shown in Table 1.

TABLE 1. Collaborative Education Subjects and Responsibilities

Subject	Main Responsibility	Synergy Defects
University	Teaching, management, culture, practice	Fragmentation, insufficient coordination
Teacher	Ideological guidance, curriculum education	Insufficient integration of different teachers
Family	Family education, daily guidance	Low participation, poor connection
Government & Community	Policy, resources, practice base	Insufficient motivation, unclear channels
Enterprise	Internship, employment, social practice	Low willingness, lack of mechanism

C. DIFFICULTIES IN FIELD COLLABORATION

Classroom teaching, campus culture, social practice, cyberspace, and family community fields are separated from each other, lacking organic connection and linkage mechanisms; The disconnect between small and large classrooms, and the disconnect between theoretical education and practical experience.

The practical form is single, mainly consisting of lectures, class meetings, and volunteer services; Lack of innovation, experience, and interactivity; The content is not closely integrated with the needs of students; Insufficient targeted and hierarchical guidance; The management of the practical process is loose, and the effectiveness is difficult to guarantee.

The overall leadership mechanism is not sound; Lack of resource sharing mechanism; The communication and coordination mechanism is not smooth; The assessment and evaluation mechanism is not scientific; The incentive and restraint mechanism is not in place; The imperfect guarantee mechanism makes it difficult to sustain and deepen collaboration.

The evaluation of educational effectiveness tends to be subjective and qualitative, lacking objective quantitative indicators; Emphasize results over processes, prioritize form over effectiveness; Single evaluation subject and lack of feedback loop; The evaluation results are difficult to use for improvement work, and the effectiveness of using evaluation to promote construction and improvement is insufficient.

Insufficient top-level design and lack of systematic thinking; Traditional path dependence and solidified organizational barriers; Insufficient resource investment and need to improve team capabilities; Insufficient institutional supply and lagging guarantee mechanisms; Insufficient expression of student subjectivity.

IV. INNOVATION OF IDEOLOGICAL AND POLITICAL EDUCATION PRACTICE MODE FROM THE PERSPECTIVE OF COLLABORATIVE EDUCATION

A. OVERALL APPROACH TO MODE INNOVATION

Taking moral education as the foundation, collaborative education as the core, and the guidance of comprehensive education and ideological and political courses, we aim to build a new integrated practice model that integrates multiple subjects, five fields, the entire process, and all elements, achieving full staff, full process, full domain, and all-round collaborative education.

B. OVERALL FRAMEWORK OF THE FIVE IN ONE COLLABORATIVE PRACTICE MODEL

Unlike traditional static resource integration, this model innovatively introduces a cross-domain dynamic coupling mechanism. It does not merely link subjects but focuses on “functional interoperability” across the five modules. For example, classroom teaching generates “theoretical pain points” which act as direct inputs for social practice, while cyberspace provides a real-time data feedback loop to adjust

campus culture activities. This transforms the model from a simple multi-entity structure into an adaptive, closed-loop educational ecosystem.. Innovatively propose a five in one practical model of classroom teaching collaboration, campus culture collaboration, social practice collaboration, network space collaboration, and community family collaboration, forming a three-dimensional pattern of on campus collaboration, on campus collaboration, home school collaboration, and online and offline collaboration, as shown in Table 2.

TABLE 2. Five-in-One Practical Model of Ideological and Political Education

Model Module	Core Carrier	Synergy Goal
Classroom Teaching	Ideological courses, curriculum ideology	Unity of knowledge and value
Campus Culture	Spirit, environment, activity, system	Cultural infiltration and education
Social Practice	Volunteer, labor, research, base service	Integration of knowledge and practice
Network Space	New media, platform, interaction, guidance	Online and offline integration
Community & Family	Home-school co-education, school-local co-construction	All-round participation

C. COLLABORATIVE SUB MODE OF CLASSROOM TEACHING

Building a collaborative teaching system guided by ideological and political courses, supported by ideological and political courses, and with various courses moving in the same direction:

- (1) Internal collaboration in ideological and political courses, optimizing thematic teaching and content integration;
- (2) The integration of ideological and political courses with curriculum ideology, achieving the unity of value guidance and knowledge transmission;
- (3) Collaboration between theoretical teaching and practical teaching, promoting case-based, seminar based, and experiential teaching;
- (4) Collaboration among teacher teams, formation of mixed teaching teams, joint lesson preparation, and collaborative teaching.

