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Evaluation of Entrepreneurial Performance among International High School Students in the Yangtze River Delta: An Entropy Weight Method Approach

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Abstract: *Evaluating the entrepreneurial performance of international high school students can help improve the quality of talent cultivation in international secondary education. This study constructs a multidimensional indicator system, including curriculum support, student enrollment, venture duration, mean comprehensive performance, threshold equivalence, and academic performance, and applies the entropy weight method to conduct a comprehensive evaluation and ranking of student entrepreneurial performance across eight international high schools in the Yangtze River Delta region. Composite evaluation scores are calculated for each school, on the basis of which the schools are ranked accordingly. By assigning weights objectively, the entropy weight method effectively captures the informational contribution of each indicator, thereby enhancing the scientific validity and discriminatory power of the evaluation results. The findings indicate that Shanghai High School (Main Campus), Hangzhou No. 2 High School of Zhejiang Province (Binjiang Campus), and Shanghai Starriver Bilingual School rank among the top three. Based on these findings, this study proposes several recommendations, including strengthening the allocation of entrepreneurship education resources, optimizing the management of entrepreneurial time, and improving the balance between entrepreneurship and academic performance.*

Keywords: *high school student entrepreneurship; entrepreneurial performance evaluation; entropy weight method*

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I. Introduction

In recent years, entrepreneurship competitions and related programs in international high schools have grown rapidly. Representative activities, such as the National Economic Challenge (Council for Economic Education, 2026) and CBPA, have attracted substantial student participation. Zhang (2011) found that participation in such activities can contribute positively to the development of students' leadership, teamwork, and innovative awareness. However, as students devote more time and energy to entrepreneurial activities, concerns have arisen regarding their potential negative impact on academic performance. Li and Zeng (2025) suggested that entrepreneurial engagement may affect students' educational choices and behavioral tendencies. Moreover, Marsh and Kleitman (2002) showed that when study time is heavily displaced by other activities, academic achievement, particularly GPA, may be significantly affected.

II. Indicator System

2.1 Establishment of the Indicator System

Table 1 summarizes the operational definitions, data sources, and directional settings of the evaluation indicators used in this study. Based on school documentation, sample statistics, behavioral records, and academic administration data, this study constructs a six-indicator evaluation system, including curriculum support, student number, T_{biz}, mean Ci, threshold equivalence, and GPA_down（%）, to conduct a comprehensive evaluation of the sample schools. Among these, T_{biz} is derived from the aggregated calculation of students' average daily time investment in entrepreneurial activities, while GPA_down（%） is used to characterize the risk of decline in academic performance. The remaining indicators reflect, respectively, the level of school support for entrepreneurship, sample size, and the coordination characteristics of entrepreneurial input. To satisfy the computational requirements of the entropy weight method, the negative indicator is uniformly transformed into a positive-oriented indicator in the subsequent analysis.

Table 1. Indicator System

Variable	Operational Definition	Data Source	Direction	Quality Control
Curriculum Support	Composite score of the school's entrepreneurship education resources and curriculum support	Compilation and evaluation of school materials	Positive	Consistent scoring criteria
Student Number	Number of valid student samples in the school	Summary of sample statistics	Positive	Consistent statistical criteria
T_{biz}（min/d）	Average daily time invested by students in entrepreneurial activities	Behavioral records and aggregated calculation	Positive	ICC > 0.88
MeanCi(h/w)	Mean coordination value between entrepreneurial investment and learning status	Calculated from the sample data	Positive	Unified calculation rules
Threshold Equivalence（h/w）	Weekly threshold-converted value of entrepreneurial time	Summary of sample estimates	Positive	Unified calculation method
GPA_down（%）	Proportion of students with declining academic performance	Academic administration data and statistical summary	Negative	Consistent statistical criteria

2.2 Explanation of the Indicators

(1) Curriculum Support

Curriculum support measures the level of course provision and institutional support for entrepreneurship education in the sample schools. This indicator reflects whether a school can provide a well-developed entrepreneurship education system, including entrepreneurship courses, mentor guidance, practical activities, project incubation, and resource support. A higher value indicates that the school has established a more comprehensive entrepreneurship education ecosystem. As a positive indicator, a higher level of curriculum support implies stronger organizational capacity and resource integration ability in entrepreneurship education.

