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Research on the Path to Building the "Grand Ideological and Political Course" in Colleges and Universities from the Perspective of Intersubjectivity

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SUMMARY: *This study explores the construction path of the "big ideological and political courses" in universities from the perspective of intersubjectivity. To go beyond the conceptual discussions, this study developed the "Intersubjectivity Co-construction Index" (ICI) and utilized multi-source data to measure how teacher-student dialogue, students' autonomy, course integration, social practice linkage, and digital feedback jointly shape educational outcomes. The empirical design included 1,260 valid student questionnaires, 96 teacher questionnaires, 21 courses, 36 practical projects, 12 weeks of platform behavior records, and 57 semi-structured interviews. The measurement results showed that this index system has good reliability and validity. The Cronbach's alpha value ranged from 0.84 to 0.89, the composite reliability (CR) ranged from 0.87 to 0.91, and the average variance extracted (AVE) ranged from 0.58 to 0.66. In the baseline dimension, the average score of course integration was the highest, at 3.61, while the score of social practice linkage was the lowest, at 3.17. This indicates that the current construction of "big ideological and political courses" is more prominent in course organization than in the transformation based on practice. Path analysis further demonstrated that personalized teaching significantly enhanced students' participation, with a standardized coefficient of 0.46, and directly promoted value internalization, with a coefficient of 0.31. Students' participation also promoted value internalization, with a coefficient of 0.38, while the connection of social practice activities had the most significant direct impact on value internalization, with a coefficient of 0.42. The 12-week intervention confirmed the effectiveness of the optimized model. Compared to the control group, the experimental group had a net improvement of 0.31 in student participation, 0.28 in value internalization, 0.36 in the quality of practical reflection, and 0.33 in the depth of digital discussion. Heterogeneity analysis further indicated that freshmen benefited more from teacher-student dialogue, senior students responded more strongly to social practice activities, science and engineering students were more sensitive to professional case integration, and humanities students relied more on dialogue and reflection. This study provides a measurable framework, an empirical testing strategy, and an optimized construction path for the GIPC reform.*

KEYWORDS: *Grand Ideological and Political Course; intersubjectivity; Intersubjective Co-construction Index; student engagement; value internalization*

1 Introduction

The proposal of "Grand Ideological and Political Course" indicates that the organizational mode

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of ideological and political education in universities is shifting from the construction of individual courses to the establishment of a systematic educational framework. In this context, the "big ideological and political course" cannot be simply understood as an expansion of the content of ideological and political theory courses, nor can it be merely regarded as a partial improvement of teaching methods. It is closer to a comprehensive educational system composed of classroom teaching, professional courses, social practice, the online space, campus culture, and social resources. The operational field of ideological and political education in universities has extended from fixed classrooms to professional learning processes, social investigation sites, volunteer scenarios, digital platform interactions, and collaborative spaces both inside and outside the campus. Existing research has shown that the implementation of curriculum-based ideological and political education in higher education has begun to break through the boundaries of a single discipline and attempts to establish a closer connection between language teaching, professional courses, and value education[1]. At the same time, the discourse form and teaching methods of contemporary Chinese ideological and political education are constantly changing. The teaching goals are no longer limited to knowledge transmission, but focus more on students' understanding, judgment, identification, and action generation in real learning situations[2]. Therefore, when studying the construction path of the "big ideological and political course", if we still remain at the level of course setting, teacher instruction, or resource investment, it will be difficult to explain the complexity of its actual operation in universities. A more explanatory research approach should place the "big ideological and political course" in an educational system where multiple subjects, multiple spaces, and multiple media interact, analyze how different construction elements jointly influence students' participation and value internalization.

From the perspective of intersubjectivity, in traditional ideological and political courses, a one-sided teaching relationship is more likely to form: the teacher is the main provider of knowledge, norms, and values, while students are mainly in the position of receiving, memorizing, and providing feedback. Such a structure has certain efficiency in knowledge transmission, but in the process of value identification, public consciousness, social responsibility, and practical actions, it often fails to fully mobilize students' active understanding and self-construction. Intersubjectivity emphasizes mutual recognition, equal dialogue, meaning negotiation, and joint generation in educational relationships. It does not focus on the closed expression of a single subject, but on the process of shared meaning formation through communication, conflict, understanding, and feedback among multiple subjects. The long-term evolution of China's civic moral education research also shows that value education cannot rely solely on external normative indoctrination; it also needs to enable students to form a stable sense of public responsibility through course contexts, teacher-student interactions, and social experiences[3]. At the same time, research on the ideological and political education perspective of China's education points out that ideological and political education has a deep connection with the development of the state, society, and individuals, and its effectiveness depends on whether the educational content can be understood by students by integrating it into their own experiences and social reality[4]. Therefore, intersubjectivity provides a more suitable theoretical entry point for the research on the "big ideological and political course": teachers, students, practice units, digital platforms, and social resources are not isolated elements, but are action subjects that constantly interact, negotiate, and reorganize during the implementation of the course.

The existing related research provides an important foundation for the construction of the "big ideological and political course", but there are still three deficiencies that deserve further advancement. First, some research remains more at the level of concept explanation, emphasizing the importance of value guidance, collaborative education, and curriculum

integration, but lacks an index system that reflects the level of construction. Without measurable indicators, it is difficult to compare the construction differences between different universities, different courses, and different student groups. Second, existing research has discussed the construction principles and implementation suggestions more, but the identification of specific influencing paths is still insufficient. For instance, which of the following factors - teacher-to-student dialogue, student autonomy, integration of professional courses, connection of social practice, and digital feedback mechanism - has a stronger impact on students' participation and which one is more conducive to internalizing values, still needs to be explained through path coefficients and empirical models. Thirdly, some studies emphasize teacher supply and course resource allocation, while seldom incorporating student autonomy, practical feedback, and digital interaction into the same analytical framework. The formation of college students' national consciousness, public awareness, and identity understanding is complex, and students from different regions and cultural backgrounds may exhibit differentiated characteristics [5]. Moreover, digital divide, cybersecurity literacy, and information environment are also influencing the acceptance and interaction patterns of ideological and political education in colleges and universities [6]. This indicates that the construction of the major ideological and political course cannot only focus on the explicit teaching activities in the classroom, but should also further analyze how the digital space, social practice, and students' self-expression jointly change the educational effectiveness.

