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Investigating the relationship among college student satisfaction with extracurricular activity, expectations and academic outcomes: An case study

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Abstract: *In higher education, extracurricular activities provide students with important opportunities to broaden their horizons and create value. As one of the indicators reflecting student experience in participation extracurricular activities, student satisfaction is a critical aspect. The main aims of this study are to examine the effect of student expectations and academic outcomes on student satisfaction with extracurricular activity. This paper also focuses on the satisfaction evaluation of college students from different majors, genders, and academic levels with extracurricular activities, compares the differences in satisfaction levels, and explores the reasons for the differences. We use principal component analysis to divide extracurricular activities into three types: practical interest, academic and cultural, and career development. Empirical results from 518 college students suggest that there are significant differences in the content and form of extracurricular activities among college students of different majors and grades. Especially, there is a notable negative correlation emerged between students' expectations of extracurricular activities and their satisfaction ratings. Our analysis revealed no significant difference between the evaluation students' satisfaction with extracurricular activities and academic outcomes. The research findings provide new insights for university administrators and teachers to understand students' differentiated needs and how to stimulate their satisfaction with extracurricular activities.*

Keywords: *Student Satisfaction; Extracurricular Activities; Principal Component Analysis; Comprehensive evaluation*

1. Introduction

The evolving landscape of higher education, characterized by increasing specialization and complexity in production, underscores the pivotal role of higher education institutions in nurturing individuals with robust professional knowledge and skills. As such, enhancing the quality of teaching in higher education is imperative. Extracurricular activities stand as vital components of the educational system, serving as important approach for imparting comprehensive skills and qualities to college students. These activities address the diverse educational needs of students and naturally draw educators' attention to their quality and effectiveness.

The paradigm shifts towards "student-centered" education has reshaped the evaluation criteria for undergraduate education quality, emphasizing students' learning experiences, emotions, and value-added growth. Consequently, students are no longer passive recipients of knowledge but active participants and consumers[1]. Therefore, students' satisfaction with extracurricular activities emerges as a crucial indicator of educational quality, aligning with societal demands for skilled individuals and students' aspirations for skill enhancement. Effective extracurricular activities have the potential to enhance students' competitiveness both within academic institutions and in broader society.

Regarding empirical research on student satisfaction, its origins can be traced back to the United States. In 1966, the American Educational Research Council pioneered the systematic measurement of freshman satisfaction using the CIRP (Cooperative Institutional Research Program). Subsequently, Betz and Menne conceived and designed the CSSQ (College Student Satisfaction Questionnaire) aiming to

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scientifically assess student satisfaction, providing strong evidence for schools to improve student retention rates. Between 1991 and 2001, the American Association of Colleges published nine in-depth research papers on student satisfaction in its RHE journal, which provided comprehensive analysis and detailed measurement of college student satisfaction. Meanwhile, numerous scholars actively engaged in the development of satisfaction scales, among which the SSI (Student Satisfaction Inventory) developed by the Noel-Levitz team had the most profound impact. This inventory was widely used to assess students' satisfaction with various aspects of school services, providing valuable feedback for schools. It is noteworthy that these scales are designed to be two-dimensional, covering comprehensively various aspects of students' college life, especially emphasizing on study satisfaction, which accounts for over 50%, laying a solid foundation for subsequent specialized research.

In the United Kingdom, the evaluation of student satisfaction is based on the characteristics of its internationalization and specialization in higher education. In 1999, the University of Limerick pioneered exploration in this field, followed by other universities gradually. The Higher Education Academy in the UK and IPSOS MORI collaborated to create the "University Student Satisfaction Scale," providing a unified standard for student satisfaction surveys across the UK.

In both the UK and the US, students and parents have a significant degree of autonomy in choosing schools and majors. Therefore, newcomers and parents rely on satisfaction survey results of current students to make choices. This makes satisfaction an important indicator for measuring school quality. Universities attach great importance to this and have used student satisfaction surveys as important bases for improving services, attracting a large number of scholars to engage in research in this field.

2. Related Concepts and Literature Review

2.1. Extracurricular Activities

The discourse on the connotation of "extracurricular activity" has persisted since as early as 1981, with educational scholars advocating that such extracurricular activities serve as supplements to traditional classroom instruction. The definition of extracurricular activities was broad, yet it encompassed school-based out-of-class activities, including involvement in school societies, sports competitions, and musical events[2-3]. Scholars emphasized that extracurricular educational activities in higher education are meticulously planned and organized to enhance students' abilities and knowledge acquisition[4]. According to Zeng Jianxiong et al. a comprehensive review of literature over the past two decades suggests that extracurricular educational activities primarily entail practical teaching beyond the major's curriculum, under unified management and guidance of teachers, encompassing all organized and planned extracurricular endeavors in which students voluntarily participate[5].

