



Research on the Precise Integration Path of Curriculum-Based Ideological and Political Education Based on Learner Value Profile and Situated Learning Theory — Taking Hierarchical Task Design as the Practical Carrier

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Abstract. Addressing the practical challenges of "awkward integration," "mismatch between supply and demand," and "difficulty in evaluating effects" in the current development of curriculum-based ideological and political education in universities, this study constructs and validates a closed-loop precision teaching model for ideological and political education, consisting of "learner value profile diagnosis—hierarchical contextual task assignment—multidimensional effect evaluation." By integrating the objectives of ideological and political education with students' cognitive patterns, a five-dimensional learner value profile model was developed, along with a reliable and valid diagnostic scale. The concept of "legitimate peripheral participation" from situated learning theory was creatively introduced into the field of ideological and political education. Through a one-semester quasi-experimental study, a mixed-methods approach was used to collect multi-source data. The empirical results show that: (1) Groups formed based on value profiles exhibited significantly higher learning engagement and achievement of ideological and political objectives compared to the control group ($p < 0.05$); (2) Hierarchical task design effectively stimulated deep cognitive and emotional identification among learners with different profile characteristics; (3) The growth heat map of learners' ideological literacy, generated from process data, visually revealed the dynamic trajectory of ideological internalization.

Keywords: Curriculum-based Ideological and Political Education, Learner Value Profile, Situated Learning Theory, Precision Teaching, Hierarchical Task Design

1 Introduction

1.1 Research Background and Practical Dilemmas

In the context of the new era, curriculum-based ideological and political education has become a strategic initiative for implementing the fundamental task of fostering virtue through education.^[1] However, through in-depth observation at the teaching frontline, it has been found that current practices generally face three major dilemmas: First, the integration dilemma, where ideological and political content often fails to align with professional knowledge, frequently manifesting as superficial labeling or rigid preaching, leading to psychological resistance among students. Second, the supply-demand mismatch dilemma, where educators lack precise understanding of learners' foundational value cognition and reception preferences, resorting to a uniform "blanket approach" that overlooks the individual differences among students.^[2] Third, the effectiveness black-box dilemma, where traditional evaluation methods struggle to capture the complex, implicit psychological process of internalizing ideological and political literacy, often resulting in superficial assessments of teaching effectiveness. The root cause of these dilemmas lies in the neglect of the subjective, contextual, and gradual nature of value formation.^[3]

1.2 Research Objectives and Innovations

This study aims to construct a theoretically interpretable, procedurally operable, and empirically verifiable system for the precise integration of curriculum-based ideological and political education.^[4] Its core innovations are reflected in three dimensions:

Theoretical Integration Innovation: For the first time, the core paradigm of Situated Learning Theory—"Legitimate Peripheral Participation"—has been systematically introduced into the field of curriculum-based ideological and political education, providing crucial theoretical support for addressing the challenge of "implicit integration." Furthermore, by integrating this with learner profiling, an interdisciplinary dialogue between educational sociology and educational data science has been achieved.

Methodological and Instrument Innovation: The Learner Value Profile Diagnostic Scale with satisfactory reliability and validity has been developed, and a gradient-based situational task template of "Peripheral-Core-Mature" participation has been designed based on the principle of legitimate peripheral participation. This provides a comprehensive framework for frontline teachers, from diagnosis to implementation.

Evaluation Paradigm Innovation: Moving beyond singular outcome-based evaluation, a multidimensional assessment system has been constructed that integrates process behavioral data, performance task outcomes, and reflective textual analysis.^[5] Data visualization technology is utilized to present the dynamic trajectory of literacy development.