Based on the above background, this paper intends to construct an intersubjective co-construction index (ICI) to quantify the multi-subject interaction level in the construction of college major ideological and political courses. This index plans to measure from five dimensions: teacher-student dialogue, student autonomy, course integration, connection of social practice, and digital feedback mechanism, and conduct empirical analysis by combining college questionnaires, course data, platform behavior data, and practice records. In recent years, the deep learning theory has been used to construct the teaching mechanism of ideological and political courses in colleges and universities, providing a new technical path for the structured analysis of educational process data [7]. The research on innovation in ideological and political education under the context of artificial intelligence, big data, and wireless network environment also suggests that researchers can capture the educational process information that traditional questionnaires cannot present from learning behaviors, interaction records, and data feedback [8]. At the same time, research based on deep learning to improve ideological and political education in colleges and universities further indicates that the evaluation of educational effectiveness can be transformed from experience judgment to computable analysis through modeling methods [9]. Based on these, this paper intends to answer three research questions: (1) How to measure the subjective inter-subjective co-construction level of "University Ideological and Political Theory Courses"? (2) Which construction paths will have a significant impact on students' participation and value internalization? (3) Can the construction model of "dialogue, practice, reflection and feedback" improve the effectiveness of ideological and political education? Through these three questions, this paper aims to advance the research on major ideological and political courses from macro-initiatives to variable measurement, mechanism identification and effect verification.

The main contributions of this paper are reflected in three aspects. First, this paper constructs an index system for the construction of major ideological and political courses from the perspective of intersubjectivity, incorporating teacher-student interaction, student expression, course collaboration, social practice and digital feedback into a unified analytical framework, thereby enhancing the observability and comparability of the level of major ideological and political course construction. Second, this paper identifies key construction paths through structural equation models or path models, focusing on testing whether

intersubjective co-construction affects value internalization through student participation, and further comparing the relative roles of connection of social practice, digital feedback mechanism and course integration. Third, this paper introduces pretest-posttest or quasi-experimental designs to examine whether the optimized course construction plan can significantly enhance students' participation, reflection quality and value recognition level. Existing studies have begun to optimize the design of ideological and political education systems in colleges and universities using deep learning methods, indicating that this field is gradually moving from an experience-oriented approach to a model-oriented and evidence-oriented approach [10]. Correspondingly, this paper hopes to form a construction path with empirical explanatory power: activating students' participation through the reconfiguration of subject relationships, promoting value understanding through practical experience, and continuously improving course operation through digital feedback. Such a research design can not only meet the practical needs of the construction of large-scale ideological and political courses, but also provide a replicable analytical framework for the evaluation of the quality of ideological and political education in universities.

2 Methods

2.1 Research Design, Sample, and Data Collection

This study adopts a mixed research design, combining questionnaire surveys, platform logs, course practice records, and semi-structured interviews to present the process characteristics and differences in effectiveness of the construction of ideological and political courses in universities [11]. The research subjects are set at 6 undergraduate universities, including 2 comprehensive universities, 2 science and engineering universities, 1 normal university, and 1 local applied undergraduate institution. This sample structure can take into account differences in school types, disciplinary structures, and educational resources, avoiding research conclusions from only a single university or curriculum form [12]. Each university selects 3 to 4 courses closely related to ideological and political education, including ideological and political theory courses, ideological and political demonstration courses, social practice courses, and digital ideological and political resource courses. Finally, 21 courses were included as observation units to analyze the differences in the level of inter subject co construction under different course organization methods.

The student sample was obtained through stratified cluster sampling, stratified by school type, grade level, and course type, and randomly selected from participating students in each course [13]. A total of 1328 questionnaires were ultimately collected. After excluding questionnaires with short response time, high proportion of consecutive identical options, and missing key variables, 1260 valid questionnaires were retained, with an effective rate of 94.88%. Among them, there were 430 samples from comprehensive universities, 420 samples from science and engineering universities, 210 samples from normal universities, and 200 samples from local applied undergraduate colleges. The grade distribution covers freshmen to seniors, with majors including humanities and social sciences, science and engineering, education, management, and arts. The teacher sample includes 96 subject teachers, professional course teachers, counselors, and practical guidance teachers, used to supplement curriculum co construction, resource integration, and student feedback usage. The course level data includes teaching outlines, task lists, practical arrangements, digital resource lists, and course evaluation records for 21 courses.

The platform logs mainly come from anonymous behavior records on the course learning platform, with an observation period of 12 weeks. The recorded content includes the duration

of online learning, the number of resource clicks, the number of discussion posts, the number of responses from peers, the number of words in reflection texts, and the submission status of phased tasks. In order to avoid simply representing learning quality based on click through rates, this article focuses on both interactive depth and reflective expression quality, and matches platform behavior with questionnaire results [14]. The course practice records come from 36 practical projects, covering types such as community service, social investigation, red resource research, rural research, and campus public issue discussions. Record the number of participants, duration of practice, collaborating units, reflection report ratings, and changes in student value identification for each project. The semi-structured interview subjects include 42 students and 15 teachers. The interview content revolves around classroom dialogue, student expression, practical feedback, digital interaction, and curriculum collaboration. The interview materials are open coded to explain the mechanism details that are difficult to directly present in the quantitative model.

Variable settings are divided into four categories. The first type is the core explanatory variable ICI. This variable consists of five dimensions: teacher-student dialogue, student subjectivity, curriculum integration, social practice connection, and digital feedback mechanism [15]. The second type is the mediating variable, mainly including student participation, classroom discussion quality, platform interaction depth, and practical reflection quality, used to test how intersubjective co construction affects the learning process. The third category is outcome variables, including value internalization, curriculum acquisition, social responsibility identification, and willingness to transform actions. The fourth category is the control variables, including gender, grade level, major category, previous academic performance, school type, course type, and teacher teaching experience. Through the above data structure, this article can conduct analysis simultaneously at the levels of students, courses, and schools, and provide a foundation for subsequent indicator construction, path estimation, and robustness testing.

It should be noted that the data collection in this article emphasizes anonymity and the principle of minimum necessity. The student questionnaire does not collect names, student IDs, and mobile phone numbers. The platform log only retains the encoded learning behavior variables, and the interview text removes identifiable personal information during the organization stage. All scale items are rated using a 5-point Likert scale, with 1 indicating strongly disagree or low level, and 5 indicating strongly agree or high level [16]. Before the official distribution of the questionnaire, a small-scale pre-test will be conducted, and adjustments will be made based on the item discrimination, semantic clarity, and response feedback. The dataset formed from this can not only reflect the multi-party interaction status in the construction of ideological and political courses, but also support further empirical analysis of student participation and value internalization results. The research design and multi-source data collection framework are shown in Figure 1.