In summary, "extracurricular activity" refers to practical, quality-focused endeavors beyond classroom instruction, managed by universities and supported by a broad spectrum of teachers. These activities offer student choice and foster holistic development. Initially limited to traditional practices, extracurricular activities have diversified to include volunteer work, public welfare, social practices, cultural performances, and sports, evolving into blended online-offline formats for broader participation. Moreover, technology has revolutionized extracurricular facilities, replacing basic setups with advanced virtual labs and VR simulations for immersive learning. These enhancements boost educational value and prepare students for a digital world. Content has expanded to real-world issues, fostering social responsibility and engagement. Overall, extracurricular evolution shows a commitment to holistic education and well-rounded individuals suited for a changing global landscape.

Extracurricular activities in higher education are crucial for student development, offering opportunities to acquire diverse skills, knowledge, and attitudes not easily accessible in classrooms. They broaden knowledge, enhance abilities, and foster practical learning through hands-on experiences. These activities cultivate future professional skills, preparing students for career success.

2.2. Research on satisfaction with extracurricular activities

The construction of the extracurricular activities in colleges and universities has a significant area of focus in educational research and practice. Scholars have underscored the importance of leveraging extracurricular activities as a platform for promoting ideological and political education among college students[6-7]. Scholars highlight the significance of studying college students' participation behavior in extracurricular activities to evaluate the effectiveness of education. By analyzing students' engagement

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in extracurricular initiatives, educators can gain valuable insights into the impact of education on students' growth and development[8-10]. This analytical approach enables educators to identify strengths and areas for improvement in education programs, facilitating continuous enhancement of educational practices. Overall, the integration of extracurricular activities represents an important approach to nurturing students' ideological consciousness, fostering their sense of civic responsibility, and promoting their overall development.

The cultivation of dual-innovation abilities through extracurricular activities in colleges and universities has garnered significant attention as a means to foster entrepreneurial spirit and innovative thinking among students. Scholars such as Shuhui Huang and Winstone et al. have explored the role of extracurricular activities in promoting innovation and entrepreneurship education, highlighting the collaborative efforts required among students, educational institutions, enterprises, and government entities[11-12]. He Yong et al. propose a comprehensive extracurricular activities education system focused on organization, management, education content, platforms, and project management[13]. Overall, these studies underscore the transformative potential of extracurricular activities in fostering dual-innovation abilities among college students. By leveraging collaborative partnerships and implementing robust educational frameworks, institutions can cultivate a new generation of innovative thinkers and entrepreneurs who are equipped to tackle real-world challenges and drive positive change in society.

Construction of the classroom teaching and extracurricular activities integration system and synergistic development. Bi Wenhui advocate for the integration of the first classroom and extracurricular activities through a three-level platform system[14]. He Yudong emphasizes the overlap between professional education and extracurricular activities education, suggesting institutional innovation in three key areas: collaborative cultivation content systems, collaborative subject cultivation systems, and evaluation systems for cultivation effects[15]. Bao Shuangcheng propose a solution involving three aspects: establishing a concept of synergistic development education, constructing a cultivation system that fosters synergy, and establishing a robust education system mechanism[16].

In higher education, research on student satisfaction with extracurricular activities has gained increasing significance. Student satisfaction, a multifaceted concept, mirrors their subjective perceptions and experiences of college education and learning[17]. It serves as a tangible manifestation of the "student-centered" educational ethos and stands as a critical evaluation metric for assessing the efficacy of teaching functions within higher education institutions. Moreover, it furnishes actionable insights to enhance the overall quality of education. Student satisfaction with extracurricular activities is pivotal in evaluating the overall quality of higher education.

A notable empirical study conducted by Xu Xia analyzed 10,781 questionnaires, considering various indicators such as assessment formats, difficulty levels, personal participation, and individual impacts of extracurricular activity[18]. Similarly, Song Dan constructed a model linking "extracurricular activity-learning satisfaction-college students' core competitiveness", highlighting satisfaction as a crucial mediator between extracurricular activity and core competitiveness[19]. Furthermore, Yan Yan revealed through questionnaire analysis that differences exist in the main primary considerations for student participation in extracurricular activities across different grades[20]. Multiple studies have demonstrated the close association between student satisfaction and key academic outcomes such as achievement, persistence, and graduation rates. Quantitative measurement methods commonly employed in this research domain include basic statistical description, hierarchical analysis, and multiple linear regression techniques[21].