(2) Student Number

The student number indicator refers to the number of valid student participants involved in entrepreneurship-related activities at a given school and reflects the scale of participation in entrepreneurial practice. This indicator does not directly measure students' entrepreneurial ability; rather, it evaluates the school's breadth of participation from the perspective of the participation base. As a positive indicator, a larger number of participants suggests broader student involvement in entrepreneurial practice, although it does not necessarily imply higher entrepreneurial quality.

(3) Average Daily Time Invested in Entrepreneurial Activities by Students

T_{biz}represents the average amount of time that students devote to entrepreneurship-related activities in their daily lives. Derived from behavioral record data, this indicator reflects the intensity of entrepreneurial engagement among the student population in each school. As a positive indicator, a higher value of T_{biz} indicates a greater overall level of student investment in entrepreneurial activities. However, excessive time investment may adversely affect academic performance; therefore, this indicator should be interpreted in conjunction with the threshold equivalence and GPA_down indicators in the evaluation process.

(4) Mean Ci

The mean Ci is used to reflect the degree of coordination between students' entrepreneurial activities and their academic studies. A higher value indicates a better balance between entrepreneurship and academic work at the school level. This indicator further emphasizes whether students' time and effort are allocated in an orderly manner and whether their entrepreneurial engagement is compatible with their academic status. Therefore, as a positive indicator, a higher mean Ci reflects better coordination, suggesting that students are able to maintain a stable balance between entrepreneurship and academic study.

(5) Threshold Equivalence (h/w)

Threshold equivalence represents the appropriate range of entrepreneurial time investment and measures the critical point between "reasonable participation" and "potential academic interference." A higher value indicates that students' entrepreneurial engagement at the school remains within a reasonable range and is less likely to crowd out academic study. As a positive indicator, this variable reflects the sustainability and appropriateness of entrepreneurial participation.

(6) GPA_down

GPA_down refers to the proportion of students whose academic performance declines and is used to reflect the potential risk of academic deterioration faced by students in sample schools while participating in entrepreneurial activities. A higher value indicates that students at the school may experience greater pressure in balancing entrepreneurial participation with academic performance. Given that academic performance is an important

outcome dimension in student development and educational evaluation[5], this study incorporates this indicator into the comprehensive evaluation system. Since GPA_down is a negative indicator, it is transformed into a positive-oriented indicator in the subsequent calculations to ensure comparability across indicators. As an outcome-based constraint indicator, GPA_down helps prevent judgments from being made solely on the basis of input levels, thereby reducing the possibility of misclassifying "high input" as "high performance."

III. Model Construction

3.1 Sample and Data Sources

This study takes students from eight international high schools in the Yangtze River Delta region as the research sample. With the assistance of homeroom teachers and entrepreneurship club mentors, questionnaire surveys and device-based data collection were conducted. A total of 711 questionnaires were collected. After excluding 83 samples with missing information or obvious abnormalities, 628 valid samples were retained, including 312 male students and 316 female students. In terms of curriculum distribution, 326 students were enrolled in the IB program and 302 students in the AP program.

The data used in this study are mainly derived from school documentation, aggregated sample statistics, behavioral record data, and academic administration information. Specifically, the curriculum support indicator was constructed primarily on the basis of each school's entrepreneurship-related curriculum offerings and support arrangements; the student number indicator was obtained from the valid sample counts of each school; indicators such as T_{biz}, mean Ci, and threshold equivalence were mainly derived from students' behavioral records and subsequent aggregated calculations; and GPA_down (%) was compiled from school academic administration data to reflect the proportion of students whose academic performance declined in each sample school. Based on these data, this study constructs a school-level comprehensive evaluation indicator system and, on this basis, carries out the subsequent entropy weight analysis.

