Value-oriented Blended Teaching Design under the Background of New Agricultural Science: Taking "Cultivation of Forage and Feed Crops" as an Example

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Abstract: *"Cultivation of Forage and Feed Crops" relies on the provincial first-class construction major of Grassland Science. It combines the "Guidelines for the Ideological and Political Construction of Courses in Higher Education Institutions" with the requirements of collaborative education for Grassland Science majors under the background of New Agricultural Science. It takes the ideological and political construction of the course as a measure to implement the fundamental task of fostering virtue and cultivating talents, and effectively plays the roles of the teacher team as the "main force," the course construction as the "main battlefield," and classroom teaching as the "main channel." This course proposes the ideological and political design concept of "Root in the land to learn forage skills, empower grassland science to serve the country." Guided by the grassland science spirit of "ecological protection, responsibility for revitalization, integration and innovation," it constructs a progressive quality framework of "knowing grass, loving grass, using grass, and promoting grass." The course focuses on teaching content, teaching resources, teaching models, and teaching evaluation as the key construction points. In view of the characteristics of the teaching content, such as numerous agricultural scenarios, strong comprehensiveness, and obvious practical needs, the course reconstructs the knowledge system with the main line of "where to plant —what to plant —how to plant," deeply integrates cultivation principles, production practices, and ideological and political elements, reshapes the four-dimensional quality objectives, restructures the three-level course content, builds "five-in-one" teaching resources, constructs the ACI blended teaching model, and establishes a multi-dimensional quality evaluation system, thereby achieving the training goals of "solid foundation, cultivated sentiment, strong practice, and ability to innovate."*

Keywords: *ideological and political elements, ACI learning model, knowing grass and loving grass, multi-dimensional evaluation.*

1. Introduction

Higher education serves as the main battlefield for cultivating top-notch innovative talents and bears the sacred mission of educating and nurturing people. Under the background of the new era, how to integrate ideological and political work throughout the entire process of education and teaching, and how to use modern educational technology to improve the quality and efficiency of talent cultivation, have become important contemporary issues for higher agricultural education. As a core course of the Grassland Science major, the teaching reform of "Cultivation of Forage and Feed Crops" is not only about the transmission of professional knowledge but also about the shaping of ecological civilization values and a "grand agricultural perspective." Therefore, under the guidance of the New Agricultural Science construction, exploring the overall design, implementation paths, and effectiveness evaluation of ideological and political education in this course has profound theoretical significance and urgent practical needs.

1.1 The urgent need and call of the times for the ideological and political construction of courses

The comprehensive promotion of the ideological and political construction of courses serves as a strategic measure to implement the fundamental task of fostering virtue and cultivating talents. In 2020, the Ministry of Education issued the "Guidelines for the Ideological and Political Construction of

Courses in Higher Education Institutions," which clearly states that "all universities, all disciplines and majors, and all courses should take up the responsibility of educating students, guard their own channels, cultivate their own responsibility fields, ensure that various courses and ideological and political courses move in the same direction, integrate explicit education and implicit education, and form a synergistic effect." This marks the paradigm shift from "ideological and political courses" to "ideological and political construction of courses" in China's higher education, requiring professional courses to transcend the simple function of "knowledge transmission" and achieve the teaching goal of integrating "value shaping, ability cultivation, and knowledge transmission."

For higher agricultural institutions, the urgency of the ideological and political construction of courses is particularly prominent. Agriculture serves as the foundation of the national economy, and the ideological and political foundation of agricultural talents directly determines the success or failure of national food security, ecological civilization construction, and comprehensive rural revitalization. For a long time, professional course teaching in agricultural science has often exhibited the tendency of "emphasizing skills over ethics," that is, overly focusing on explicit knowledge such as technical parameters and physiological mechanisms of crop cultivation while neglecting the ecological ethics, patriotism, and scientific spirit hidden behind the techniques. This educational model of "separation between knowledge and practice" makes it difficult to cultivate new-type agricultural talents who truly possess a commitment to "agriculture, rural areas, and farmers" and a sense of responsibility for the times. The introduction of ideological and political construction of courses is precisely aimed at solving this dilemma. It requires professional teachers to deeply explore the ideological and political elements embedded in the course, silently integrating the education of "great nation's agriculture, rural areas, and farmers," ecological civilization thoughts, and the spirit of hard work into the bloodline of professional teaching, so that students, while mastering professional skills, can establish a correct worldview, outlook on life, and value system, thus achieving the fundamental leap from "cultivating talents" to "educating people."