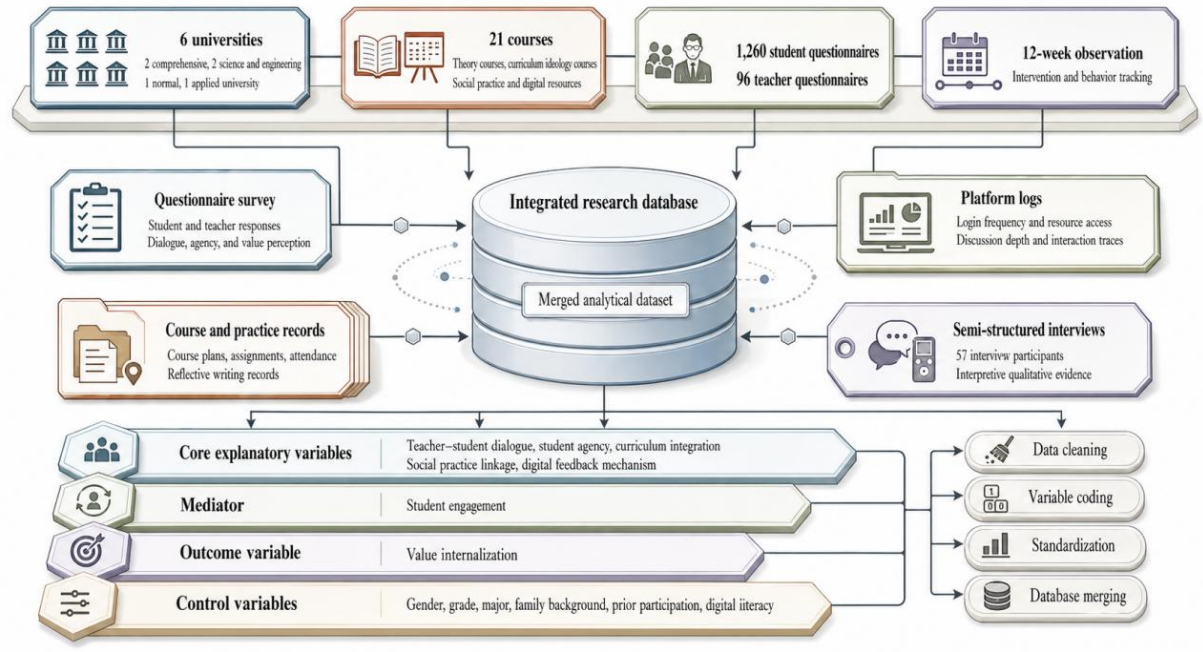

Figure 1: Research design and multi-source data collection framework.

As shown in Figure 1, this study constructs a multi-source data framework centered on 6 universities and 21 courses, integrating student questionnaires, platform logs, course practice records, and semi-structured interviews into a unified research design. This framework not only presents process information regarding course operation and student participation but also provides a data foundation for subsequent indicator calculation, pathway identification, and robustness testing.

2.2 Indicator system and AI-empowered evaluation model

In order to enable the construction level of the "Great Ideological and Political Course" to enter the subsequent model estimation, this article constructs an evaluation system consisting of 5 primary indicators and 21 secondary indicators from the perspective of intersubjectivity. The indicator design follows two principles. Firstly, indicators can reflect the real interaction between teachers, students, curriculum content, social practice, and digital platforms. Secondly, indicators can obtain relatively stable data through questionnaires, course documents, platform logs, and practice records [17]. The five primary indicators are teacher-student dialogue, student subjectivity, curriculum integration, social practice connection, and digital feedback mechanism. Among them, teacher-student dialogue mainly measures the frequency of classroom questioning, the quality of two-way feedback, the openness of topic discussions, and the timeliness of teacher responses. Student subjectivity mainly measures students' right to choose topics, initiative in expressing values, depth of self reflection, and participation in peer discussions. Course integration mainly measures the degree of integration between ideological and political content and professional knowledge, the authenticity of professional cases, cross course collaboration, and the consistency between course tasks and value objectives. The social practice linkage mainly measures the intensity of practical participation, the relevance of practical issues, the quality of practical reflection, and the collaboration of external practice units. The digital feedback mechanism mainly measures the frequency of resource access, the depth of online discussions, the timeliness of learning analysis feedback, the degree to which teachers use the platform to adjust courses, and the continuity of online and offline interactions.

Among the above indicators, questionnaire indicators are assigned using a 5-point Likert scale, platform log indicators are transformed into continuous variables after extreme value processing, and course file and practice record indicators are independently encoded by two researchers based on scoring rules. If the difference in ratings between two coders exceeds 1 point, it will be reviewed by a third researcher. This approach can reduce the bias caused by a single data source and enable the indicator system to cover student perception, teacher supply, curriculum organization, and practical participation processes simultaneously. In order to facilitate the synthesis of different dimensional indicators, this article first standardizes the range of each secondary indicator, and then calculates the comprehensive index [19]. The calculation of standardized scores is shown in formula (1).

$$z_{ij} = \frac{x_{ij} - \min(x_j)}{\max(x_j) - \min(x_j)} \tag{1}$$

In Equation (1), `$z_{ij}$ ` represents the standardized score of the i-th sample on the j-th sub-indicator. `$x_{ij}$ ` represents the raw observation value. `$\max(x_j)$ ` and `$\min(x_j)$ ` represent the minimum and maximum values of the j-th sub-indicator across the entire sample, respectively. The calculation of the inter-subjective co-construction index is shown in Equation (2).

$$ICI_i = \sum_{j=1}^{m} w_j z_{ij} \tag{2}$$

In Equation (2), `$ICI_i$ ` represents the inter-entity co-construction index for the i-th sample. `$w_j$ ` represents the weight of the j-th sub-indicator. `$m$ ` represents the number of sub-indicators. A higher value of the inter-entity co-construction index indicates a more thorough degree of multi-entity co-construction experienced by the course or individual student associated with that sample.Weights are determined using the entropy weighting method, which allocates weights based on the degree of information dispersion within each indicator, thereby reducing the influence of subjective weighting by researchers [20]. If a particular indicator shows significant variation across samples, it indicates that it carries higher information content for distinguishing different levels of construction, and its corresponding weight will increase. The calculation of indicator weights using the entropy weighting method is shown in Equation (3).

$$p_{ij} = \frac{z_{ij}}{\sum_{i=1}^{n} z_{ij}} \tag{3a}$$

$$e_j = -\frac{1}{\ln n} \sum_{i=1}^{n} p_{ij} \ln(p_{ij}) \tag{3b}$$

$$w_j = \frac{1 - e_j}{\sum_{j=1}^{m} (1 - e_j)} \tag{3c}$$

In Equation (3),p_{ij} represents the proportion of the i-th sample in the standardized score of the j-th sub-indicator.n represents the total number of samples.e_j represents the information entropy of the jth sub-indicator. If the values of a particular indicator are more dispersed across the samples,e_j is typically lower, and the weight of that indicator in the composite index consequently increases. Based on the preprocessed 1260 student questionnaires and supporting course data, this paper calculates the weights of each secondary indicator and uses them for subsequent path modeling and heterogeneity analysis. The preliminary weight results show that

the quality of practical reflection, the relevance of real-life issues, the degree of integration between ideological and political content and professional knowledge, the quality of two-way feedback, and the weight of students' choice of topics are relatively high. This indicates that the deep differences in the construction of ideological and political courses mainly lie in whether students can enter real issues, participate in expression, and whether the curriculum can embed value goals into the professional learning process.