3.2 Entropy Weight Method

Differences exist among international schools in terms of curriculum support, teacher allocation, and learning resources, and these differences may systematically affect students' time allocation and academic performance. To control for school-level environmental heterogeneity, this study constructs a school-level composite environmental variable, SchoolEnv, and incorporates it as a control variable into the subsequent empirical analysis.

This study adopts the entropy weight method[6] to synthesize multidimensional school-environment indicators. By determining weights according to the degree of dispersion of each indicator, the entropy weight method can reflect the informational contribution of different indicators while avoiding subjective weighting. The specific procedures include positive transformation and standardization of the original indicators, calculation of the information entropy of each indicator, determination of indicator weights on this basis, and weighted summation of the standardized indicators to obtain a school-level composite environmental index.

It should be noted that, in this study, the entropy weight method is used only to construct the school-level environmental control variable and does not directly participate in the calculation of the critical threshold of entrepreneurial time investment.

The calculation steps are as follows:
First, after transforming the data into positive-oriented form, the data are standardized. The standardization formula is given as follows:

For positive indicators: $X_{ij} = \frac{x_{ij} - min(x_j)}{max(x_j) - min(x_j)}$

For negative indicators: $X_{ij} = \frac{max(xj) - xij}{max(x_j) - min(x_j)}$

Then, the entropy weight method is used to calculate the weights:

1. Calculation of indicator proportions: $P_{ij} = \frac{X_{ij}}{\sum_{j=1}^{i} X_{ij}}$
2. Calculation of information entropy: $e_j = -\frac{1}{\ln(n)} \times \sum_{j=1}^{i} P_{ij} \times \ln(P_{ij})$
3. Calculation of indicator weights: $w_j = \frac{1 - e_j}{\sum_{j=1}^{m} 1 - e_j}$

Finally, the composite index is calculated as follows:

4. Calculation of the composite index: $SCORE_i = \sum_{j=1}^{m} w_j \times X_{ij}$

Here,P_{ij}denotes the proportion of the i-th sample under the j-th indicator after standardization, that is, the relative share of that sample with respect to the given indicator. x_{ij} denotes the original value of the i-th sample under the j-th indicator. Specifically, i indexes the sample (e.g., schools, students, etc.), and j indexes the indicator (e.g., curriculum support, entrepreneurial time investment, etc.). $\min(x_j)$and $\min(x_j)$ denote the minimum and maximum values of the j-th indicator, respectively, representing the range of that indicator across the sample set. e_j denotes the information entropy of the j-th indicator, which measures the degree of dispersion or uncertainty of that indicator across all samples. w_j denotes the weight of the j-th indicator, reflecting its relative importance in the comprehensive evaluation. $SCORE_i$denotes the composite score of the i-th sample, representing its overall performance across all indicators.

3.3 Estimation of Indicator Weights and Results of the Comprehensive Evaluation

To ensure consistency and accuracy in the presentation of the estimation results, all numerical values reported in the subsequent result tables, except those in the raw data table, are rounded to four decimal places.

(1) Positive Transformation of Indicators

Since the original indicator system includes both positive and negative indicators, this study first transforms the negative indicator into a positive-oriented form in order to unify the direction of evaluation. Specifically, GPA_down (%), which represents the proportion of students whose academic performance has declined, is a negative indicator and therefore needs to be converted into a positive form before the subsequent calculations. All other indicators are positive indicators and thus require no adjustment.

Table 2 presents the raw indicator data for each sample school. It reports the initial observed values of indicators such as curriculum support, student number, T_{biz}, mean Ci, threshold equivalence, and GPA_down (%). These data have not yet undergone positive transformation or standardization and therefore serve as the basic input data for the subsequent entropy weight calculations.