3. Research Design

3.1. Research Purpose

The purposes of this study are (1) to examine the effect of student expectations on satisfactions of extracurricular activities, (2) to examine the relationship between satisfactions of extracurricular activities and academic outcomes and (3) to assess the effect of other factors on satisfactions.

This paper aims to develop a comprehensive evaluation model for assessing college students' satisfaction with extracurricular activities, utilizing principal component analysis[22-23]. Additionally, it conducts variance analysis on various characteristics of college students to explore the factors influencing satisfaction with these activities. Through comparative analysis, the study seeks to identify effective strategies to enhance students' satisfaction with extracurricular activities, thereby contributing to continual improvement and enhancement of the quality of higher education services.

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3.2. Research Object

The research in this paper focuses on college students at Z University, with data sourced from the survey conducted as part of the "Empirical Study on College Students' Educational Satisfaction in Liberal Arts Colleges" project at Z University. A total of 612 sample data points were extracted according to research criteria. Invalid data, including responses unrelated to the questionnaire content, unclear responses, or those with excessively short completion times, were excluded. Consequently, 518 valid questionnaires were retained, resulting in an effective rate of 84.6%. Table 1 presents the basic distribution of the sample.

Table 1: Distribution of valid samples

Projects	Indicators	Samples	Percentage	Projects	Indicators	Samples	Percentage
Grade	Freshman	163	31.47%	College Major	Law School	200	38.61%
	Sophomore	167	32.24%		Political and Social Sciences Faculty	131	25.29%
	Junior	95	18.34%		College of Arts and Literature	65	12.55%
	Senior and above	93	17.95%		Faculty of Economics	90	17.37%
Gender	Male	146	28.19%		College of Engineering	32	6.18%
	Female	372	71.81%				

Based on the basic characteristics of the sample, the University of Z is identified as a liberal arts-oriented higher education institution. The ratio of male to female students in the sample aligns generally with the overall gender ratio of the university. Notably, the participation rate of junior, senior, and above students is slightly lower compared to freshmen and sophomores. This discrepancy is primarily attributed to the significant academic pressure faced by upperclassmen or their engagement in off-campus internships, resulting in lower cooperation rates with this type of questionnaire. However, it's worth mentioning that the data coverage for each grade is relatively balanced. The sample encompasses students form 12 colleges within the university, categorized into five groups based on Z University's disciplinary characteristics and the classification of primary/secondary disciplines. The distribution of students mirrors the overall enrollment of the university and enrollment of each college, thus rendering the sample distribution reasonable and representative. Consequently, it provides effective and reliable data support for this study.

3.3. Setting of Research Indicators and Statistical Description

Extracurricular activities. This study is based on the "Higher Education Teaching Quality and Student Development Survey Questionnaire" organized and implemented by the School of Education at Peking University, as well as the measurement design of student learning experiences in the Student Experience in the Research University (SERU) initiated by the University of California, Berkeley's Center for Studies in Higher Education. It combines the actual situation of various extracurricular activities provided by Z University for its enrolled students, and establishes evaluation indicators through comprehensive literature review and analysis. These activities are divided into eight groups: New students' orientation education; Public welfare work and volunteer service; Theme group day /party activities; Clubs / Associations; Academic lectures/reports; Cultural and sports activities; Academic guidance and psychological counseling; Career planning.

Table 2: Descriptive statistics

Types of indicators for extracurricular activities	Minimal value	Maximum value	Average value	Standard deviation	Skewness		Kurtosis	
	Statistical quantities	Statistical quantities	Statistical quantities	Statistical quantities	Statistical quantities	Standard error	Statistical quantities	Standard error
New Student Orientation Class	1	5	3.863	0.817	-0.127	0.107	-0.559	0.214
Public and volunteering work	1	5	3.886	0.858	-0.407	0.107	-0.207	0.214
Theme group day /party activities	1	5	3.903	0.810	-0.261	0.107	-0.247	0.214
Clubs / Associations	1	5	3.948	0.832	-0.368	0.107	-0.341	0.214
Academic lectures/reports	1	5	4.050	0.797	-0.458	0.107	-0.282	0.214
Cultural and sports activities	1	5	4.019	0.825	-0.430	0.107	-0.428	0.214
Academic guidance and psychological counseling	1	5	3.774	0.898	-0.249	0.107	-0.442	0.214
Career Planning	1	5	3.745	0.946	-0.381	0.107	-0.256	0.214

