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An Empirical Study on Ideological-Political Education in University Information Literacy Curriculum

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Abstract: This study utilizes the "Information Retrieval and Utilization" course at Hangzhou Dianzi University Information Engineering College as an implementation platform to explore pathways for integrating information literacy education with ideological and political education through empirical research (N=559). The findings reveal that: (1) significant disparities in AI technology application competencies across different disciplinary groups; (2) pronounced gender-based differentiation in teaching method preferences; and (3) a strong correlation between awareness of the "ideological-political curriculum" and participation in diverse activities. The study proposes a dual-spiral solution path of "Technical Foundation-Value Guidance" and establishes a dynamic case repository on this basis. This approach aims to enhance information screening capabilities and value internalization effects, providing an operable empirical paradigm for resolving the "skill-value" dichotomy dilemma, thereby facilitating the transformation of information literacy education toward value-conscious cognition.

1. Introduction

On November 28, 2024, the Australian Federal Senate passed legislation prohibiting adolescents under the age of 16 from using social media [1]. This measure aims to counter the systemic threats posed by digital technology to the shaping of young people's values. With the rapid global development of artificial intelligence and big data, the connotation of information literacy education has expanded from traditional resource retrieval skills to a comprehensive competency system encompassing the acquisition, application, and evaluation of digital resources [2]. Against the backdrop of information overload, a core challenge for information literacy education is determining how to promote "information dieting" through education and intervene to mitigate ethical risks posed by technology, such as misinformation and algorithmic bias [3].

Zhong Zhixian [4] highlights that the "holistic competency model" of information literacy includes complex abilities such as the use of information tools, information processing and generation, and creative transformation. However, current information literacy education faces a practical dilemma of the "separation between skills and values": teachers specializing in information literacy often lack systematic training in ideological and political education theories and methods, leading to ineffective interactions with students when introducing ideological and

political elements [5]. As the cultivation of complex competencies encounters new ethical challenges in the data era, the traditional educational paradigm of "emphasizing skills over values" urgently needs to be reformed to mitigate risks brought by new technologies like big data and artificial intelligence [6].

2. Research Methods

2.1 Technical Route

Currently, most research on information literacy and ideological-political education remains at the stage of theoretical analysis and methodological discussion, with empirical studies requiring further reinforcement [7]. This study employs the Information Retrieval and Utilization course as a vehicle, focusing on the intersection of information retrieval and "Curriculum-based Ideological and Political Education." Through empirical research methods (N=559), it delves into the current characteristics of information literacy education and ideological-political construction in colleges, with a particular focus on examining differences in retrieval behaviors and value cognition across different groups. Innovatively, it constructs a dual-helix teaching model of "Technology Foundation-Value Guidance" [8]: at the technical level, it cultivates information screening and application skills, while at the value level, it instills concepts such as " Scientific and Technological Powerhouse," "spirit of innovation," and academic ethics awareness. Furthermore, based on this teaching model, a dynamic case library (Figure 1) is established to address the disconnection between technical skills and values education. This approach not only achieves a functional upgrade in information literacy education but also establishes an ideological-political education paradigm where comprehensive quality courses play a synergistic role in holistic development, thereby promoting a cognitive leap from "technology to values."