Table 2. Raw Indicator Data of the Sample Schools

School	Hangzhou Xuejun High School of Zhejiang Province (Zijingang Campus)	Hangzhou No. 2 High School of Zhejiang Province (Binjiang Campus)	Hangzhou No. 14 High School of Zhejiang Province (International Department)	No. 2 High School Affiliated to East China Normal University (Pudong Campus)	Shanghai High School (Main Campus)	Shanghai Pinghe Bilingual School	Shanghai Qibao Dwight High School	Shanghai Starriver Bilingual School
Curriculum Support	6	8	4.5	6	8	6	6	8
Student Number	82	75	66	89	96	78	83	59
T_{biz} (min/d)	28.4	30.1	26.8	32.7	35.1	31.5	33.9	29.6
Mean Ci	0.59	0.61	0.57	0.64	0.66	0.63	0.65	0.62
Threshold Equivalence (h/w)	2.8	3	2.9	3.3	3.6	3.3	3.6	3.4
GPA_down （%）	22	24	21.2	19.1	17.4	20.5	18.1	16.9

On this basis, to unify the evaluation direction of each indicator, this paper carries out positive normalization on negative indicators, with the processing results shown in Table 3.

Table 3 Results of Indicator Positive Processing

School	Hangzhou Xuejun High School of Zhejiang Province (Zijingang Campus)	Hangzhou No. 2 High School of Zhejiang Province (Binjiang Campus)	Hangzhou No. 14 High School of Zhejiang Province (International Department)	No. 2 High School Affiliated to East China Normal University (Pudong Campus)	Shanghai High School (Main Campus)	Shanghai Pinghe Bilingual School	Shanghai Qibao Dwight High School	Shanghai Starriver Bilingual School	sum of squares

Curriculum Support	6	8	4.5	6	8	6	6	8	356.25
Student Number	82	75	66	89	96	78	83	59	50296
T_{biz}(min/d)	28.4	30.1	26.8	32.7	35.1	31.5	33.9	29.6	7749.73
Mean Ci	0.41	0.39	0.43	0.36	0.34	0.37	0.35	0.38	1.1541
Threshold Equivalence(h/w)	2.8	3	2.9	3.3	3.6	3.3	3.6	3.4	84.51
GPA_down（%）	78	76	78.8	80.9	82.6	79.5	81.9	83.1	51370.48

(2)Standardization

After completing the positive processing of indicators, this paper further standardizes the data to eliminate differences in dimensions and orders of magnitude among different indicators. After standardization, all indicators are converted to a unified dimensionless scale, which improves the comparability between different indicators and lays a foundation for the subsequent entropy calculation and weight determination.

Table 4 Results of Indicator Standardization

School	Hangzhou Xuejun High School of Zhejiang Province (Zijingang Campus)	Hangzhou No. 2 High School of Zhejiang Province (Binjiang Campus)	Hangzhou No. 14 High School of Zhejiang Province (International Department)	No. 2 High School Affiliated to East China Normal University (Pudong Campus)	Shanghai High School (Main Campus)	Shanghai Pinghe Bilingual School	Shanghai Qibao Dwight High School	Shanghai Starriver Bilingual School
Curriculum Support	0.3179	0.4239	0.2384	0.3179	0.4239	0.3179	0.3179	0.4239
Student Number	0.3656	0.3344	0.2943	0.3968	0.4281	0.3478	0.3701	0.2631
T_{biz} (min/d)	0.3226	0.3419	0.3044	0.3715	0.3987	0.3578	0.3851	0.3362
Mean Ci	0.3816	0.363	0.4003	0.3351	0.3165	0.3444	0.3258	0.3537
Threshold Equivalence(h/w)	0.3046	0.3263	0.3155	0.359	0.3916	0.359	0.3916	0.3698
GPA_down（%）	0.3441	0.3353	0.3477	0.3569	0.3644	0.3508	0.3613	0.3666

(3)Calculation of Indicator Proportions

Based on the standardized data, the proportion of each evaluation object corresponding to each indicator is further calculated. This step reflects the relative contribution of each school under different indicators, and also provides an important basis for the subsequent calculation of information entropy and difference coefficient.