These categories encompass a wide range of activities, including signature events, ongoing series, and relevant courses designed to enhance students' educational experience. To gauge students' personal experiences with these activities, the study employs a questionnaire featuring positive questions based

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on the Likert metric. Data collection is conducted through an online questionnaire platform, and subsequent data cleaning, organization, and modeling are carried out using the statistical software SPSS 26.0. Based on the statistical description results presented in Table 2, it can be deduced that the sample data display a slightly left-skewed and flat-top distribution, indicative of a distribution pattern that is more aligned with a normal distribution.

Student Expectations. The definition of expectancy is the probability of success that a person believes will occur in an upcoming task or activity[24]. The two central components of expectancy-value theories are expectancy and subjective value. These can be the inherent interest resulting from a given activity and the instrumental usefulness of a task for one's current life or for reaching future goals, in the expectancy-value theories[25-26]. Studies have shown that expectancy, often measured using competence beliefs (e.g., academic self-concept) as a proxy, and task value are positively related to achievement[27]. This paper uses college students' awareness of the importance of extracurricular activities as a characterization of student expectations.

Academic outcomes. GPA of the whole scores for each college student consisted of the weighted average of required course grades and elective course grades in the major, which was measured on a scale from A to E. In this article, these grades were converted to numbers for data analysis, and higher numbers pointed to better grades (A=5, B=4, C=3, D=2, E=1), which ranging from the top 10%, 11%-25%, 26%-50%, 51%-75% to the bottom 25% of GPAs. It was widely used as an index of students' academic ability which was one of the predictors of students' general intelligence[28]. The high and low academic achievers were classified by these grades.

3.4. Constructing a Comprehensive Evaluation Model of Satisfaction with Extracurricular Activities

3.4.1. Reliability and validity tests

In this paper, reliability and validity tests are conducted to ensure the robustness and credibility of the constructed evaluation model. The reliability of the indicator variables is assessed using Cronbach's α coefficient, a widely accepted measure of internal consistency. According to De Vellis, a coefficient between 0.7 and 0.8 indicates good reliability, while a coefficient above 0.8 indicates very good reliability. Additionally, the Kaiser-Meyer-Olkin (KMO) value is employed to assess the suitability of inter-item factor analysis. A KMO value above 0.9 indicates excellent factor analysis suitability, above 0.8 indicates good suitability, above 0.7 indicates moderate suitability, and below 0.6 indicates unsuitability for factor analysis.

Drawing upon the findings of reliability and adaptability tests outlined in Table 3, it can be deduced that the indicator variables exhibit very good reliability and excellent validity. This suggests that the variables are consistent and measure what they are intended to measure, rendering them suitable for factor analysis. This finding instill confidence in the reliability and validity of the evaluation model constructed in this study.

Table3: Reliability and adaptability test outlined

Statistical test volume		Test result data	Acceptability of test results
Cronbachαcoefficient		0.938	✓
Kaiser-Meyer-Olkin metric for sampling adequacy		0.916	✓
Bartlett's sphericity test	Approximate cardinality	3348.294	✓
	df	28	
	Sig.	0.000	

3.4.2. Factor analysis

To conduct factor analysis, the correlation coefficient matrix is calculated based on the collected data. Additionally, the eigenvalues corresponding to this matrix and their contribution rates are computed, as presented in Table 4. Upon examination, it is observed that the cumulative contribution rate of the first two eigenvalues alone has reached 77.543%, which exceeds the recommended threshold of 70%. This indicates that the factor analysis is effective in capturing a significant portion of the variance in the data. The high cumulative contribution rate suggests that the extracted factors successfully explain a large proportion of the variability in students' satisfaction with extracurricular activities. This underscores the utility and effectiveness of the factor analysis approach employed in this study.

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Table 4: Results of factor analysis

Component Serial Number	Eigenvalue	Contribution rate	Cumulative contribution rate	Component Serial Number	Eigen value	Contribution rate	Cumulative contribution rate
1	5.595	69.934	69.934	5	.283	3.541	92.046
2	.609	7.609	77.543	6	.267	3.337	95.382
3	.533	6.660	84.202	7	.239	2.985	98.367
4	.344	4.302	88.505	8	.131	1.633	100.000

In this study, the first three principal components were selected for comprehensive evaluation, as they accounted for a cumulative contribution rate of 84.202%. The extracted variance of the common factor was found to be not less than 0.74, indicating that all the question items were suitable for retention in the analysis. Subsequently, the data underwent direct cross-rotation using the maximum variance method, resulting in eigenvalues of 2.857, 2.074, and 1.805 for the first three rotated components, respectively. These eigenvalues correspond to contribution rates of 35.711%, 25.926%, and 22.565%, respectively. Table 5 presents the eigenvectors corresponding to the three rotated components, which provide insights into the underlying factors influencing students' satisfaction with extracurricular activities.