2 Theoretical Foundation and Core Framework

2.1 Learner Value Profile: The "Five-Dimensions Four-Stages" Diagnostic Framework

To achieve precise ideological and political education, it is essential to delineate students' "pre-structure" of value cognition. This study constructs a theoretical model of value profiling that comprises five core dimensions and four developmental stages. The five core dimensions include political identity, national/cultural concern, rational critical thinking, emotional empathy, and willingness for practical participation.^[6] The four developmental stages encompass the germination stage, development stage, stabilization stage, and internalization stage, as illustrated in Figure 1. The construction of the five-dimensional model is based on the integration of three theoretical logics. Firstly, political identification and national/cultural concern are directly derived from national and societal-level requirements such as "patriotism" and "professionalism" within the Core Socialist Values, reflecting students' emotional identification with and rational support for the nation's development path and cultural traditions. Secondly, rational critical thinking and emotional empathy correspond to the critical thinking and cross-cultural understanding skills required in contemporary global citizenship competency frameworks for addressing complex value-related issues. Lastly, willingness to engage in practice is rooted in the Confucian tradition of "unity of knowledge and action," which emphasizes translating value cognition into conscious action. This model aims to transform students' implicit and ambiguous value cognition into observable and analyzable structured data.

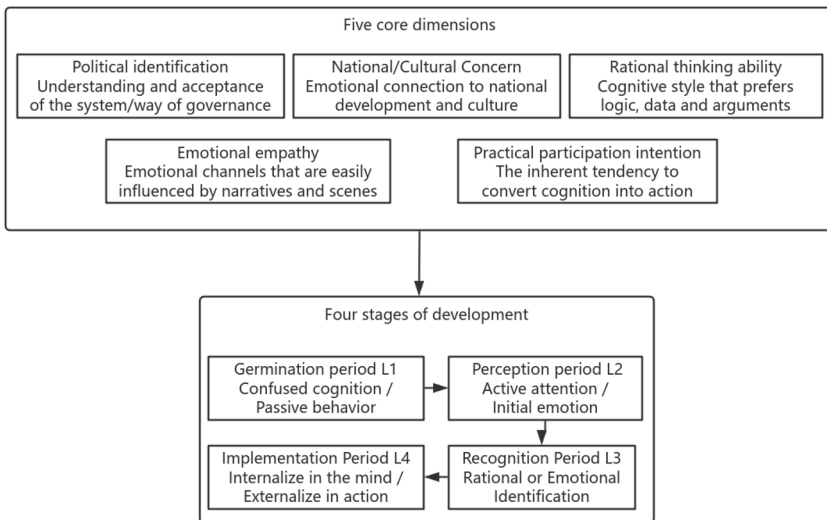


Fig. 1. Schematic diagram of the theoretical model for learner value profiling

2.2 Legitimate Peripheral Participation: The Theoretical Cornerstone of Implicit Integration of Ideological and Political Education

"Legitimate Peripheral Participation" is a core concept in situated learning theory, describing how novices, through engagement in authentic practices, gradually progress from the periphery toward the center of a community. In this process, they tacitly acquire the community's knowledge, skills, norms, and values. This theory provides a highly explanatory design philosophy for the "implicit integration" of ideological and political education.^[7]

In the context of curriculum-based ideological and political education, professional courses constitute a "community of practice," with ideological and political objectives serving as its cultural core. The drawback of traditional didactic approaches to ideological and political education lies in their attempt to have a "bystander," who has not yet been accepted by the community, directly memorize the community's core tenets, which inevitably leads to alienation and resistance.

"Legitimate Peripheral Participation," on the other hand, outlines a gradient developmental path: students are allowed to assume a "legitimate" learner identity and begin by completing peripheral tasks that are closely related to the course but of lower complexity. By addressing real-world problems, students naturally internalize the community's values through observation, imitation, and interaction, thereby achieving internalization.^[8]