Table 5 Information Amount of Each Indicator（P_{ij}）

School	Hangzhou Xuejun High School of Zhejiang Province (Zijingang Campus)	Hangzhou No. 2 High School of Zhejiang Province (Binjiang Campus)	Hangzhou No. 14 High School of Zhejiang Province (International Department)	No. 2 High School Affiliated to East China Normal University (Pudong Campus)	Shanghai High School (Main Campus)	Shanghai Pinghe Bilingual School	Shanghai Qibao Dwight High School	Shanghai Starriver Bilingual School
Curriculum Support	0.1143	0.1524	0.0857	0.1143	0.1524	0.1143	0.1143	0.1524
Student Number	0.1306	0.1194	0.1051	0.1417	0.1529	0.1242	0.1322	0.0939
T_{biz} (min/d)	0.1145	0.1213	0.108	0.1318	0.1415	0.127	0.1366	0.1193
Mean Ci	0.1353	0.1287	0.1419	0.1188	0.1122	0.1221	0.1155	0.1254
Threshold	0.1081	0.1158	0.112	0.1274	0.139	0.1274	0.139	0.1313

Equivalence(h/w)								
GPA_down（%）	0.1217	0.1186	0.123	0.1262	0.1289	0.1241	0.1278	0.1297

(4)Calculation of Information Entropy and Difference Coefficient

Based on the proportion results of each indicator, the information entropy of each indicator is calculated, and the difference coefficient is further obtained. Information entropy is used to measure the degree of information dispersion of an indicator: the greater the difference of an indicator among different evaluation objects, the more information it provides and the stronger its distinguishing effect on the comprehensive evaluation; accordingly, the difference coefficient of this indicator is also larger.

P_{ij}represents the standardized value of the i-th sample under thej-th indicator, and $\ln(P_{ij})$is its natural logarithm. The term $P_{ij} \times \ln(P_{ij})$ is used to calculate the information amount of the indicator, measuring its dispersion across all samples, and further reflecting the contribution of the indicator to the comprehensive evaluation. The entropy value E_j refers to the "degree of disorder" of the indicator: a higher degree of disorder indicates smaller differences among samples. The information utility $1-E_j$ represents the effective information actually provided by the indicator. The entropy weight w_j is the final weight, indicating the importance of the indicator.

Table 6 Calculation Results of $P_{ij} \times \ln(P_{ij})$for Each Indicator

School	Hangzhou Xuejun High School of Zhejiang Province (Zijingang Campus)	Hangzhou No. 2 High School of Zhejiang Province (Binjiang Campus)	Hangzhou No. 14 High School of Zhejiang Province (International Department)	No. 2 High School Affiliated to East China Normal University (Pudong Campus)	Shanghai High School (Main Campus)	Shanghai Pinghe Bilingual School	Shanghai Qibao Dwight High School	Shanghai Starriver Bilingual School
Curriculum Support	−0.2479	−0.2867	−0.2106	−0.2479	−0.2867	−0.2479	−0.2479	−0.2867
Student Number	−0.2658	−0.2538	−0.2368	−0.2769	−0.2871	−0.2591	−0.2675	−0.2222
T_{biz} (min/d)	−0.2481	−0.2559	−0.2404	−0.2671	−0.2767	−0.262	−0.272	−0.2537
Mean Ci	−0.2706	−0.2639	−0.2771	−0.2531	−0.2454	−0.2568	−0.2493	−0.2604
Threshold Equivalence(h/w)	−0.2405	−0.2497	−0.2452	−0.2625	−0.2743	−0.2625	−0.2743	−0.2665
GPA_down（%）	−0.2563	−0.2529	−0.2577	−0.2613	−0.2641	−0.2589	−0.2629	−0.2649

Table 7 Information Entropy of Each Indicator（E_j）

Curriculum Support	Student Number	T_{biz} (min/d)	Mean Ci	Threshold Equivalence(h/w)	GPA_down（%）
0.9917	0.9950	0.9983	0.9987	0.9981	0.9998

Table 8 Information Entropy Surplus of Each Indicator（$1-E_j$）

Curriculum Support	Student Number	T_{biz} (min/d)	Mean Ci	Threshold Equivalence(h/w)	GPA_down（%）
0.0083	0.0050	0.0017	0.0013	0.0019	0.0002

(5)Determination of Indicator Weights

On the basis of the difference coefficients, normalization is performed on each indicator to determine the final weights. The weights reflect the relative importance of each indicator in the comprehensive evaluation system; a higher weight indicates a more significant influence of the indicator on the comprehensive scores of the sample schools.