1.2 New requirements for the cultivation of talents in Grassland Science under the background of New Agricultural Science

The world today is undergoing profound changes unseen in a century, and the new round of technological revolution and industrial transformation poses unprecedented challenges to higher agricultural education. In 2019, the successive release of the "Anji Consensus" and the "Beidacang Action" marked the full launch of the New Agricultural Science construction. The core essence of the New Agricultural Science construction lies in "facing new agriculture, new rural areas, new farmers, and new ecology," breaking down traditional disciplinary barriers, promoting cross-disciplinary integration of agriculture-engineering, agriculture-science, and agriculture-humanities, and cultivating compound agricultural talents with cross-boundary thinking, innovative ability, and a global perspective[1-3].

Against this macro background, Grassland Science has been endowed with a completely new connotation of the era. In the traditional view, Grassland Science is often narrowly defined as "growing grass for livestock raising," while in the context of New Agricultural Science, grassland serves as the main force in building the national ecological security barrier, as an important support for practicing the "grand food perspective," and as a key link in achieving the coordinated development of the "grain-economy-feed" ternary structure. This requires that talents in Grassland Science in the new era cannot just remain at the technical level of "knowing how to grow grass"; instead, they must possess more comprehensive competencies: first, they should have profound ecological civilization literacy, deeply understand the development concept that "lucid waters and lush mountains are invaluable assets," and take into account both ecological protection and production development; second, they should have a strong sense of mission and responsibility, caring about "national affairs" and shouldering "national responsibilities," and be able to step forward when facing major strategic needs such as ecological governance in the Northwest and improvement of grass mountains and slopes in the South; third, they should have cross-disciplinary thinking for exploration and innovation, enabling them to apply modern technological tools such as artificial intelligence, big data, and biotechnology to forage breeding and cultivation[4].

As the core backbone course of the Grassland Science major, "Cultivation of Forage and Feed Crops" serves as the key link connecting grassland theory and production practice. However, the current teaching status of this course still exhibits problems such as unsystematic mining of ideological and political elements and a disconnect from the talent demands of New Agricultural Science. Therefore, the course urgently needs to be systematically restructured according to the talent profile of

New Agricultural Science, so that its content not only reflects the latest technological frontiers of forage cultivation but also highlights national strategic needs, allowing students to perceive the pulse of the times in their professional learning and integrate their personal career plans into the overall national development strategy.

1.3 The key role of blended teaching in the student-centered teaching concept

The effective implementation of ideological and political construction of courses and the cultivation of talents for New Agricultural Science cannot be separated from the innovation of teaching concepts and the support of teaching models. Traditional teaching of "Cultivation of Forage and Feed Crops" often adopts the linear teaching model of "cramming method" and "monologue teaching," where the teacher serves as the authority and transmitter of knowledge, while the student acts as a passive recipient. This "teacher-centered" teaching model may be efficient in the stage of knowledge transmission, but it proves inadequate in value shaping and higher-order thinking cultivation. If ideological and political education merely remains at the level of teachers' verbal preaching, lacking students' deep experience and emotional resonance, it is very likely to cause the phenomena of "labeling" and "separation of theory and practice," making it difficult to achieve the "internalization in the mind and externalization in actions" of ideological and political elements[5].

The educational concept of "student-centered" emphasizes that teaching should start from students' needs and cognitive laws, focusing on students' active construction and comprehensive development. Guided by this concept, online-offline blended teaching has become an inevitable choice to break through the dilemmas of traditional teaching and achieve deep learning. Blended teaching is not a simple accumulation of online and offline resources, but rather achieves full-time-space linkage before, during, and after class by restructuring the teaching process.

In summary, under the macro requirements of the ideological and political construction of courses and the era-driven impetus of New Agricultural Science construction, the teaching reform of "Cultivation of Forage and Feed Crops" is imperative, and blended teaching provides powerful technical and methodological support for the implementation of student-centered ideological and political construction of courses. This paper takes "Cultivation of Forage and Feed Crops" as the research object, bases itself on the new requirements for Grassland Science talents under the New Agricultural Science construction, systematically elaborates the overall design concept of ideological and political construction of this course, and constructs the trinity teaching objective of "knowledge, ability, and value." It deeply explores the implementation path of ideological and political construction of courses based on student-centeredness and blended teaching, solving the problem of "rigid labeling" in the integration of ideological and political elements. It also attempts to construct a multi-dimensional, whole-process evaluation system for the effectiveness of ideological and political construction of courses, in order to provide a theoretical reference and practical paradigm for the ideological and political construction of similar courses in higher agricultural institutions, and truly achieve the resonance and collaborative education of professional education and ideological and political education[6].