From the perspective of measurement logic, this indicator system can simultaneously present two aspects: "course supply" and "student generation". The dialogue between teachers and students and the integration of courses reflect the foundation of teaching organization in universities. The connection between student subjectivity and social practice reflects the level of student participation and experience transformation. The digital feedback mechanism is used to observe whether the course operation has formed a continuous adjustment ability. The follow-up model will use the intersubjective co construction index as the core explanatory variable to further examine its impact on student participation, value internalization, and willingness to transform actions.

2.3 Path Estimation, Mediation Test, and Robustness Strategy

To identify the role path of intersubjective co construction in student participation and value internalization, this article further estimates it using structural equation modeling and multivariate path modeling after completing indicator calculations. The model is set with the intersubjective co construction index as the core explanatory variable, student participation and social practice linkage level as process variables, and value internalization and action transformation willingness as outcome variables [21]. Considering that students are nested in different courses, the model simultaneously controls the course type, school type, and individual characteristics to avoid misjudging the differences in course organization as individual level educational effects. The basic form of path estimation is shown in formula (4).

$$Y_i = \beta_0 + \beta_1 ICI_i + \beta_2 SE_i + \beta_3 PL_i + \beta_4 DF_i + \gamma^{\top} X_i + \mu_c + \varepsilon_i \quad (4)$$

In Equation (4), Y_i represents the i-th student's willingness to convert to action. SE_i represents student engagement. PL_i represents the level of social practice engagement. DF_i represents the score of the digital feedback mechanism. $\boldsymbol{X_i}$ represents the vector of control variables, including gender, grade level, major category, prior academic performance, and course type. β_0 represents the intercept term. β_1, β_2, β_3, and β_4 represent the marginal effects of each core variable, respectively. $\boldsymbol{\gamma}$ represents the vector of control variable coefficients. μ_c represents the fixed effect at the course level.ε_i represents the random error term. If β_1 is significantly positive, it indicates that higher levels of intersubjective co-construction lead to better outcomes in students' internalization of values. If β_2 and β_3 are both significant, it suggests that classroom participation and practical experience may both constitute key influencing factors. After constructing the intersubjective co-construction index, this paper further develops a methodological design focusing on three aspects: reliability and validity testing, mediation effect testing, and robustness testing. The analytical framework for these three types of testing methods is shown in Figure 2.

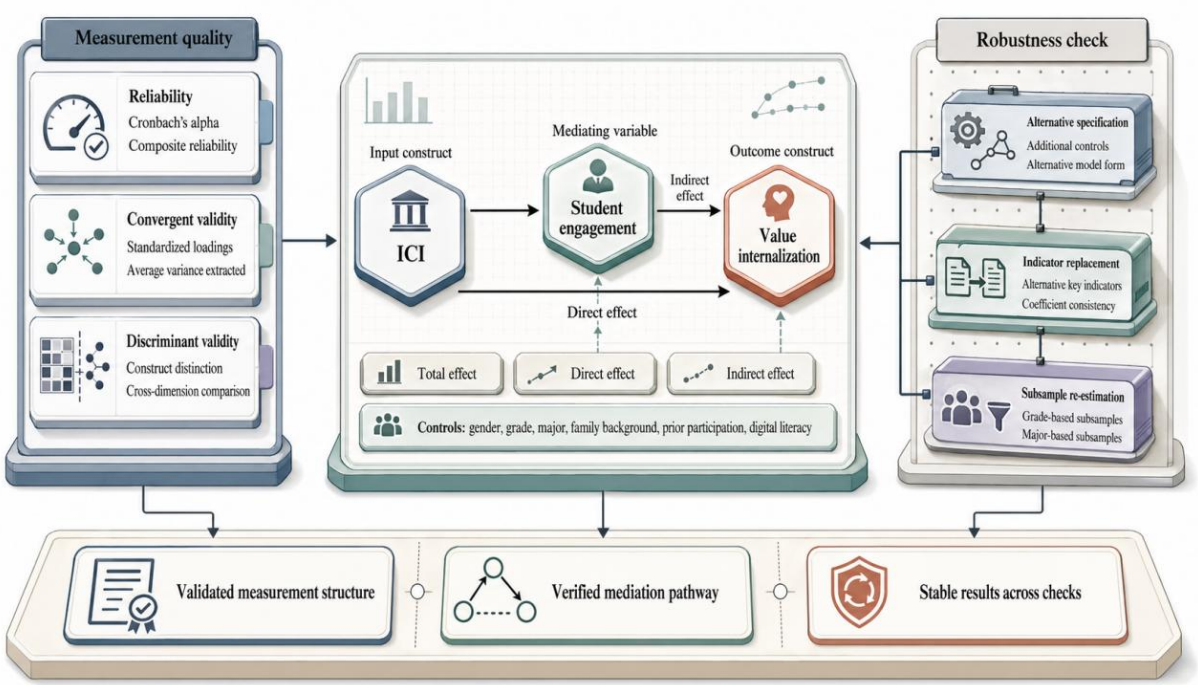

Figure 2: Analytical Framework of the Three Types of Testing Methods.

As shown in Figure 2, reliability and validity tests are used to confirm the measurement quality of the indicator system, mediation effect tests are used to examine the role of student participation, social practice linkage, and digital feedback mechanisms in the relationship between intersubjective co construction and value internalization, and robustness tests are used to determine whether the core results are affected by weight setting, outcome variable caliber, grouped samples, and extreme value processing [22, 23]. Specifically, Cronbach's alpha is used to determine the internal consistency of the reliability and validity test scale, Composite Reliability (CR) is used to measure internal consistency, Average Variance Extracted (AVE) is used to test aggregate validity, and Heterotrait Monotrai (HTMT) ratio is used to confirm discriminant validity [22]. In general, when Cronbach's alpha and CR are higher than 0.70, and AVE is higher than 0.50, it indicates that the measured structure has good stability. When HTMT is below 0.85, it can be considered that there are clear distinguishing boundaries between different dimensions. This step is used to confirm that the intersubjective co construction index is not composed of several loose items pieced together, but has an interpretable measurement structure.

For the mediation effect test, this article focuses on examining whether student participation plays a transmission role between intersubjective co construction and value internalization. Firstly, estimate the impact of the intersubjective co construction index on student participation, and then estimate the impact of the intersubjective co construction index and student participation entering the model simultaneously on students' willingness to transform their actions. The significance of the mediating effect was tested using Bootstrap repeated sampling, with a repetition rate of 5000 and a 95% confidence interval reported. If the confidence interval of the indirect effect does not include 0, it indicates that student participation has a significant mediating effect [24]. The social practice linkage and digital feedback mechanism will also be tested in the same way to compare the explanatory power of different process variables.