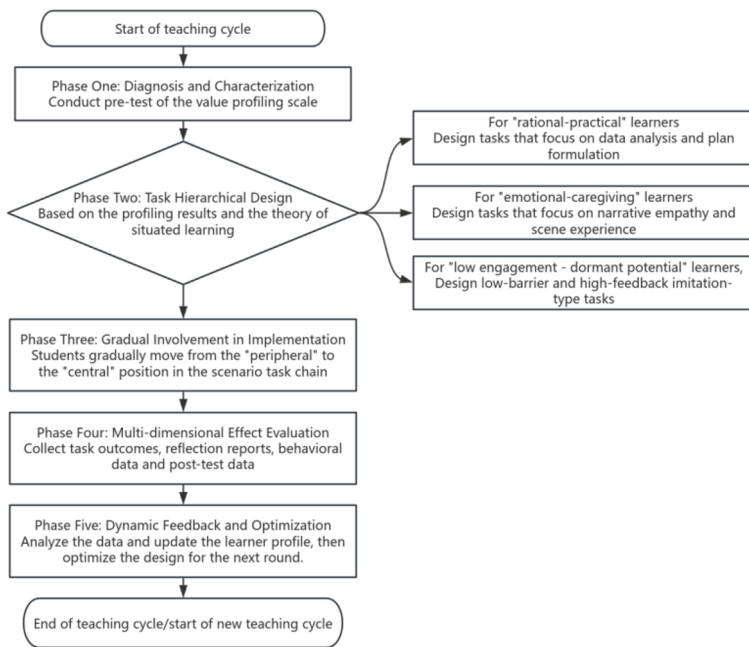


Fig. 2. The "Profiling-Participation" Dual-Drive Model for Precision Ideological and Political Education in a Closed-Loop Teaching Framework

2.3 Integrated Framework: The "Profiling-Participation" Dual-Drive Model

Based on the aforementioned theories, this study proposes the "Profiling-Participation" Dual-Drive Model, as illustrated in Figure 2. The "Value Profiling" component functions as a precision navigation system, diagnosing learners' initial states and types, as well as identifying their zones of proximal development. The "Hierarchical Participation" component serves as the engine for implicit integration, designing practical pathways in accordance with the principles of legitimate peripheral participation. The synergistic interaction between these two components forms a complete pedagogical closed loop.

3 Research Design and Methodology

3.1 Overall Design: Embedded Quasi-Experimental Research

This study employs a mixed-methods quasi-experimental design, selecting two naturally formed classes within the same major at a university that showed no significant differences in pre-test assessments. These classes were randomly designated as the experimental group and the control group. The experimental group underwent hierarchical situational task-based instruction grounded in value profiling, while the control group received the conventional "lecture + case study" approach to ideological and political education integration. The experimental period lasted one semester. Quantitative data were used to assess the effectiveness of the intervention, while qualitative data provided an in-depth description of the processes and mechanisms, achieving methodological triangulation.^[9]

3.2 Measurement Tool Development: The Value Profile Diagnostic Scale

Based on the "Five-Dimensions Four-Stages Model," the 'Diagnostic Scale for Learners' Foundation of Ideological and Political Literacy and Cognitive Preferences' was developed. Each dimension comprises 4 items, resulting in a total of 20 items scored on a 5-point Likert scale. After two rounds of pilot testing, items were refined through item analysis (Critical Ratio > 3.0) and exploratory factor analysis. Confirmatory factor analysis results ($\chi^2/df = 2.15$, CFI = 0.93, TLI = 0.91, RMSEA = 0.06) indicated good model fit. Reliability coefficients for each dimension ranged from 0.78 to 0.85, meeting standards for reliability and validity. The final structure of the scale is presented in Table 1.