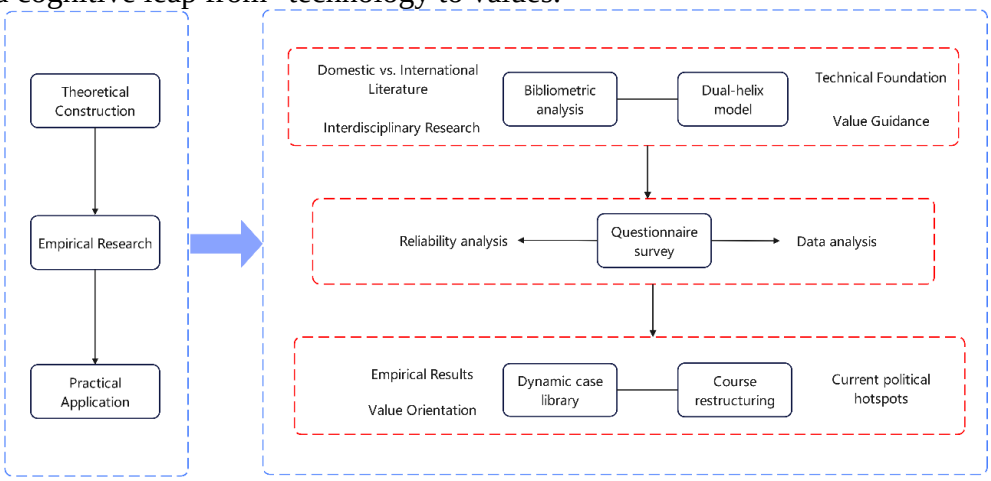

Figure 1: Technical Route

2.2 Empirical Survey

2.2.1 Questionnaire Design and Implementation

The questionnaire was randomly distributed to students across the school via an online questionnaire platform (Questionnaire Star). The questionnaire design covered the following dimensions: basic information (gender, grade, etc.), information literacy level, ideological-political cognition level, and teaching preference characteristics.

Survey Period: March 27, 2025 - April 7, 2025

Valid Sample Size: 559

2.2.2 Reliability of the Questionnaire

Reliability analysis was conducted using SPSSAU. The results (Table 1) show a Cronbach's α coefficient of 0.921 (when this coefficient is ≥0.8, it indicates high questionnaire reliability). Therefore, the reliability quality of the research data is high, supporting the feasibility of subsequent inferential statistical analysis.

Table 1: Cronbach's α Reliability Analysis

Number of Items	Sample Size	Cronbach α Coefficient
89	93	0.933

3. Basic Information and Results Analysis of the Questionnaire Survey

3.1 Basic Information of Respondents

3.1.1 Gender Distribution

Male: 279 persons, approximately 51.4%; Female: 264 persons, approximately 48.6%. The sample's gender ratio is closely aligned with the national distribution in China for 2024 (male 51.06%, female 48.94%), indicating strong inclusivity towards both genders in the school's enrollment process, with no obvious gender bias.

3.1.2 Discipline Distribution

School of Electronic Engineering: 84 persons, approx. 15.03%; School of Management: 95 persons, approx. 16.99%; School of Mechanical Engineering: 14 persons, approx. 2.5%; School of Computer Science: 139 persons, approx. 24.87%; School of Economics: 227 persons, approx. 40.61%.

3.1.3 Grade Distribution

Freshman: 237 persons, approx. 43.6%; Sophomore: 209 persons, approx. 38.5%; Junior: 47 persons, approx. 8.7%; Senior: 33 persons, approx. 6.1%; College-to-Bachelor (Upgrading): 17 persons, approx. 3.1%. Freshmen and sophomores showed higher participation rates in various activities, constituting the main body of respondents, over 80%. In contrast, College-to-Bachelor students, due to their smaller population base, had relatively limited overall participation.

3.2 Analysis of Information Literacy and Ideological-Political Education Survey Results

3.2.1 Respondents' Utilization of Free Learning Resources

Survey data shows that out of 559 respondents, only 7 reported never using free online learning resources at all. However, over 120 respondents reported never using or not knowing how to use the school library's free digital resources (see Table 2). This suggests potential shortcomings in the promotion, publicity, and usage guidance of the school library's digital resources. Further analysis revealed slight gender differences in the utilization rate of free learning resources: females slightly outperformed males in using the school library's free resources, reflecting, to some extent, that females might possess greater learning initiative or pay more attention to the systematic use of resources in their study habits.

3.2.2 Time Spent on Online Information Retrieval is Closely Related to Information Literacy

Among the 226 respondents who reported spending 2 hours or more daily on online information retrieval, 46.88% would verify information through multi-source comparison, and 54.64% tended to visit professional websites for information discrimination (see Table 3). This indicates that longer retrieval times contribute to the cultivation of more scientific and rigorous information evaluation abilities. Simultaneously, this group showed higher acceptance and usage rates of artificial intelligence technology, with 49.27% of respondents stating they were familiar with and frequently used AI technology (see Table 3). This indirectly suggests that high-frequency online information retrievers might be more inclined to try new technological tools, indicating a positive correlation between their information literacy and digital technology application skills. Furthermore, respondents' online information retrieval skills were also positively correlated with retrieval time; groups with more proficient retrieval skills had a higher proportion of individuals spending ≥2 hours daily on retrieval.