In addition, when conducting robustness tests, this article verifies the stability of the results from four aspects. Firstly, replace the indicator weight method and compare the results of entropy weight method with those of equal weight method. Secondly, change the outcome

variable caliber and use internalization of value, sense of course achievement, and willingness to transform actions as dependent variables. Thirdly, perform grouping estimation and compare the path differences among different school types, major categories, and grade groups. Fourthly, remove samples with extremely high or low platform interaction and test whether extreme behavior records change the core conclusion. Through the above processing, this article can determine whether the impact of inter subject co construction is consistent, and provide a model basis for proposing differentiated construction paths in the future [25].

3 Results and Discussion

3.1 Measurement Quality and Baseline Pattern of Grand Ideological and Political Course Construction

This study first examines the measurement quality of the indicator system for the construction of ideological and political courses from the perspective of intersubjectivity, and further analyzes the basic pattern and weak links in the current construction of ideological and political courses in universities. Table 1 reports the mean, standard deviation (SD), Cronbach's alpha, combination reliability, and mean variance extraction for six core dimensions.

Table 1: Measurement quality and descriptive statistics of core dimensions.

Indicator dimension	Mean	SD	Cronbach’s α	CR	AVE
Teacher–student dialogue	3.42	0.71	0.86	0.88	0.61
Student agency	3.28	0.76	0.84	0.87	0.58
Curriculum integration	3.61	0.68	0.88	0.90	0.64
Social practice linkage	3.17	0.82	0.87	0.89	0.62
Digital feedback mechanism	3.36	0.74	0.85	0.88	0.59
Value internalization	3.49	0.69	0.89	0.91	0.66

From Table 1, it can be seen that the mean distribution of each dimension is between 3.17 and 3.61, indicating that the construction of ideological and political courses in the sample universities has formed a certain foundation, but there are significant differences between different construction stages. The highest score for course integration is 3.61 on average, with an SD value of 0.68, indicating that universities have made relatively stable progress in coordinating ideological and political theory courses with professional courses, integrating professional cases, and designing course tasks. The average value internalization is 3.49, which is at a relatively high level, indicating that students have a certain degree of acceptance of the curriculum value objectives. The average value of teacher-student dialogue is 3.42, and the average value of digital feedback mechanism is 3.36, both of which are in the middle position, indicating that classroom interaction and platform feedback have entered the course operation process, but there is still room for improvement. The average student subjectivity is 3.28, which is lower than the course integration of 0.33. The average value of social practice linkage is the lowest, only 3.17, and the SD value reaches 0.82, indicating significant differences in the level of practical support between different courses and universities. To further verify the reliability of the indicator system, this article compares Cronbach's alpha, CR, and AVE in the same graph. The analysis results of the measurement quality and basic situation of the construction of the "Great Ideological and Political Course" are shown in Figure 3.

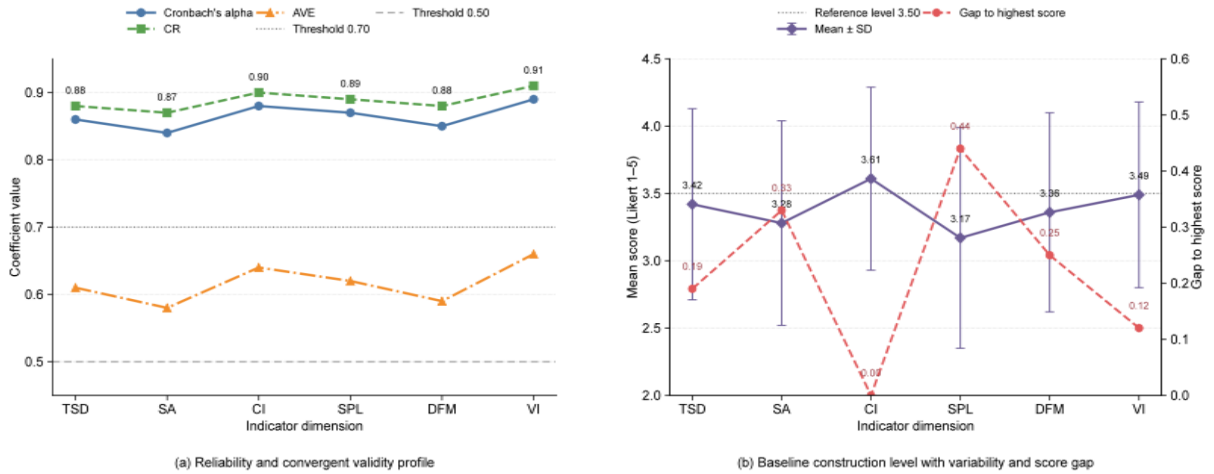

Figure 3: Measurement quality and baseline profile of the "Grand Ideological and Political Course" construction.

As shown in Figure 3 (a), Cronbach's alpha values for all six dimensions are higher than 0.80, with the highest value internalization at 0.89, curriculum integration at 0.88, and social practice linkage at 0.87, indicating good internal consistency of the scale. All CR values are above 0.85, with the lowest value being 0.87 for student subjectivity and the highest value being 0.91 for value internalization, indicating that the latent variables can stably reflect the same measurement structure for the corresponding items. The AVE values are all above 0.50, ranging from 0.58 to 0.66, meeting the requirements for convergent validity. The three curves in Figure 3 (a) are all above the corresponding threshold lines, indicating that the indicator system can support subsequent index calculations and model analysis.

As shown in Figure 3 (b), curriculum integration is at the highest position among all construction dimensions, with an average of 3.61. The social practice connection is at the lowest position, with an average of 3.17, which differs from the highest dimension by 0.44. The average student subjectivity is 3.28, which is significantly lower than that of curriculum integration. This result indicates that the current construction of ideological and political courses in universities is advancing rapidly in terms of course supply and teaching organization, but the degree of student participation in course co construction, active expression of value judgments, and transformation of classroom learning into practical experience is still insufficient. In other words, the construction of resources has already entered the curriculum system, but the initiative of students as participants has not been fully released. In order to further identify weak links, this paper draws a heatmap based on mean, dispersion, and relative difference, as shown in Figure 4.

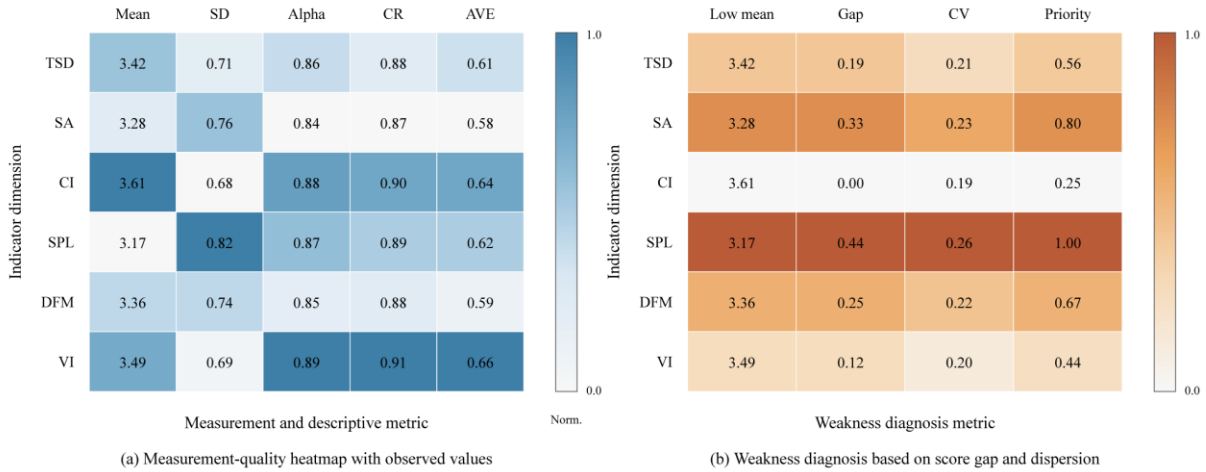

Figure 4: Baseline weakness diagnosis of Grand Ideological and Political Course construction.