Table 9 Calculation Results of Entropy Weights for Each Indicator

Curriculum Support	Student Number	T_{biz} (min/d)	Mean Ci	Threshold Equivalence(h/w)	GPA_down (%)
0.4495	0.2691	0.0943	0.0731	0.1032	0.0108

According to the weight calculation results in Table 9, curriculum support, student participation, and threshold equivalence carry relatively high weights, indicating that these three indicators have the most significant impact on schools' comprehensive scores. Schools can enhance these indicators by strengthening entrepreneurship-related courses, expanding participation scale, and optimizing the scheduling of entrepreneurship activities, thereby improving their comprehensive scores. In contrast, T_{biz}, mean Ci, and GPA_down have lower weights, meaning their contribution to the comprehensive evaluation is relatively limited, so schools do not need to invest excessive resources in improving these indicators.

(6) Calculation and Ranking of Comprehensive Scores

Based on the standardized results of each indicator and their corresponding weights, the comprehensive scores of each sample school are calculated and ranked accordingly. A higher comprehensive score indicates that the school has a better overall performance in entrepreneurship education support, student participation foundation, investment coordination, academic balance, and other related aspects.

Table 10 Comprehensive Evaluation Scores and Rankings of Sample Schools

School	Hangzhou Xuejun High School of Zhejiang Province (Zijingang Campus)	Hangzhou No. 2 High School of Zhejiang Province (Binjiang Campus)	Hangzhou No. 14 High School of Zhejiang Province (International Department)	No. 2 High School Affiliated to East China Normal University (Pudong Campus)	Shanghai High School (Main Campus)	Shanghai Pinghe Bilingual School	Shanghai Qibao Dwight High School	Shanghai Starriver Bilingual School
Score	0.3348	0.3766	0.2806	0.3501	0.4108	0.3362	0.3469	0.3610
Rank	7	2	8	4	1	6	5	3

The comprehensive evaluation results derived from the entropy weight method reflect the relative performance of each school under the specified evaluation framework. In terms of composite scores, Shanghai High School (Main Campus) ranked first with a clear lead (0.4108), indicating the strongest overall performance across all indicators. No. 2 High School Affiliated to East China Normal University (Pudong Campus) (0.3501) and Shanghai Starriver Bilingual School (0.3610) ranked fourth and third, respectively. Although their scores were relatively close, the entropy weight method, through objective weighting, effectively captured differences between the two schools across multiple dimensions, suggesting that it is sensitive to subtle variations in key indicators. Hangzhou No. 2 High School of Zhejiang Province (Binjiang Campus) ranked second (0.3766), also demonstrating strong performance and clear advantages in several important indicators. It should be noted that the entropy weight method is sensitive to inter-school differences in resource allocation and is able to assign reasonable weights to different indicators, thereby enhancing the scientific validity and discriminatory power of the evaluation results.

IV. Conclusion and Countermeasure Suggestions

4.1 Research Conclusions

This study applies the entropy weight method to conduct a comprehensive evaluation of the entrepreneurial performance of students from eight international high schools in the Yangtze River Delta region, thereby revealing the relative strengths of each school and differences in the balance of resource allocation under a multidimensional indicator system. Overall, schools in Shanghai demonstrate relatively strong overall competitiveness. In particular, Shanghai High School (Main Campus) ranked first with a clear advantage, reflecting its outstanding performance across several key indicators. As a leading school in Hangzhou, Hangzhou No. 2 High School of Zhejiang Province (Binjiang Campus) also performed prominently.

However, the relationship between scores and rankings is not strictly linear. For example, although the scores of Shanghai Qibao Dwight High School and Hangzhou Xuejun High School of Zhejiang Province (Zijingang Campus) differ only slightly, their rankings are separated by a relatively large gap. This suggests that, through objective weighting and entropy-based calculation, the entropy weight method can sensitively distinguish differences in schools' performance and resource allocation efficiency across multiple dimensions, rather than merely relying on total scores. In addition, the small score differences among schools ranked from third to seventh indicate intense competition, where even slight differences may affect the final ranking.