3.2.3 Characteristics of AI Technology Use Across Different Groups

Survey data shows that over 90% of respondents have been exposed to AI technology, with over 80% using it as a learning assistant. At the level of information literacy and new technology application, males slightly outperformed females in judging information reliability and applying AI technology. It is worth noting that although the proportion of female respondents using AI technology was slightly lower than that of males, in the specific sub-field of using this technology for learning assistance, the proportion of females was higher than that of males. This contrast in data suggests that learning-oriented AI applications hold unique appeal for females, encouraging more females to utilize new technologies to enhance learning outcomes.

3.2.4 Discipline Background Significantly Influences AI Technology Application

Among respondents who reported being relatively familiar and frequently using AI technology, 136 were from the School of Economics. Based on this school having the highest number of respondents, this group constitutes only 59.9% of that school's respondents. In contrast, this group's proportion in the School of Computer Science was as high as 74.1% (see Table 4), and only 0.7% of respondents from that school reported being unfamiliar with AI. This indicates that discipline background has a significant guiding influence on AI technology; due to stronger professional relevance, students in computer-related disciplines have more extensive and in-depth exposure to and application of AI.

3.2.5 Activity Participation Influences Awareness of "Curriculum-based Ideological and Political Education"

Among respondents who did not participate in any related activities, only about 38% reported being unfamiliar or somewhat unfamiliar with "Curriculum-based Ideological and Political Education," reflecting a relatively high coverage of ideological-political education in the overall environment. In contrast, among respondents who participated solely in ideological-political education activities or information literacy activities, this proportion decreased to about 27% and 22% respectively. For respondents who participated in both types of activities, this proportion was only about 13% (see Table 5). This indicates that diverse participation, especially simultaneous participation in both information literacy and ideological-political education activities, can significantly enhance understanding of the "Curriculum-based Ideological and Political Education" concept. Therefore, it is recommended to strengthen the integration of these two aspects in future

education and training to improve the overall awareness of "Curriculum-based Ideological and Political Education" among the audience.

3.2.6 Teaching Method Preferences Exhibit Gender Differences

According to feedback, 14.31% of respondents found the content of ideological-political education dull and uninteresting, making it difficult to engage their interest. 29% of respondents hoped for richer teaching methods to explore "Curriculum-based Ideological and Political Education" elements. Among the teaching methods of interest, video playback and case analysis were particularly favored. Specifically, vivid, intuitive, and emotionally resonant video playback attracted more female attention (77.53%), while case analysis, focusing on problem decomposition and logical reasoning, was more popular among males (70.21%) (see Table 6). This difference may be related to gender characteristics. Therefore, in the teaching plan design process, targeted introduction of video materials and case analysis based on the teaching method preferences of different genders can enhance student engagement and thus improve teaching effectiveness.

Table 2: Information Literacy Summary Table (N=559)

Information Literacy Indicator		Freq.	Ratio	Male		Female	
				Freq.	Ratio	Freq.	Ratio
Online Free Learning Resources	Completely unable, never used	7	1.25%	5	1.71%	2	0.75%
	Occasionally use	264	47.23%	126	43.15%	138	51.69%
	Frequently use	215	38.46%	114	39.04%	101	37.83%
	Proficient use, and systematic learning	73	13.06%	47	16.10%	26	9.74%
School Library Digital Resources	Being unable to use	124	22.18%	68	23.29%	56	20.97%
	Occasionally use, but not familiar	294	52.59%	152	52.05%	142	53.18%
	Able to independently search and use resources	113	20.21%	54	18.49%	59	22.10%
	Thoroughly acquainted, able to efficiently utilize various resources	28	5.01%	18	6.16%	10	3.75%

Table 3: Retrieval Duration Situation Table

Retrieval Duration		0 hours		0-1 hour		1-2 hours		≥2 hours	
		Freq.	Ratio	Freq.	Ratio	Freq.	Ratio	Freq.	Ratio
Information Discrimination	Compare multiple sources for judgment	0	0.00%	85	23.04%	111	30.08%	173	46.88%
	Visit professional websites for screening	0	0.00%	21	21.65%	23	23.71%	53	54.64%
AI Usage	Unfamiliar	3	30%	1	10%	2	20%	4	40%
	Know about, but haven't used	1	2.70%	14	37.84%	6	16.22%	16	43.24%
	Know about, but use rarely	1	0.59%	47	27.81%	50	29.59%	71	42.01%
	Relatively familiar and use frequently	0	0.00%	78	22.74%	96	27.99%	169	49.27%