Table 1. Structure and Sample Items of the "Learner Value Profile Diagnostic Scale"

Dimension	Item	Item Polarity	α Coefficient
Degree of Political Identification	I believe that the country's current policies are generally designed with long-term development and the well-being of the people in mind.	Positive Polarity	0.82
	I am able to understand some policy adjustments that	Positive Polarity	

Dimension	Item	Item Polarity	α Coefficient
	may cause inconvenience in the short term from the perspective of the overall development of the country.		
	Studying modern and contemporary history has given me a deeper understanding of the inevitability of historical development.	Positive Polarity	
	Discussing topics such as the national political system feels quite distant from my personal life.	Negative Polarity	
National/Cultural Concern	I genuinely feel happy for the achievements our country has made in international competition.	Positive Polarity	0.79
	I am very interested in the wisdom embedded in traditional culture.	Positive Polarity	
	I proactively follow news reports on national initiatives in areas such as rural revitalization.	Positive Polarity	
	Understanding the current state of development across different national industries holds little significance for my personal growth.	Negative Polarity	
Rational Critical Thinking	When discussing social hot topics, I make an effort to verify data and factual sources.	Positive Polarity	0.85
	Compared to emotional appeals, I find logically rigorous arguments more persuasive.	Positive Polarity	
	I enjoy deconstructing a complex social issue to analyze the multiple underlying causes and their interlocking mechanisms.	Positive Polarity	
	I seldom delve deeply into the economic, social, or other underlying causes of social phenomena.	Negative Polarity	
Emotional Empathy	Watching a film that depicts the struggles of ordinary people can deeply inspire me.	Positive Polarity	0.81
	I am easily moved by individuals who achieve extraordinary deeds in ordinary positions.	Positive Polarity	
	In teamwork, I can keenly perceive and attend to my teammates' emotional feelings.	Positive Polarity	
	Artistic or symbolic expressions of patriotism have little emotional impact on me.	Negative Polarity	
Willingness for Practical Participation	If the professional knowledge I have acquired can be applied to solve practical problems in the community, I am willing to invest time to participate.	Positive Polarity	0.78
	In group assignments, I tend to proactively take on tasks that contribute substantially to the team's final outcomes.	Positive Polarity	
	I believe that adhering to academic norms and refraining from cheating in exams constitute the most fundamental professional ethics for students, and I consciously practice them.	Positive Polarity	

Dimension	Item	Item Polarity	α Coefficient
	Unless it is a mandatory course requirement or linked to academic performance, I am generally reluctant to participate in volunteer services or publicity welfare activities.	Negative Polar-	

3.3 Core Intervention: Hierarchical Situational Task Design Process Based on Profiles

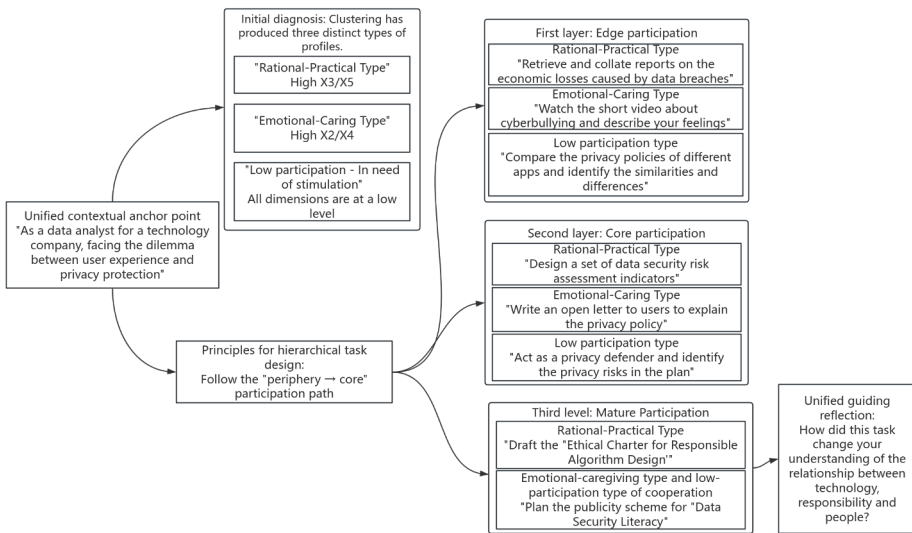


Fig. 3. Example of Hierarchical Situational Task Design for Learners with Different Profiles