D. COLLABORATIVE SUB MODEL OF CAMPUS CULTURE

Integrating ideological and political education into the entire chain of campus culture:

- (1) Spiritual and cultural synergy: school motto, school spirit, exemplary guidance, thematic education;
- (2) Material and cultural synergy: landscape education, venue education, and environmental education;
- (3) Collaboration of behavioral culture: construction of academic atmosphere, cultivation of civilization, and club activities;
- (4) Collaboration of institutional culture: management services, assessment and evaluation, incentives and constraints.

E. COLLABORATIVE SUB MODEL OF SOCIAL PRACTICE

Building a comprehensive system of on campus practice, on campus practice, and social practice:

- (1) Red Practice: Red Base Study, Party History Study, Ideal and Belief Education;
- (2) Volunteer service: community service, public welfare activities, civilized practice;
- (3) Labor education: productive labor, service labor, daily life labor;
- (4) School local school enterprise collaboration: internships and practical training, social research, grassroots services, rural revitalization;
- (5) Collaboration in Innovation and Entrepreneurship: Science and Technology Innovation Competitions, Project Practices, and Achievement Transformation.

F. COLLABORATIVE SUB MODE IN CYBERSPACE

Building an integrated online and offline network ideological and political system:

- (1) Network platform collaboration: Easy Class, Study Strong Nation, Campus New Media Matrix linkage;
- (2) Network Content Collaboration: “High-quality content” is defined as original digital media that achieves over 1,000 interactions or a 90% positive sentiment rate. Operationally, universities should implement a “1+N” new media matrix, where the central “1” (Official University Account) pushes weekly thematic VR short videos (e.g., “Virtual Red History Tours”), while “N” (student organization accounts) produce interactive H5 quizzes to ensure peer-to-peer engagement;
- (3) Network interactive collaboration: online discussions, themed check-in, knowledge competitions, interactive quizzes;
- (4) Network governance collaboration: public opinion guidance, value guidance, behavioral norms, psychological counseling.

G. COMMUNITY FAMILY COLLABORATION SUB MODEL

Promote the normalization of collaborative education between families, schools, and communities:

- (1) Home school communication and collaboration: home visits, parent teacher conferences, growth feed back, collaborative guidance;
- (2) Collaborative construction between school and local areas: community practice, civilized construction, cultural services;
- (3) Social resource collaboration: Hiring external mentors, jointly building practical bases, and sharing venue resources.

H. MULTI SUBJECT COLLABORATIVE OPERATION MECHANISM

- (1) Unified leadership and overall coordination of the Party committee;

- (2) Departmental linkage, division of labor and responsibility;

- (3) School local school enterprise cooperation, resource sharing;

- (4) Home school communication, working together in the same direction;

- (5) Students participate independently and stimulate their subjectivity.

V. CONSTRUCTION OF EVALUATION SYSTEM FOR THE EFFECTIVENESS OF IDEOLOGICAL AND POLITICAL EDUCATION IN EDUCATION

A. PRINCIPLES FOR BUILDING EVALUATION SYSTEM

Adhere to the principles of scientificity, systematicity, objectivity, operability, guidance, and development, and uphold the unity of process and result, quantitative and qualitative, and diagnostic and improvement.

B. OVERALL DIMENSIONS OF PERFORMANCE EVALUATION

The system employs the Analytic Hierarchy Process (AHP) to determine indicator weights, with “Ideological Guidance” assigned a weight of 0.30 and “Practice Development” 0.25. Each observation point is quantified using a 5-point Likert Scale (1 = very poor to 5 = excellent). For instance, “ideals and beliefs” are measured through a combination of semester-end political literacy test scores (60%) and qualitative behavior logs (40%) recorded by counselors.

Construct a multidimensional and multi-level evaluation system consisting of five dimensions, sixteen secondary indicators, and several observation points:

- (1) Effectiveness of ideological guidance;
- (2) Value shaping effectiveness;
- (3) Practice cultivates effectiveness;
- (4) Growth and development efficiency;
- (5) Collaborative guarantee efficiency.

Ideal beliefs, political identification, patriotism, and theoretical literacy, with a focus on evaluating students’ understanding and recognition of the Party’s innovative theories, line principles, and policies.

Moral qualities, legal concepts, sense of responsibility, spirit of struggle, and civilized literacy are evaluated with a focus on moral cultivation and value orientation, as shown in Table 3.