Table 4: School AI Usage Situation Table

Awareness of AI at the College Level	Unfamiliar		Know about, but haven't used		Know about, but use rarely		Relatively familiar and use frequently		Subtotal
	Freq.	Ratio	Freq.	Ratio	Freq.	Ratio	Freq.	Ratio	
School of Electronic Eng.	2	2.38%	9	10.71%	21	25.00%	52	61.90%	84
School of Management	2	2.11%	8	8.42%	39	41.05%	46	48.42%	95
School of Mechanical Eng.	2	14.29%	1	7.14%	5	35.71%	6	42.86%	14
School of Computer Science	1	0.72%	5	3.60%	30	21.58%	103	74.10%	139
School of Economics	3	1.32%	14	6.17%	74	32.60%	136	59.91%	227

Table 5: "Curriculum-based Ideological and Political Education" Situation Table

Concept of "Curriculum-based Ideological and Political Education"	Relatively familiar		Have a basic understanding		Not very familiar		Unfamiliar	
	Freq.	Ratio	Freq.	Ratio	Freq.	Ratio	Freq.	Ratio
Participated in neither	18	15.52%	54	46.55%	27	23.28%	17	14.66%
Only participated in info. literacy activities	11	34.38%	14	43.75%	4	12.50%	3	9.38%
Only participated in ideo.-pol. education activities	14	9.79%	90	62.94%	27	18.88%	12	8.39%
Participated in both	58	21.64%	174	64.93%	26	9.70%	10	3.73%

Table 6: Teaching Method Preference Table

Teaching Method Preference	Teacher Lecture		Case Analysis		Case Discussion		Video Playback	
	Freq.	Ratio	Freq.	Ratio	Freq.	Ratio	Freq.	Ratio
Male	185	63.36%	205	70.21%	157	53.77%	190	65.07%
Female	172	64.42%	190	71.16%	131	49.06%	207	77.53%
Teaching Method Preference	Role-playing/Simulation		Student Presentation		Flipped Classroom			
	Freq.	Ratio	Freq.	Ratio	Freq.	Ratio		
Male	140	47.95%	65	22.26%	70	23.97%		
Female	149	55.81%	51	19.10%	54	20.22%		

4. Practical Pathways

4.1 Dynamic Case Library Construction

Integrating information literacy elements into "Curriculum-based Ideological and Political Education" should focus on the intersection of information literacy and ideological-political education. Using a dynamic case library as the carrier, and combining it with the interest points of respondents from the empirical survey, ideological-political elements such as "information ethics," "scientific verification," "spirit of innovation," and "lifelong learning" are integrated with information literacy cases through an integrated and interactive approach to teaching and learning. The greatest characteristic of the case teaching method is its authenticity and practicality [9]. Supplemented with effective teaching methods and strategies, the simulation and reenactment of real scenarios in the case library concretize and contextualize abstract values, enhancing respondents' attention and participation, achieving an educational effect that is as gentle as the spring breeze and as nourishing as the rain, imperceptibly influencing individuals. Table 7 shows some information retrieval cases suitable for integrating ideological-political education in the "Information Retrieval and Utilization" course and the ideological-political elements they contain.

Table 7: Teaching Method Preference Table

Information Literacy Teaching Topic	Dynamic Case	Ideological-Political Goal
Information Retrieval & Utilization	Wei Zexi Incident, Baidu Bidding Ranking	Scientific Verification, Information Ethics
Online Information Leakage	Malicious acts like "Doxing", "Bypassing Firewalls"	Critical Thinking, Information Ethics
Intellectual Property	Huawei applying for trademarks, patents	Scientific and Technological Powerhouse, National Confidence
Information Infringement	CNKI suing Meta AI Search for infringement	Information Integrity, Information Ethics
Academic Misconduct	Nature issues retraction: Prof. Dai Meifeng suspected of plagiarism	Spirit of Innovation, Research Integrity
Academic Hegemony	Nonagenarian professor sues CNKI	Critical Thinking, Information Ethics
Retrieval Result Evaluation	Recall rate, Precision rate: "You can't have your cake and eat it too"	Philosophical Speculation
Fact/Data Case	Did WHO define "sub-health"? Artificial Intelligence (AI)	Scientific Verification, Lifelong Learning
Reference Management	Reference management software, CAS "Notice on Standardizing Citations"	Research Integrity