In different disciplines, the ideological and political education in curricula manifests differently, but their commonality lies in all following the path of "legitimate peripheral participation." In science and engineering courses, the entry point for values can be "ethical responsibility and technology for good," while in humanities and social sciences courses, the entry point for values is "cultural identity and historical materialism." Science and engineering courses should avoid value preaching; instead, ethical and responsibility dimensions must be embedded in technical standards, design processes, or engineering decision-making stages, allowing students to naturally encounter "soft values" by solving "hard problems." Humanities and social sciences courses should go beyond mere knowledge transmission by guiding students to extract value contexts from texts and phenomena, and by connecting meaning and engaging in critical interpretation within historical or contemporary contexts, thereby promoting the deepening of value cognition.

The participants of this experiment are students majoring in "Data Science and Big Data Technology." For the experimental group, we followed the closed-loop model

illustrated in Figure 2. Taking the "Data Privacy and Ethics" module in the 'Data Science and Technology' course as an example, we designed a three-tier progressive task sequence, The distinction among peripheral, core, and mature tasks lies in a systematic shift in students' identity roles within the course, their proximity to the value core, and the transformation of their cognitive and emotional engagement, as shown in Figure 3.

3.4 Data Collection and Analysis

Four types of data were collected: pre- and post-test questionnaire data; online learning platform logs; outcomes of hierarchical tasks and reflection reports; and semi-structured interview data from 15 students in the experimental group after the experiment. SPSS 26.0 was used for descriptive statistics, independent samples t-tests, and repeated measures ANOVA. NVivo 12 was employed for thematic analysis of reflection reports and interview transcripts, with inter-coder reliability verification (Kappa coefficient > 0.8) to ensure the reliability of qualitative analysis, as illustrated in Figure 4.

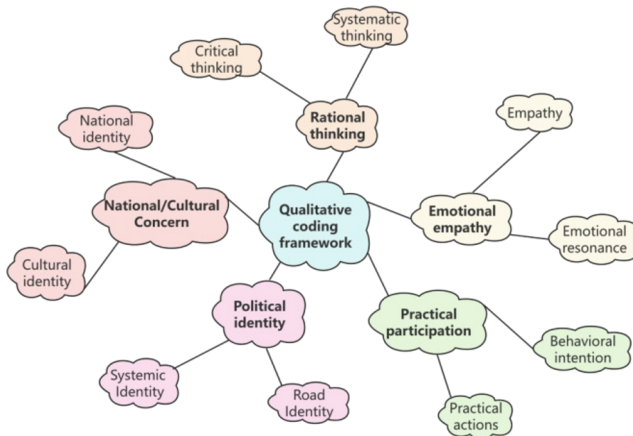


Fig. 4. Tree Diagram of Qualitative Coding in NVivo

4 Results and Findings

4.1 Clustering Results of Learner Value Profiles

A K-means cluster analysis conducted on the pre-test data of the experimental group identified three distinct profile categories, whose cluster center characteristics are illustrated in Figure 5. The 'Rational-Practical Type' accounted for 33%, characterized by significantly higher scores in rational critical thinking and willingness for practical participation. The 'Emotional-Caring Type' comprised 42%, demonstrating outstanding performance in emotional empathy and national/cultural concern. The 'Low Engagement Type to Be Motivated' represented 25%, exhibiting relatively lower initial scores

across all five dimensions. This clustering outcome provides a direct basis for the subsequent implementation of differentiated task branching.^[10]



Fig. 5. Comparison of Characteristics of Three Typical Learner Value Profiles

4.2 Multidimensional Comparison of Ideological and Political Education Effectiveness

Quantitative Effects: Significant Improvement in Goal Attainment and Engagement. An independent samples t-test revealed that after the experiment, the post-test total score of the experimental group ($M = 4.18, SD = 0.52$) was significantly higher than that of the control group ($M = 3.55, SD = 0.71$), $t(88) = 4.32, p < 0.001$. Additionally, the average task completion rate of the experimental group was 92%, compared to 78% for the control group. The proportion of deep discussion posts was 41% in the experimental group, versus 22% in the control group. All metrics for the experimental group were significantly higher than those of the control group, as detailed in Table 2.