TABLE 3. Evaluation Index System of Education Effectiveness

Dimension	Secondary Index	Evaluation Orientation
Ideological Guidance	Ideals, beliefs, political identity	Political and theoretical accomplishment
Value Shaping	Morality, responsibility, rule of law	Moral and value orientation
Practice Development	Practice, service, labor, cooperation	Behavior and practical ability
Growth Progress	Study, health, innovation, development	Comprehensive quality
Collaboration Support	Mechanism, team, resource, satisfaction	Operation and guarantee

C. PRACTICAL CULTIVATION EFFECTIVENESS

Practical participation, volunteer service, work attitude, teamwork, and the ability to integrate knowledge and action, with a focus on evaluating practical performance and behavioral habits.

Academic development, physical and mental health, innovative spirit, employment competence, and development potential, with a focus on evaluating comprehensive literacy and development ability.

Organizational leadership, mechanism operation, resource guarantee, team building, satisfaction evaluation, with a focus on evaluating the level of collaborative operation and guarantee.

D. EVALUATION METHOD AND IMPLEMENTATION PROCESS

Adopting multi-party evaluation, multi method fusion, and full process evaluation:

- (1) Student self-evaluation and peer evaluation;
- (2) Teacher evaluation;
- (3) Management evaluation;
- (4) Off campus evaluation;
- (5) Process evaluation of big data;
- (6) Comprehensive evaluation and feedback improvement.

Establish a closed-loop mechanism of evaluation feedback diagnosis improvement enhancement, using evaluation results for work optimization, team assessment, resource allocation, and model innovation, achieving the goal of promoting construction, improvement, and effectiveness through evaluation.

VI. EMPIRICAL ANALYSIS AND CASE TESTING

A. EMPIRICAL OBJECT AND DATA SOURCE

Select different types of universities to conduct empirical research, covering undergraduate and graduate students, ideological and political teachers, counselors, management personnel, and external cooperative units. Data sources include questionnaires, interviews, platform records, practical achievements, etc. Conduct reliability and validity analysis on the questionnaire to ensure data reliability and indicator validity, which can be used for statistical analysis and model testing.

Describe and analyze differences in subject collaboration, field collaboration, practical models, mechanism operation, and perceived effectiveness, objectively presenting the current level.

This study selected 8 typical universities in Shaanxi Province as samples. A total of 850 questionnaires were distributed to students, teachers, and administrators, with 812 valid responses recovered (recovery rate: 95.5%). Data reliability was confirmed with a Cronbach's alpha of 0.886, and validity was verified via a KMO value of 0.842 ($p < 0.001$).

B. CORRELATION ANALYSIS BETWEEN COLLABORATIVE PRACTICE MODE AND EDUCATIONAL EFFECTIVENESS

The results indicate that the higher the degree of collaboration, the more diverse the practical models, and the more perfect the mechanisms, the more significant the educational effectiveness. The five in one collaborative practice model has a significant positive impact on improving effectiveness.

C. ANALYSIS OF DIFFERENCES AMONG DIFFERENT GROUPS

There are significant differences in collaborative perception, practical participation, and effectiveness evaluation among universities of different grades, majors, genders, and levels of education, providing a basis for hierarchical classification optimization.

D. TYPICAL CASE ANALYSIS

Case 1: Collaborative Education Model of Classroom Teaching and Course Ideology and Politics

Through mixed teaching and research, collaborative lesson preparation, and joint efforts, the deep integration of value guidance and knowledge transmission is achieved, and students' theoretical identification and moral literacy are significantly improved.

Case 2: School land collaboration+social practice education model

By jointly building practical bases, conducting red research and grassroots services, students' practical abilities, sense of social responsibility, and patriotism have been significantly enhanced.

Case Three: Collaborative Education Model of Online Ideological and Political Education and Campus Culture

The combination of online and offline linkage, cultural immersion, and online guidance enhances attractiveness and coverage, resulting in high student participation and satisfaction.

Case 4: Family school community collaboration+full process education model for all staff

Multi party linkage and closed-loop management have formed a stable and long-term mechanism, resulting in continuous improvement of students' comprehensive literacy and development quality, as shown in Table 4.