4.2 Dynamic Case Analysis

Retrieval cases are reusable. Building a case library not only saves teachers' lesson preparation costs and improves teaching effectiveness but also expands the influence of ideological-political education within the information literacy curriculum [10]. This survey research shows that the top five cases respondents were most interested in were "Online Information Leakage," "Wei Zexi Incident," "Baidu Bidding Ranking," "Intellectual Property," and "Meta AI Search Infringement"; the top five ideological-political elements respondents were most interested in were "Spirit of Innovation," " Scientific and Technological Powerhouse," "Scientific Verification," "Social Responsibility," and "Information Ethics." The following section will briefly discuss these five cases of interest from the perspective of "technological value," incorporating ideological and political elements.

4.2.1 Wei Zexi Incident (2016), Baidu Bidding Ranking

Wei Zexi, born in 1994 in Xianyang, Shaanxi, was a 2012 enrollee at Xidian University. He was diagnosed with synovial sarcoma in 2014. After seeing a specific hospital's promotion for treating this condition on Baidu, he went there for treatment. After 3 surgeries, 4 chemotherapy sessions, and 25 radiotherapy sessions, spending over 200,000 RMB without improvement, he ultimately passed away in 2016. Wei Zexi's death brought Baidu's Bidding Ranking system to the forefront of public attention: the bidding ranking mechanism, based on advertising bids and keyword matching, directly influenced information users' objective judgment of search results, leading to the tragedy.

The Wei Zexi incident exposed issues such as the lack of advertising labels in Baidu search and the absence of qualification reviews, highlighting the necessity of targeted information literacy education: Technically, on the one hand, it is essential to improve information users' information screening abilities, and on the other hand, to standardize information publishers to establish a multi-dimensional ranking algorithm considering "quality-price-authoritativeness," and mandatorily implement differentiated advertising labels. At the value level, on the one hand, it is necessary to cultivate information users in maintaining a cautious awareness as if treading on thin ice, uphold rational thinking based on scientific verification when interpreting information, and take responsibility for verifying the authority of information sources before disseminating information. On the other hand, information publishers must be educated on information ethics, establishing a full-process code of conduct covering "publication-review-accountability," and adhering to the bottom line of information responsibility awareness. Simultaneously, regulatory agencies need to improve internet advertising management measures, constructing a regulatory framework including algorithm filing, regular audits, and joint disciplinary actions, ultimately forming a collaborative governance solution of "user literacy enhancement - platform algorithm optimization - regulatory system perfection."

4.2.2 Online Information Leakage: Xie Guangjun's Daughter "Doxing" Incident

On March 17, Baidu Vice President Xie Guangjun issued an apology letter over the "doxxing" incident involving his 13-year-old daughter, which has attracted public attention. His daughter, dissatisfied with a netizen's comments about Korean star Jang Won-young, used "doxing" methods to maliciously expose the personal private information of that netizen and her supporters, and incited netizens to launch unscrupulous abuse and attacks against those who had been "doxxed". This not only seriously violated citizens' privacy rights but also exposed the misuse of technology by some netizens and the lack of information ethics in the digital age.

With the rapid development of AI and big data technology, the scope of personal privacy

protection is being reshaped. The occurrence of the "doxing" incident further exposes the harmfulness of information leakage and the urgency of information ethics construction: the information network society needs to construct information ethical norms, transforming respect for privacy, informed consent, etc., into operable codes of conduct, for example, embedding privacy protection modules in search engines, guiding information ethical behavior through technical design. In information literacy teaching, real cases like "doxing" can be combined with elements such as "information ethics" and "information responsibility." Through specific case analysis, students can understand the harms of "online exposure" and "cyberbullying" triggered by information leakage, enhancing their awareness of information ethics and sense of responsibility. In personal information protection teaching, cases like fraud incidents caused by misuse of facial data or infringement incidents due to improper privacy settings on social platforms can be analyzed, guiding students to intuitively recognize the irreversible risks of biometric information leakage and the ripple effects of online behavior in society, establishing the "minimum necessary" principle for information sharing and a dialectical view of the dual attributes of technological as both a convenience and a risk, ultimately forming the digital citizen literacy of "technology use has boundaries, online behavior entails responsibility."