Table 5: The eigenvectors corresponding to the 3 rotated components after rotation

Component Symbols	x_1	x_2	x_3	$x_{4\,4}$	x_5	x_6	x_7	x_8
y_1	0.696	0.753	0.801	0.808	0.341	0.329	0.415	0.341
y_2	0.341	0.415	0.281	0.265	0.224	0.454	0.817	0.844
y_3	0.381	0.230	0.320	0.266	0.862	0.715	0.286	0.312

The given equations(1) represent the three principal components as follows:

$$\begin{cases} y_1 = 0.696x_1 + 0.753x_2 + 0.801x_3 + 0.808x_4 + 0.341x_5 + 0.329x_6 + 0.415x_7 + 0.341x_8 \\ y_2 = 0.341x_1 + 0.415x_2 + 0.281x_3 + 0.265x_4 + 0.224x_5 + 0.454x_6 + 0.817x_7 + 0.844x_8 \\ y_3 = 0.381x_1 + 0.230x_2 + 0.320x_3 + 0.266x_4 + 0.862x_5 + 0.715x_6 + 0.286x_7 + 0.312x_8 \end{cases} \quad (1)$$

These equations reveal how the principal components (y_1, y_2, and y_3) are constructed from the standardized index values ($x_1, x_2, \cdots, x_8$). The coefficients indicate the relative importance of each indicator in contributing to the respective principal component. Specifically, the interpretation of the principal components is as follows: The first principal component (y_1) primarily reflects information from the first four indicators, which pertain to new students' entrance education, public work and volunteer service, theme group day activities/party organization life, and association categories. The second principal component (y_2) mainly captures evaluation information from the academic guidance and psychological counseling, and career planning categories. The third principal component (y_3) reflects the overall situation of the academic lectures/reports and cultural and sports activities categories.

Here, x_i represents the standardized index value for each indicator ($i = 1, 2, \cdots, 8$), indicating the degree to which each category contributes to the overall satisfaction of students with extracurricular activities.

3.4.3. Construction of a comprehensive evaluation model

The comprehensive evaluation model is constructed based on the weights of the three principal components previously determined. The model combines these components to generate a comprehensive satisfaction index(Z) for extracurricular activities. The formula(2) for the comprehensive satisfaction index is:

$$Z = 0.357y_1 + 0.259y_2 + 0.226y_3 \quad (2)$$

Given that the value intervals of data analysis are [1,5], linear interpolation is applied to transform the comprehensive satisfaction index(Z') into values within the range of [1,5]. The interpolation formula(3) is

$$Z' = 0.341Z - 0.6368 \quad (3)$$

By applying this transformation, the comprehensive satisfaction index is adjusted to ensure that it

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falls within the desired range of [1,5]. This transformation reveals that college students tend to exhibit a higher level of overall satisfaction with extracurricular activities. Table 6 provides individual sample statistics and test results, facilitating a clearer understanding of the level of satisfaction among college students with regard to extracurricular activities.

Table 6: Individual sample statistics and test results

Single sample statistics					Single sample test (test value = 3)					
Overall satisfaction	Sample size	Average value	Standard deviation	Standard error of the mean	*t*	*df*	*Sig.* (Bilateral)	Mean Difference	95% confidence interval of the difference	
									Lower limit	Upper limit
	518	3.755	0.801	0.035	21.452	517.000	0.000	0.755	0.686	0.824

4. Results

4.1. Model Results

The overall satisfaction situation with college students' extracurricular activity is deemed good, as inferred from the satisfaction index calculated by formula (3). To provide a more detailed understanding of students' satisfaction levels, the college students' group was divided into four categories based on their overall satisfaction index scores: Low satisfaction group: score range [0,2.5]; Medium satisfaction group: score range (2.5,3.5]; Second-highest satisfaction group: score range (3.5,4.5]; High satisfaction group: score range (4.5, 5]. The percentage of students falling into each category is as follows: 4.0% in the low satisfaction group, 34.4% in the medium satisfaction group, 39.8% in the second-highest satisfaction group, and 21.8% in the high satisfaction group. Notably, the combined percentages of the second-highest and high satisfaction groups exceeded 60%, indicating that a majority of current university students at Z University rated their satisfaction with extracurricular activity relatively well.