2. Ideological and Political Teaching Practice of the Course

2.1 Optimizing Top-level Design, Strengthening the Foundation of Ideological and Political Education

Combining the course characteristics and its support for the talent cultivation program, the top-level design of the ideological and political teaching system for this course reshapes the four-dimensional quality objectives and excavates 28 ideological and political elements, including grassland civilization, local advantages, grassroots rooting, truth-seeking and innovation, and ecological security.

Table 1 Indicators for the Ideological and Political Construction of the Course

First-level construction indicators	Second-level construction indicators
Patriotism	Professional identity; Knowing and loving agriculture; Rural revitalization; Dual carbon goals
Industry conviction	Rooting in grassroots; Serving the industry; Food security; Seed industry revitalization
Ecological awareness	Respect for nature; Green development; Crisis awareness; The concept of the overall situation
Scientific spirit	Dialectical thinking; Interdisciplinary integration; Seeking truth; Innovation, and teamwork
Cultural confidence	Agricultural civilization; Grassland civilization; Local advantages; Resource advantages

2.2 Restructuring the Three-Level Course Content, Integrating Ideological and Political Education Elements

In the new era, grassland science has upgraded from the traditional "utilization of grassland resources" to a compound green industry characterized by "ecological priority, multiple values, technological empowerment, and cross-border integration." It serves as both an "ecological barrier" for ecological civilization construction and an "industrial cornerstone" for rural revitalization, and it is also an "important force" for serving national strategies and global governance. The course restructures the knowledge system to better align with disciplinary development and course objectives, forming three theoretical learning modules: "where to plant—what to plant—how to plant." It deeply explores and refines the ideological value and spiritual connotation within the professional knowledge system, carefully designs ideological and political cases, and skillfully integrates them into the teaching content. The practical component is closely combined with theoretical learning, completing the entire process practice of forage cultivation, namely "seed selection, tillage, sowing, management, harvesting and storage," allowing students to experience ideological and political education through practice. The organic integration of ideological and political elements into practical teaching not only ensures the systematicness and continuity of ideological and political education in the talent cultivation process but also serves as an inevitable requirement for implementing the concept of "Three-All Education."

2.3 Building "Five-in-One" Teaching Resources, Consolidating the Carrier of Ideological and Political Education

The team builds rich online learning resources according to the FD-QM online course quality construction standards, including self-constructed micro-courses, knowledge graphs, and six types of ideological and political case libraries co-constructed by teachers and students, covering typical figures, events, policies, cutting-edge literature, and interdisciplinary cases, totaling 129 cases, which are still under dynamic adjustment. Offline, students enter smart classrooms, experimental platforms, farming and reading bases, science and technology backyards, and research institutes for theoretical and practical learning. After the course, the team continues to provide students with platforms for social practice and disciplinary competitions, supporting students' personalized development and ability improvement. Thus, the team forms a four-in-one (online digital resources, offline physical resources, characteristic ideological and political resources, and extended development resources) three-dimensional teaching resource[7].

2.4 Optimizing the Teaching Model, Opening Up the Path for Ideological and Political Education

The course constructs the ACI (Automatic-Constructive-Interactive) learning model, which provides learners with multi-angle and personalized learning paths. Before class, students engage in autonomous learning, and the teacher answers questions online. The teacher issues task cards, and individuals or groups carry out constructive learning based on the tasks to achieve the transfer and application of knowledge. Offline, the teacher integrates industry and cutting-edge content into various scenarios, continuously conducting constructive learning, and carries out interactive learning through student-student interaction and teacher-student interaction to correct cognitive deviations and cultivate

innovative thinking. After class, students return to the online platform with advanced tasks and conduct summaries and reflections. Through the ACI learning model, the course breaks the limitations of time and space, supports personalized learning, and achieves high-level learning objectives.