4.2.3 Intellectual Property: Scientific and Technological Powerhouse, Spirit of Innovation

Huawei Technologies Co., Ltd. (hereinafter "Huawei"), as an outstanding representative of Chinese high-tech enterprises, has its development history closely linked to "technology" and "innovation". According to publicly available data [11], Huawei's R&D investment reached 164.7 billion RMB in 2023, with cumulative investment over the past decade exceeding 1,110 billion RMB, ranking fifth globally in R&D investment. Continuous innovation and respect for intellectual property are the driving forces behind Huawei's commercial achievements today. As of April 15, 2025, Huawei held 124,118 valid patents in China, with invention patents accounting for over 95%. Meanwhile, Huawei's patent layout in European and American markets has achieved significant results, demonstrating strong technological innovation capabilities.

In information literacy teaching, a three-stage instructional design of "Patent Map Analysis → Technology Evolution Deduction → Value Ecosystem Construction" can systematically cultivate students' technical abilities and value cognition. The first stage, patent map analysis, uses Huawei's 5G patent layout as a practical case to guide students in retrieving patent documents using IPC classification numbers, while simultaneously constructing patent citation networks to reveal technology diffusion paths. The second stage, technology evolution deduction, analyzes Huawei's AI patent data from 2000-2025, using time-series analysis to understand its technological transition patterns from algorithm optimization to application innovation, guiding students to predict future technological innovation trends. The third stage, value ecosystem construction, combines Huawei's patent layout, which forms technological barriers and industrial advantages through Industry-University-Research collaboration, and introduces ethical conflict cases such as "Generative AI Copyright Infringement" [12], inspiring students to contemplate the balance between IP protection and open innovation, enabling them to understand the strategic significance of intellectual property for national technological competitiveness and ethical responsibility.

4.2.4 AI Artificial Intelligence

On February 15, 2024, the US AI research company OpenAI released Sora, a new text-to-video model, ushering in a new era of AI in 2024. In the field of artificial intelligence, Huawei is also actively deploying. On April 8, 2025, the China National Intellectual Property Administration publicly disclosed a Huawei-held invention patent (Publication No.: CN119784569A) [13]. The

core of this patent lies in reducing the computational load on the Central Processing Unit through an innovative data preprocessing mechanism, enhancing system stability while ensuring task execution efficiency, providing a key technical path to solve the performance bottleneck of current AI technologies that rely on large-scale data training for neural networks. Improvements in AI processing power will be directly reflected in applications across industries like smart homes and autonomous driving, and Huawei's new technology may become an important force assisting various industries in their intelligent transformation.

Zhang Xiaojin [14] believes that the development of artificial intelligence, whether at the weak AI or strong AI stage, all of them will grab data, analyze it, and execute tasks strictly in accordance with the machine protocol. The process of grabbing the required data is similar to "information retrieval" in the "Information Retrieval and Utilization" course. However, when AI technology is used unreasonably, or the algorithm itself has defects, it may touch the bottom line of information ethics: for example, big data technology can easily leak personal privacy [15] or infringe upon others' rights during the process of collecting and mining metadata.

Although AI is highly intelligent, its essence remains an externalized tool of human wisdom. In the AI era, we must both leverage the benefits of advanced technology and uphold the bottom line of academic ethics, continuously enhancing the collaborative innovation capability between humans and technology through lifelong learning, becoming the masters rather than the appendages of technological civilization.

5. Conclusion

The essence of "Curriculum-based Ideological and Political Education" is to achieve the fundamental task of educating people through the value infiltration of the entire teaching process, rather than simply adding courses [4]. The "Information Retrieval and Utilization" course, relying on the "Technology Foundation-Value Guidance" dual-helix model and constructing a dynamic case library, naturally integrates ideological-political elements such as "Scientific and Technological Powerhouse" and "information ethics" into information retrieval teaching. This enables students to master technical abilities like patent retrieval and multi-source information verification while simultaneously completing the cognitive leap from technical rationality to value rationality. Centered on the course objective of "combining knowledge impartation with value guidance," it collaborates with ideological and political theory courses to complete the educational pattern of "explicit-implicit complementarity" [16]. There is no uniform model for "Curriculum-based Ideological and Political Education." As the saying goes, “There is no fixed method in teaching; the key is to find the right one.” Only by taking dynamic adaptability as the guiding principle and continuously iterating and innovating in content, pedagogy and assessment can we sustain an educational ecology where "the curriculum stays fresh and values education ever-present." [17].

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