4.2. Relationship between Satisfaction with Extracurricular Activities and Student Expectations, Academic Outcomes and Other Factors, respectively

Utilizing SPSS software for ANOVA variance analysis and cross analysis, we examined the relationship among various categories of data sets. Findings are outlined below:

1) Students Expectations Comparison: A notable negative correlation emerged between students' perceived importance of extracurricular activities and their satisfaction ratings. Remarkably, students who deemed these activities as "very unimportant" exhibited the highest satisfaction levels, followed by those who rated them as "unimportant", "average", "important", and "very important", in descending order. This negative association was statistically significant at the 1% level, indicating a consistent trend wherein students' satisfaction tends to decline as they perceive these activities as more important. This finding mirrors the conclusions drawn by Zhang Bei et al. in their examination of university education satisfaction, reinforcing the notion of a negative relationship between students' learning expectations and their actual experiences[29].

This scenario underscores the necessity for educational institutions to balance the overarching quality training of students with the cultivation of their individual development characteristics in the management of extracurricular activities. Moreover, it emphasizes the imperative for schools to enhance communication channels with students throughout the teaching and management processes to gain comprehensive insights into students' learning expectations. Similarly, students are encouraged to familiarize themselves with the overarching planning direction of the school's talent training, fostering alignment between their expectations and the institution's objectives, ultimately bolstering satisfaction levels.

2) Academic Outcomes Comparison: Upon categorizing students' grade ranking into five distinct groups, ranging from the top 10% to the bottom 25%, our analysis revealed no significant difference in the evaluation of students' satisfaction with extracurricular activities. This suggests that students' satisfaction with these activities is not influenced by their academic performance. This finding contrasts with observations related to classroom education satisfaction. The difference can be attributed to the fact that college students' performance ranking predominantly relies on examination results in major courses, with a relatively minimal contribution from their involvement in extracurricular activities.

3) Gender Comparison: Our analysis revealed no significant difference in the satisfaction levels

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between male and female students at University Z regarding extracurricular activities. This indicates that the questionnaire content is gender-neutral and applicable to all students. Furthermore, the findings suggest that gender does not exert a significant influence on the higher education learning experience.

4) College Major Comparison: Our analysis revealed significant satisfaction differences among students in various faculties, with law students showing notably higher satisfaction than engineering students. This disparity can be traced to University Z's 70-year focus on law education and abundant resources, while the newer engineering college may lack such advantages. No significant satisfaction differences were found among other faculties.

5) Grade Level Comparison. Our analysis revealed a significant disparity in satisfaction levels with extracurricular activities among students of different grades. Particularly, freshman reported significantly higher satisfaction compared to students in other grades. This aligns with the common experience that freshman undergo a transition period in adapting to university life and learning methodologies, which markedly differ from those in secondary school. Freshmen typically exhibit heightened curiosity and enthusiasm toward their new academic environment, contributing to their elevated satisfaction levels. Conversely, senior students, accustomed to university life and facing increased academic pressures, tend to maintain relatively stable satisfaction levels with extracurricular activities.

5. Discussion and Conclusion

This study used principal component analysis to categorize extracurricular activities into three types and constructed a satisfaction evaluation model. It involved 518 Chinese college students and found significant negative correlations between satisfaction and student expectations, as well as satisfaction and grade level. No links were found between satisfaction and academic outcomes, majors, or genders. Understanding the relationship among student experience(satisfaction) of extracurricular activities, student expectations and academic outcomes performance may help teachers and administrators develop techniques and methods designed to enhance the quality of higher education.

1) The organic integration of professional classroom education and extracurricular activities, based on curriculum clusters, fosters a virtuous cycle of "learning-research-use-learning" among college students. Each component plays a distinct role within the higher education process. Professional classroom instruction facilitates the acquisition of foundational theories, principles, and scientific research skills. Conversely, extracurricular activities enable students to apply and innovate upon their acquired knowledge in real-world scenarios, leveraging their abilities to tackle practical challenges. This symbiotic relationship encourages students to delve deeper into their studies, broaden their knowledge base, enhance their practical skills, and refine their overall personal development.