Therefore, the evaluation results not only reflect the current conditions of the schools, but also provide dynamic feedback on their developmental weaknesses and potential areas for improvement. Schools should pay particular attention to indicators with relatively high weights in the entropy weight model, optimize specific dimensions accordingly, avoid focusing solely on overall rankings, and promote more targeted, high-quality, and sustainable development.

4.2 Countermeasure Suggestions

Based on the empirical results, the following recommendations are proposed for improving the entrepreneurial performance of international high schools in the Yangtze River Delta region.

(1) Strengthen curriculum support and the integration of educational resources

Shanghai High School (Main Campus) demonstrated relatively strong support for entrepreneurship education, particularly in terms of curriculum design and mentor guidance. Other schools should further improve the systematic design of entrepreneurship education and increase investment in related resources, especially with regard to curriculum diversity and practical training. It is recommended that schools offer more entrepreneurship courses, interdisciplinary projects, and practice-oriented opportunities, while also optimizing the allocation of mentors and counselors to enhance teaching effectiveness and students' entrepreneurial capabilities.

(2) Expand student participation and broaden the participation base

Schools should broaden student participation through multiple channels in order to enhance students' sense of engagement and belonging in entrepreneurial activities. More students can be encouraged to participate in entrepreneurial practice by establishing entrepreneurship clubs, organizing campus innovation competitions, and supporting student entrepreneurial projects. In addition, innovation funds and incentive mechanisms may be introduced to stimulate students' initiative and further deepen entrepreneurship education.

(3) Optimize Entrepreneurship Time Management and Academic Balance

Excessive time devoted to entrepreneurial activities may negatively affect academic performance. Schools with relatively poor GPA_down performance should pay particular attention to the balance between entrepreneurship and academic study. Schools should provide students with reasonable time-planning support so that they can balance entrepreneurial engagement with academic responsibilities and avoid excessive academic pressure caused by overinvolvement in entrepreneurial activities.

(4) **Improve coordination and the quality of entrepreneurial engagement**

The mean Ci reflects the degree of coordination between students' entrepreneurial activities and their academic study. In some schools, students spend relatively long periods of time on entrepreneurial activities, yet the level of coordination remains weak, resulting in limited overall effectiveness. Schools are therefore advised to design more structured entrepreneurial projects and improve the quality of student participation. Mentor guidance, teamwork, and academic support should be strengthened to avoid a situation of high input but low returns.

(5) **Strengthen the analysis and optimization of key indicators**

Schools should formulate improvement plans based on the entropy weight results, especially with respect to key indicators such as curriculum support, entrepreneurial time investment, and academic performance. Lower-ranked schools may strengthen curriculum support or provide students with greater flexibility in arranging entrepreneurial activities. At the same time, schools should closely monitor GPA_down and adjust the scheduling of entrepreneurial activities in a timely manner so as to reduce adverse academic effects.

(6) Conduct regular follow-up evaluations and adjust development strategies accordingly

Schools should conduct regular self-evaluations, particularly with respect to indicators assigned relatively high weights by the entropy weight method. Sample data should be updated annually to analyze changes in entrepreneurship education and academic performance, and educational policies and resource allocation should be adjusted in a timely manner to ensure continuous improvement.

At the same time, according to the indicator weights obtained from the entropy weight method, curriculum support, entrepreneurial time investment, and academic performance exert the greatest influence on schools' composite scores. To improve overall performance, schools should therefore prioritize these key indicators. For example, they may increase both the quantity and quality of entrepreneurship courses, strengthen mentor guidance, and enhance institutional support for entrepreneurship education; they may also reasonably regulate students' entrepreneurial time investment to prevent excessive involvement from affecting academic study; and they may strengthen academic support to ensure that entrepreneurial participation does not place undue pressure on academic performance. Through targeted improvements in these key dimensions, schools can effectively enhance their composite scores and promote overall development.

Through the implementation of the above recommendations, schools can make more precise adjustments based on objective evaluation data, achieve a better balance between entrepreneurship education and academic development, and improve students' overall quality and innovative capacity.

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