As shown in Figure 4 (a), curriculum integration and value internalization exhibit high intensity in Mean, CR, and AVE, indicating that these two dimensions have both good construction foundations and stable measurement quality. The Cronbach's alpha, CR, and AVE of social practice linkage are not low, with values of 0.87, 0.89, and 0.62, respectively, indicating that this dimension is reliable for measurement, but it has the lowest mean and highest standard deviation. This indicates that the problem is not due to measurement failure, but rather due to insufficient construction and inter school differences in the practical process itself.

As shown in Figure 4 (b), the score gap of social practice linkage is 0.44, the coefficient of variation is 0.26, and the comprehensive priority reaches 1.00, which is the most prominent shortcoming. The priority of student subjectivity is 0.80, and the digital feedback mechanism is 0.67, which is also a dimension that needs to be improved. In contrast, the priority of curriculum integration is only 0.25, indicating a good foundation for its construction. From this, it can be concluded that the main contradictions in the current construction of ideological and political courses are concentrated in three aspects: insufficient student co construction, weak practical connection, and insufficient utilization of digital feedback. Subsequent construction should start with enhancing students' right to choose topics, expanding the proportion of real social issues entering the curriculum, strengthening practical reflection and evaluation, and improving the use of platform feedback, so as to further shift the integration of ideological and political courses from curriculum to student participation and practical transformation.

3.2 Path Effects: From Intersubjective Dialogue to Value Internalization

After confirming that the indicator system has good reliability and convergent validity, this article further examines the impact path of the intersubjective co construction index on student participation and value internalization. The standardization coefficient of the core path is shown in Table 2.

Table 2: Standardized path effects among core variables.

Path	Standardized coefficient	p-value	Interpretation
ICI → Student Engagement	0.46	<0.001	Inter-subjectivity-based collaboration significantly enhances student participation.
ICI → Value Internalization	0.31	<0.001	The level of collaborative construction directly affects value recognition.
Student Engagement → Value Internalization	0.38	<0.001	Student participation plays a mediating role.
Social Practice Linkage → Value Internalization	0.42	<0.001	Practical connection is the strongest pathway.
Digital Feedback → Student Engagement	0.29	<0.01	Digital feedback primarily enhances process participation.

From Table 2, it can be seen that the coefficient of influence of ICI on Student Engagement is 0.46, which is significant at the 0.001 level, indicating that for every one standard deviation increase in the level of inter subject co construction, student engagement increases by approximately 0.46 standard deviations. The direct impact coefficient of ICI on Value Internalization is 0.31, which also reaches a significant level, indicating that teacher-student dialogue, student expression rights, curriculum integration, practical participation, and digital feedback jointly constitute important conditions for the formation of value identity. To compare the effect strength of different paths more clearly, this article plotted the path coefficients and their intermediate structures, as shown in Figure 5.

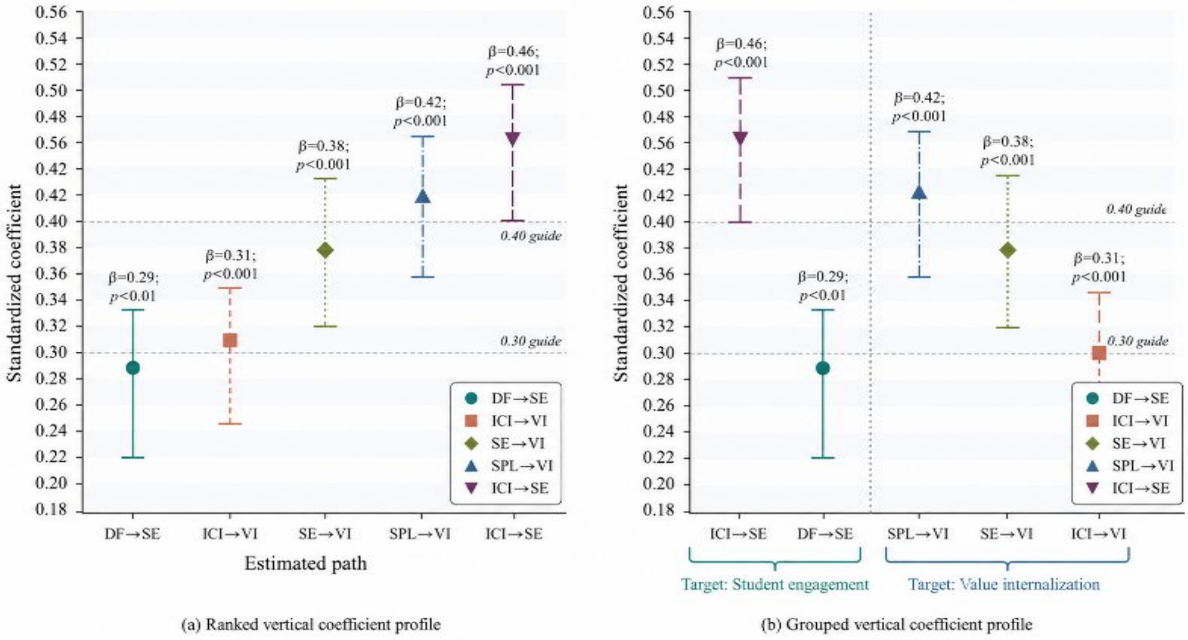

Figure 5: Standardized path coefficients and mediation structure.

As shown in Figure 5 (a), all five path coefficients are positive and exceed 0.29. Among them, ICI has the highest coefficient of 0.46 for Student Engagement, indicating that intersubjective co construction first manifests as the activation of student participation process.

The coefficient of Social Practice Linkage on Value Internalization is 0.42, which is higher than the direct effect of ICI at 0.31, indicating that social practice is not an additional link, but one of the most explanatory variables in the process of value internalization. Figure 5 (b) further shows that ICI can directly affect Value Internalization or indirectly affect it through Student Engagement; The coefficient of Digital Feedback on Student Engagement is 0.29, indicating that platform feedback mainly serves the learning process rather than directly replacing classroom and practical experience. To verify whether the above path has a continuous trend, this article further plotted a scatter plot of standardized variables, as shown in Figure 6.