TABLE 4. Empirical Analysis Results of Collaboration and Effectiveness

Variable	Mean	Correlation	t-value	p-value	Significance
Subject Collaboration	3.28	0.621	5.42	<0.01	Significant
Field Collaboration	3.15	0.584	4.98	<0.01	Significant
Practice Model	3.42	0.673	6.15	<0.01	Significant
Mechanism Guarantee	3.06	0.592	5.11	<0.01	Significant
Education Effectiveness	3.57	—	—	—	—

E. EMPIRICAL CONCLUSION

(1) Collaborative education has a significant positive predictive effect on the effectiveness of ideological and political education;

(2) The five in one collaborative practice model is scientifically effective, implementable, and promotable;

(3) The degree of mechanism perfection is the key factor affecting the sustainability and effectiveness of collaboration;

(4) The scientific evaluation system can effectively diagnose problems, promote improvement, and enhance efficiency.

VII. CONCLUSION AND PROSPECT

A. RESEARCH CONCLUSION

(1) Collaborative education is the core path to solve the current dilemma of ideological and political education and improve the effectiveness of education. It meets the requirements of comprehensive education and the internal requirements of ideological and political courses, and has a solid theoretical and practical foundation.

(2) The current ideological and political education in universities faces five major collaborative challenges: subject, field, practice, mechanism, and evaluation. The root cause lies in insufficient top-level design, solidified organizational barriers, and lagging institutional supply.

(3) This article innovatively constructs a five in one collaborative practice model of classroom teaching, campus culture, social practice, cyberspace, and community and family, forming a complete implementation system with multiple subject linkage, five field integration, full process connectivity, and full element guarantee.

(4) The five dimensional and multi-dimensional evaluation system for educational effectiveness established is scientifically standardized, quantifiable, and operable, which can effectively measure the effectiveness of education and support continuous improvement.

(5) Empirical evidence shows that the collaborative practice model can significantly enhance the affinity, pertinence, and effectiveness of ideological and political education, providing a feasible paradigm for deepening reforms in universities.

B. MAIN INNOVATION POINTS

(1) Build a new mode of ideological and political practice of "Five in One" collaborative education, achieve systematic integration of multiple subjects, multiple fields, and the whole process, and break through the limitations of the traditional single mode.

(2) Establish a quantifiable, comparable, and closed-loop evaluation system for educational effectiveness, filling the gap in scientific and standardized effectiveness evaluation.

(3) Establishment of an Interest-Alignment and Incentive Mechanism To address the "low willingness" of external entities, this paper proposes a reciprocal value-exchange framework. For enterprises, the model integrates "human resource pre-incubation" and "technical problem-solving" into the social practice module, providing companies with direct access to high-quality talent and university research capabilities. For communities, a "service-for-governance" compen-

sation mechanism is established, where student volunteer services directly support community grid management in exchange for practical resources, ensuring a sustainable win-win motivation.

(4) Propose a collaborative mechanism consisting of five aspects: overall leadership, resource sharing, communication and coordination, assessment and incentives, and guarantee and support, to provide institutional solutions for long-term operation.

(5) Form an integrated research system of theory mode mechanism evaluation empirical, which combines theoretical innovation and practical implementation.

C. COUNTERMEASURES AND SUGGESTIONS

(1) Strengthen top-level design, improve the leadership system of Party committee leadership, departmental collaboration, school local collaboration, and home school collaboration;

(2) Deepen the implementation of the five in one practical model, expand carriers, enrich forms, strengthen experiences, and highlight practical results;

(3) Establish a collaborative operation mechanism for resource sharing, project co construction, personnel recruitment, and base sharing;

(4) Improve the effectiveness evaluation and improvement mechanism of scientific evaluation, closed-loop feedback, and promoting improvement through evaluation;

(5) Strengthen team building, funding support, platform construction, technical support, and enhance collaboration capabilities and support levels;

(6) Inspire students' subjectivity and promote them to shift from passive acceptance to active participation and independent growth.

D. RESEARCH SHORTCOMINGS AND PROSPECTS

Further research can be conducted in areas such as digital empowerment, AI precision ideological and political education, collaborative education through large-scale models, cross regional collaboration, and long-term mechanism tracking; In the future, we can combine digital intelligence technology to build a new form of precise, personalized, and intelligent collaborative education, continuously improving the quality and level of ideological and political education for college students in the new era.

AUTHOR CONTRIBUTIONS

Gang Cao designed, collected and analyzed the data, and drafted the manuscript. Gang Cao conducted the study, critically revised the manuscript for important intellectual content, and gave final approval of the version to be published. Gang Cao participated fully in the work, take public responsibility for appropriate portions of the content, and agreed to be accountable for all aspects of the work in ensuring that questions related to the accuracy or integrity of any part of the work are appropriately investigated and resolved.

CONFLICTS OF INTEREST

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