Table 2. Comprehensive Comparison of Key Indicators Between the Experimental Group and the Control Group

Evaluation Indicator	Experimental Group	Control Group	Between-Group Difference	Effect Size	Improvement Percentage
Ideological and Political Literacy (5-point scale)	4.18±0.52	3.55±0.71	+0.63	0.99	17.7%
Average Task Completion Rate	92%	78%	+14%	1.12	17.9%
Proportion of In-depth Discussion Posts	41%	22%	+19%	1.35	86.4%

Qualitative Effects: Depth of Reflection and Value Internalization. Textual analysis of reflection reports revealed that students in the experimental group more frequently used terms such as "responsibility," "systems thinking," and "humanistic care," as illustrated in Figure 6. During interviews, rational-practical type students stated: "By analyzing real data breach losses, I quantitatively understood for the first time that 'technology ethics' is not an empty phrase." Emotional-caring type students mentioned: "When writing an open letter for a 'fictional' user, I genuinely thought about how to earn their trust."



Fig. 6. Word Frequency Statistics from Thematic Analysis

4.3 Process Growth Visualization: Heat Map of Ideological and Political Literacy

Table 3. Heat Map Matrix of Comprehensive Literacy Development for Three Learner Types Across Three Task Rounds

Student Type	Task Type	Rational Critical Thinking (X3)	Emotional Empathy (X4)	Willingness for Practical Participation (X5)
Rational-Practical Type (33%)	Task 1: Peripheral Participation	3.0	2.8	2.8
	Task 2: Core Participation	3.8	3.2	3.5
	Task 3: Mature Participation	4.5	3.5	4.2
Emotional-Caring Type (42%)	Task 1: Peripheral Participation	2.9	3.8	3.2
	Task 2: Core Participation	3.3	4.3	4.0
	Task 3: Mature Participation	3.8	4.2	4.1
Low Engagement Type to Be Motivated (25%)	Task 1: Peripheral Participation	2.7	2.9	2.5
	Task 2: Core Participation	3.0	3.3	3.2
	Task 3: Mature Participation	3.5	3.6	3.8

Note: White areas represent low-level zones; green areas represent basic growth zones; orange areas represent stable growth zones; red areas represent significant growth zones.

To dynamically capture the process of literacy internalization, this study integrated the text analysis scores from reflection reports on three hierarchical tasks to generate a growth heat map of ideological and political literacy, as shown in Table 3. Further

repeated-measures ANOVA conducted on these scores revealed that all three student types demonstrated growth across the three task stages. This indicates that participation phases tailored to the characteristics of learners' profiles can more effectively stimulate growth in their specific dimensions of literacy.

5 Conclusion

Although this study was empirically conducted in the single course "Data Science and Technology," the core of the constructed "Profile-Participation" model possesses disciplinary neutrality. The model relies on two universal educational components—"value profile diagnosis" and "legitimate peripheral participation"—rather than any specific disciplinary knowledge. Therefore, its approach can be transferred to other professional communities, provided that ideological and political objectives can be transformed into gradient participation tasks aligned with the core practices of the respective community. Ultimately, the effectiveness of ideological and political education in curricula should not be confined to cognitive and emotional identification but should also manifest as conscious and responsible actions in professional practice and social life. By stimulating the "willingness to engage in practice," this study guides students to make value-sensitive choices in simulated and real-world contexts, precisely to pave the way for the transformation from "value identification" to "behavioral habits." This provides a scientific, nuanced, and humanistic implementation pathway for genuinely fulfilling the fundamental task of fostering virtue and cultivating talent.

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