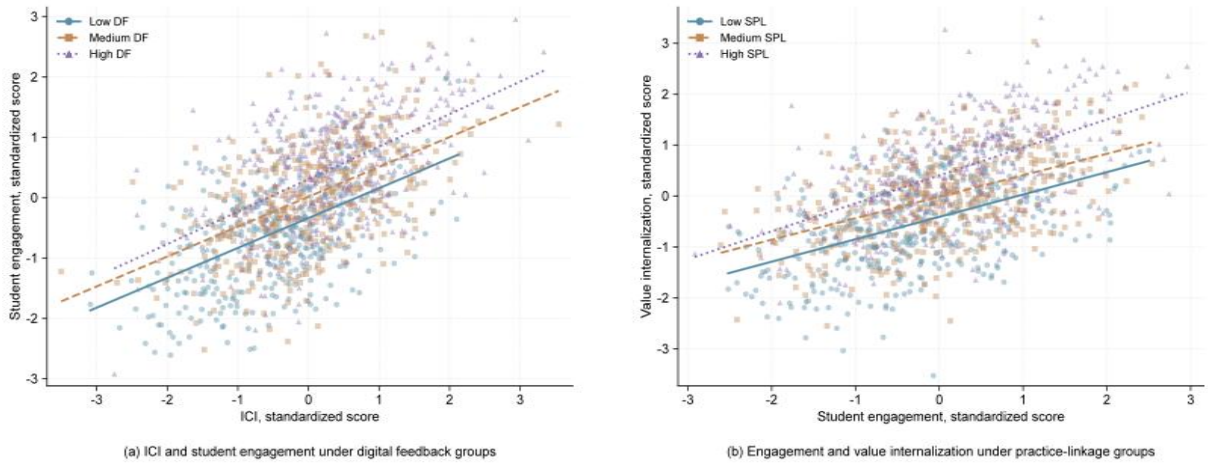

Figure 6: Scatter-fit verification of the relationship among ICI, engagement, practice linkage, and value internalization.

As shown in Figure 6 (a), there is a stable positive relationship between ICI and Student Engagement, and the slope of the fitted line is more pronounced in the high Digital Feedback group, indicating that digital feedback can amplify the promoting effect of intersubjective co construction on student participation. Figure 6 (b) shows that there is also a positive fitting trend between Student Engagement and Value Internalization, with the high Social Practice Linkage group having a higher overall position, indicating that practice linkage can enhance the effect of student participation in transforming into value identification. Overall, the key to the construction of ideological and political courses is not only to increase course content, but also to improve the quality of student participation through dialogue, expression, practice, and feedback. Especially in the context of social practice, it brings classroom topics into real social situations and promotes students to form more stable value judgments through reflective activities. Therefore, in the subsequent construction, priority should be given to strengthening the design of practical tasks, collaboration between practical units, and reflection and evaluation mechanisms, while continuously tracking changes in student participation through digital platforms.

3.3 Intervention Effect, Heterogeneity, and Optimized Construction Path

To further verify the actual effectiveness of the optimization plan, this article conducted a 12 week course optimization experiment. The experimental sample consisted of 1260 students, including 620 in the experimental group, using the Dialogue, Practice, Reflection, and Feedback model. The control group consisted of 640 participants, using a conventional lecture centered model. Both groups completed measurements of student participation, value internalization, quality of practical reflection, and depth of digital discussion before the experiment, and measured the same set of variables again after the experiment. The intervention

effect of the 12 week course optimization is shown in Figure 7.

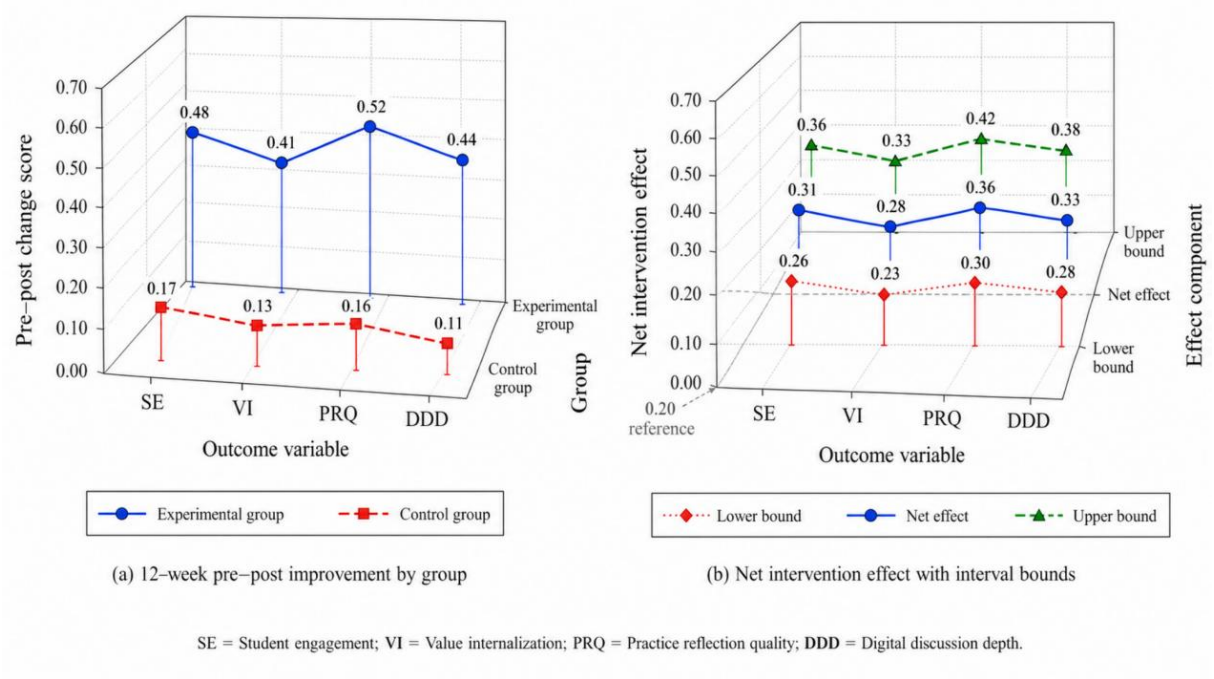

Figure 7: Intervention effect of the 12-week course optimization.