2) To enhance the overall quality of higher education, it is imperative to form an effective incentive mechanism that incentivizes active teacher participation and fosters the synergistic development of professional classroom and extracurricular activities. No matter students participate in professional classroom activities extracurricular endeavors, they rely on teachers' guidance for theoretical understanding and practical application, despite teachers not being the primary participants in extracurricular activities. Additionally, the implementation of a "dual appointment system" facilitates the participation of professionals from various fields, such as judges, prosecutors, lawyers, entrepreneurs, and engineers, in teaching extracurricular activities. These professionals, acting as adjunct faculty, not only contribute to expanding students' knowledge but also serve as mentors in their respective fields. The success of the "dual appointment system" hinges on mutual recognition by both employers and universities of the dual identities of these adjunct faculty members, along with adequate support and resources from institutional systems.

3) The advancement of extracurricular activity necessitates cooperation and information exchange among multiple departments, colleges, and universities, alongside the proactive engagement of social resources to enhance overall effectiveness. These activities are characterized by their broad scope, diverse formats, and rich content, making it impractical for a single department or college to execute them alone. Facilitating information sharing among departments, colleges and universities not only provides students with a broader their horizons, but also ensures consistent recognition of extracurricular transcripts, thereby conserving educational resources and leveraging each university's professional strengths. Furthermore, the involvement of social resources contributes to the development of extracurricular activities, enabling students to grasp society's actual demands for professionals early on. This fosters the integration of industry and education, nurturing college students' innovative and entrepreneurial capabilities. Social resources can contribute to extracurricular education in various ways,

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such as supporting cultural activities and competitions to enrich students' campus experiences.

4) The outbreak in 2020 expedited the adoption of new patterns and models in higher education, leveraging scientific information technology to empower learning institutions and hastening the digital transformation of education. Higher education is transitioning from an "emergency" phase to a state of "normalization", paving the way for a more flexible and adaptable educational system. There is a notable shift towards hybrid teaching modes that integrate both online and offline learning. Additionally, there will be a focus on establishing smart study environments to facilitate seamless learning experiences. Artificial intelligence (AI) will play a pivotal role in virtual simulation experiment teaching, enhancing opportunities for practical training. This integration of AI will enable students to engage in personalized, intelligent, immersive, and interactive learning experiences, thereby enriching their educational journey. Overall, the evolution of education extracurricular activity reflects a commitment to adaptability and innovation in the face of unprecedented challenges.

In conclusion, extracurricular activity is pivotal in higher education for implementing quality education and fostering students' comprehensive development. Emphasizing a student-centered approach, these activities are tailored to meet the diverse needs of learners, making them integral to the educational experience. Student satisfaction serves as a vital indicator for educators and administrators, offering valuable insights into the effectiveness of activities, methods, and services. By prioritizing student feedback, educators can refine teaching practices and enhance the overall quality of extracurricular learning experiences. Ultimately, this focus on student satisfaction contributes to the holistic development of students, preparing them for success in both academic and professional realms.

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References

[1] Bao Wei. (2007). Quality of Higher Education from the View of Students: An Analysis of Education Assessment by Undergraduates. Modern University Education, (04): 16-22+110-111.
[2] Stuart M, Lido C, Morgan J, et al. (2011) The impact of engagement with extracurricular activities on the student experience and graduate outcomes for widening participation populations. Active Learning in Higher Education 12(3): 203-15.
[3] Youth Work Department of the Party Committee of Huazhong University of Technology. (1982). To attach importance to and strengthen the extracurricular activities. Higher Education Front, (11): 22-24.
[4] De Prada Creo E, Mareque M, Portela-Pino I. (2021). The acquisition of teamwork skills in university students through extra-curricular activities. Education+ Training, 63(2): 165-181.
[5] Zeng Jianxiong, Song Dan et al. (2017). Research on the extracurricular activities of college students: history, focus and prospect--a literature review based on CNKI from 1999-2016. Chongqing Higher Education Research,5(06): 119-127.
[6] Feraco T, Resnati D, Fregonese D, et al. (2023) An integrated model of school students' academic achievement and life satisfaction. Linking soft skills, extracurricular activities, self-regulated learning, motivation, and emotions. European Journal of Psychology of Education, 38(1): 109-130.
[7] Elshami W, Taha M H, Abuzaid M, et al. (2021). Satisfaction with online learning in the new normal: perspective of students and faculty at medical and health sciences colleges. Medical education online, 26(1): 1920090.
[8] Wang Gang. (2021). Research on student behavior in the extracurricular activities under the evaluation perspective of ideological and political education in higher education. Chengdu, Sichuan: University of Electronic Science and Technology, 6.
[9] Hartman, D. E., Schmidt, S. L.. (1995). Understanding Student/Alumni Satisfaction from A Consumer's Perspective: The Effects of Institutional Performance and Program Outcome. Research in Higher Education, 36(02): 197-217.
[10] Tang Wei-Hui, Fan Li-Juan. (2016). Analysis of college students' evaluation of extracurricular activities and influencing factors from the perspective of satisfaction. Forestry Teaching, (04): 6-7.
[11] Huang Shuhui. (2022). Research on innovation and entrepreneurship education based on the extracurricular activities in triple helix colleges and universities. Education and Teaching Forum, (09):