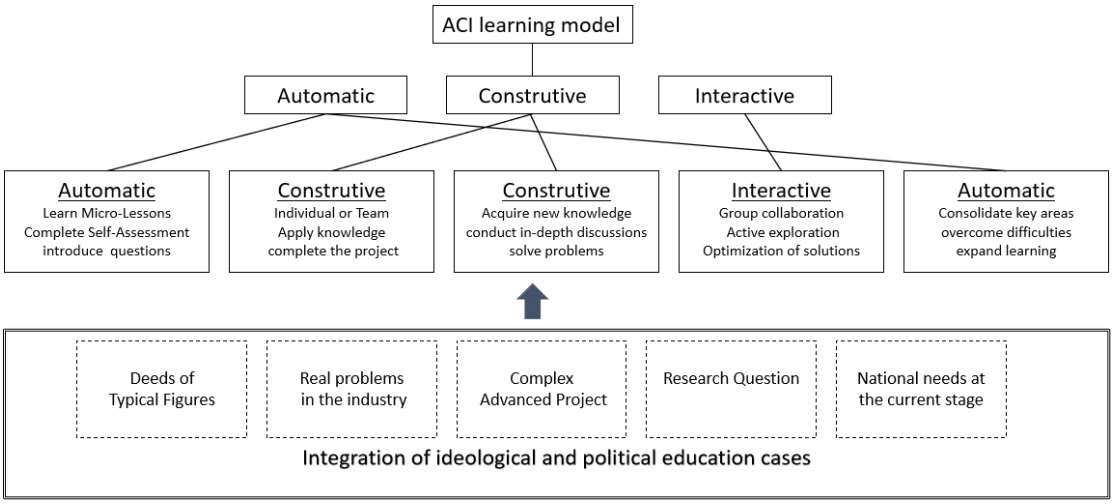

Figure.1 Implementation pathways for ideological and political education based on the ACI learning model

The course integrates ideological and political cases into all aspects of teaching, opening up the ideological and political education path from "knowing grass and loving grass" to "using grass and promoting grass." Through the progressive linkages of "profession, industry, and national needs," the course enables students to gradually establish the belief that "the profession has value, the individual has ability, and struggle has direction," and finally consolidates their determination to take pragmatic action to serve the country, achieving the deep integration of ideological and political education and professional education.

3. Course Evaluation and Effectiveness

3.1 Constructing a Multi-Dimensional Evaluation System

The course constructs an evaluation system around multiple teaching links. The methods for evaluating quality objectives are diverse and each has its own focus: the course primarily uses machine evaluation for teaching cases and pre-class tests, accurately measuring the progress and quality of self-study through data; it adopts both machine evaluation and teacher evaluation for after-class assignments, with teacher evaluation supplementing subjective quality observations; it reflects classroom participation through course credits based on the quantity and quality of interactive engagement; it uses intra-group and teacher evaluation for group tasks, focusing on qualities such as collaboration, communication, and innovation, thereby assessing students' quality development from multiple dimensions.

3.2 Effectiveness of the Ideological and Political Teaching Reform of the Course

Students experience emotional resonance during the learning process, show enhanced learning initiative, and engage in deep thinking. Students deeply explore the case of planting forage on saline-alkali land improved in class, consult materials, and propose feasible implementation plans. Students who were previously inactive in learning become very interested in the case of the development of the forage industry in Tibet, actively consult materials, and present on behalf of their groups. In their group work, students demonstrate positive views on sustainable development and the role of grassland science in promoting rural revitalization.

The value of "knowing grass and loving grass" through the practice of the "mission of promoting grass" is realized by students. Under the circumstance that the first-choice rate for freshmen is less than 50%, the rate of graduates pursuing postgraduate studies or employment in their major has steadily increased. Some students actively choose to return to their hometowns and work in county towns, county-level cities, border forestry and grassland management departments, and agriculture-related

enterprises.

4. Outlook

4.1 Enriching Ideological and Political Cases of the Course through Multiple Channels

The course enriches the materials for fostering virtue and cultivating talents, ensures that the ideological and political case resources keep pace with the times, and timely introduces cutting-edge achievements in scientific and technological development into the course, making the teaching content cutting-edge and contemporary. It collects and records relevant cases in combination with the work of the Mengcao Museum, the resource nursery of the National Long-term Positioning Station for Grassland, the scientific research of the team teachers, and social services, and dynamically updates the ideological and political case library.

4.2 Highlighting Smart Ideological and Political Education through the Construction of Smart Courses

The course systematically sorts out and deeply excavates the ideological value essence and spiritual and cultural connotations embedded in the professional knowledge system. It uses knowledge graph technology to precisely locate and structurally and visually present these elements. Furthermore, the course seamlessly embeds these refined ideological and political elements into the entire process of smart classroom teaching (such as intelligent push, interactive discussion, and situational simulation), thereby achieving a deep association and dynamic integration of ideological and political materials with the knowledge graph.

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