As shown in Figure 7 (a), the improvement of the four indicators in the experimental group was significantly higher than that in the control group, with the greatest improvement in Practice Reflection Quality, reaching 0.52. The digital discussion depth increased by 0.44, which was significantly higher than the control group's 0.11. This indicates that the curriculum optimization plan has a strong activating effect on students' process participation and reflective expression. As shown in Figure 7 (b), all four net effects exceed the reference level of 0.20, with the highest net effect of 0.36 for practice reflection quality, 0.33 for numerical discussion depth, and 0.31 for student participation. The net effect of value internalization is 0.28, which is lower than practical reflection and numerical discussion, but still shows a clear improvement trend. From this, it can be seen that the optimization of the 12 week course has not only improved students' explicit participation behavior, but also promoted their further understanding and acceptance of the course's value goals. Among them, practical reflection and online discussion are the two most likely to generate changes in a short period of time.

To further identify the advantageous paths among different student groups, this article conducted heterogeneity analysis. Specifically, this article examines the coefficient differences among lower grade students, higher grade students, students majoring in science and engineering, and students majoring in humanities and social sciences on different paths, in order to determine whether curriculum optimization needs to be adjusted based on students' development stages and professional backgrounds. The results are shown in Figure 8.

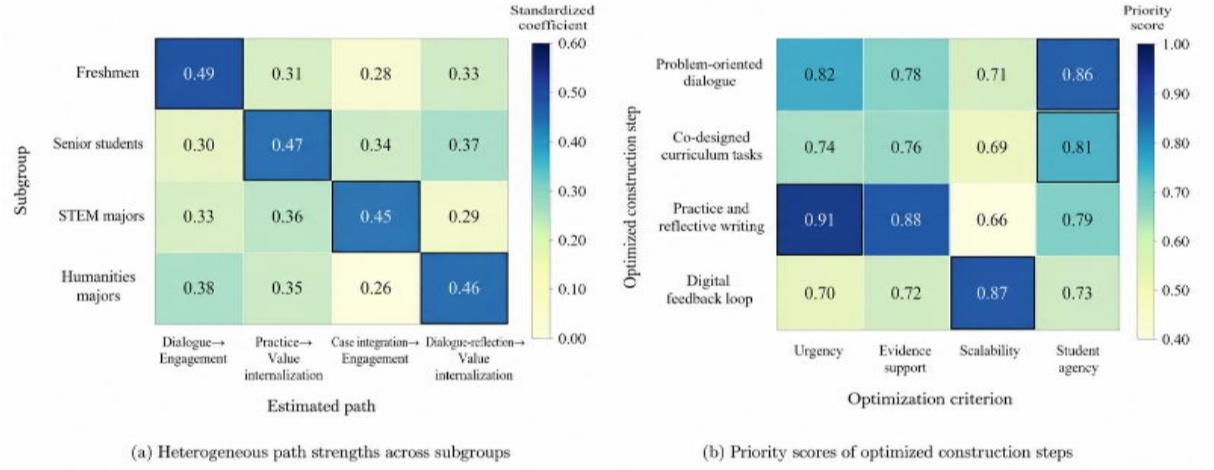

Figure 8: Heterogeneous effects and priority matrix for optimized construction path.

As shown in Figure 8 (a), there are significant differences in the strongest paths among different student groups. Among the Freshmen group, the Teacher Student dialogue has the highest coefficient of 0.49 for Engagement, indicating that lower grade students rely more on teacher guidance, classroom response, and discussion order support. Among the senior students group, social practice has the highest coefficient of value internalization, which is 0.47, indicating that senior students are more likely to form value judgments through solving real-life problems. In STEM majors, the coefficient of Professional Case Integration for Engagement reaches 0.45, indicating that STEM students are more sensitive to embedding professional cases. When ideological and political issues can enter engineering problems, technical ethics, and professional responsibility contexts, student participation is more likely to be activated. In Humanities majors, the coefficient of Dialogue and Reflection for Value internalization is 0.46, indicating that humanities and social science students place more emphasis on discussion, explanation, and reflective expression, and value internalization relies more on classroom debate and textual reflection processes.

As shown in Figure 8 (b), the priority of optimizing the path also presents a clear structure. Social practice and reflective writing scored the highest on Urgency and Evidence support, with scores of 0.91 and 0.88, respectively, indicating that practical reflection is currently the most important aspect that requires priority investment in construction resources. The Digital feedback loop scored the highest on Scalability, at 0.87, making it suitable as a tool for continuous improvement of course operations. The score of Problem oriented dialogue on Student Agency is 0.86, indicating that introducing real-life problems into the classroom can more effectively activate student expression. The score of Co designed curriculum tasks on Student Agency is 0.81, indicating that the joint participation of students, teachers, and practice units in task design can help reduce the one-way supply tendency in curriculum construction and enhance students' sense of ownership of curriculum tasks.

Based on the above results, this article proposes four optimization paths. Firstly, the introduction of the course should start from social reality problems, enabling students to enter classroom discussions through problem identification, and avoiding excessive reliance on conceptual exposition at the beginning of the course. Secondly, course tasks should be jointly designed by teachers, students, and practical units to provide students with clearer participation positions and align practical tasks with course objectives. Thirdly, the results of social practice should be transformed into reflective texts, classroom discussions, and evaluation materials to enhance the educational explanatory power of practical activities. Fourthly, platform logs, discussion quality, and learning analysis results should be utilized to continuously adjust course

content and teaching feedback. Overall, the 12 week experiment showed that the optimization plan had the most significant improvement in practical reflection and digital discussion; The heterogeneity results further indicate that the construction of ideological and political courses needs to allocate different implementation priorities according to grade, major, and course type, so as to transform inter subject co construction from an overall initiative to an executable curriculum improvement plan.

4 Conclusion

This article constructs a measurable framework for the construction of ideological and political courses in universities from the perspective of intersubjectivity, and verifies the relationship between subject co construction, student participation, and value internalization based on questionnaires, course records, platform behavior, and practical data. Research has shown that the key to the construction of ideological and political courses lies not only in increasing course resources or expanding teaching scenarios, but also in reconstructing the subject relationship between teachers, students, course content, social practice, and digital platforms, so as to shift the course operation from one-way supply to multi-party participation. The main contribution of this article is:

(1) Transforming intersubjectivity from abstract educational concepts into observable and comparable curriculum construction mechanisms, and explaining how ideological and political courses can form educational effects through dimensions such as teacher-student dialogue, student subjectivity, curriculum integration, social practice connection, and digital feedback mechanisms.

(2) We have constructed the Intersubjective Co construction Index, which combines path modeling, mediation effect testing, and robustness analysis to identify the core explanatory role of student participation and social practice linkage in the process of value internalization.

(3) A construction path consisting of problem-based dialogue, course task co construction, social practice reflection, and digital feedback improvement has been proposed, providing feasible solutions for optimizing the classroom organization, practical design, and platform feedback of ideological and political courses in universities.

However, the samples in this article mainly come from some universities, and platform logs can only reflect some learning behaviors. Therefore, in the future, it can be expanded to more regions and different levels of universities, and classroom videos, text mining, and sentiment analysis can be added. In addition, value internalization has a long-term nature, and in the future, it is necessary to track students' social participation and professional ethics performance after graduation.

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