ISSN 2522-6398 Vol. 7, Issue 11: 246-255, DOI: 10.25236/FER.2024.071137

25-28.
[12] Winstone N, Balloo K, Gravett K, et al. (2022). Who stands to benefit? Wellbeing, belonging and challenges to equity in engagement in extra-curricular activities at university. Active Learning in Higher Education, 23(2): 81-96.
[13] He Y, Dong Yao. (2020). A model for cultivating "double-creative" talents in the extracurricular activities of colleges and universities. Education Modernization, 7(41): 48-51.
[14] Bi Wenhui, Chen Yuhang et al. (2022). The integration system of the first classroom and the extracurricular activities in colleges and universities based on double-creative education-- taking the food microbiology course group as an example. China Light Industry Education, 25(01): 56-61.
[15] He Yudong. (2021). Institutional innovation of collaborative education between law courses and the extracurricular activities in colleges and universities. Journal of Beijing University of Chemical Technology (Social Science Edition), (04): 90-94.
[16] Bao Shuangcheng, Wang Xiaoli. (2020). Research on the integrated development and collaborative education mechanism of the first and second classrooms in colleges and universities. Heilongjiang Science, 11(13): 25-26+29.
[17] Bao Wei. (2014).The Unfinished Transformation - Higher Education Impact and Student Development. Beijing: Education Science Press, 3.
[18] Xu Xia, Cao Jia et al. (2019). A survey on the satisfaction of "second class transcript" system in applied undergraduate institutions. Western Quality Education, (05): 153-154+157.
[19] Song D, Zeng JX. (2018). An empirical study on the relationship between extracurricular activities, learning satisfaction and college students' core competitiveness. University Education Science, (05): 21-29.
[20] Yan Yan, Lai Qiuhua et al. (2018). Analysis of college students' influencing factors on the extracurricular activities from the perspective of satisfaction - taking Guangzhou University of Traditional Chinese Medicine as an example. Science and Technology Wenhui, 7(B):28-30.
[21] Tang Wanjin, Xian Kuitong, Zheng Zhaohong, Kang Jian. (2009). Theory and application of customer satisfaction measurement. China Metrology Press, 6.
[22] Gewers F L, Ferreira G R, Arruda H F D, et al. (2021). Principal component analysis: A natural approach to data exploration. ACM Computing Surveys (CSUR), 54(4): 1-34.
[23] Karamizadeh S, Abdullah S M, Manaf A A, et al. (2020). An overview of principal component analysis. Journal of Signal and Information Processing, 4.
[24] David W. Putwain, Laura J. Nicholson, Reinhard Pekrun, Sandra Becker, Wendy Symes(2019) Expectancy of success, attainment value, engagement, and Achievement: A moderated mediation analysis. Learning and Instruction,60:117-125.
[25] Ajzen, I. & Fishbein, M. (1980). Understanding attitudes and predicting social behavior. Journal of Experimental Social Psychology, 278.
[26] Allan Wigfield, Jacquelynne S. Eccles (2000). Expectancy–Value Theory of Achievement Motivation. Contemporary Educational Psychology, 25(1):68-81.
[27] Heyder A, Kessels U, Steinmayr R(2017). Explaining academic-track boys' underachievement in language grades: Not a lack of aptitude but students' motivational beliefs and parents' perceptions? Br J Educ Psychol, 87(2):205-223.
[28] Yiukong Chan (2016) Investigating the relationship among extracurricular activities, learning approach and academic outcomes: A case study. Active Learning in Higher Education, 17(3):223-233.
[29] Zhang Bei, Lin Jiabao. (2014). Empirical Analysis of Factors Influencing University Teaching Satisfaction-Based on the Perspective of Students' Expectations and Students' Perceived Quality. Fudan Education Forum, 12(04): 59-65.