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## **Exploration of Innovation and Entrepreneurship Education Path for College Students: A Case Study in the Guangdong-Hong Kong-Macao Greater Bay Area** (Full Paper)

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### **ABSTRACT**

Under the high-level positioning of the Guangdong-Hong Kong-Macao Greater Bay Area (GBA) by the Chinese central government, innovation and entrepreneurship education (IEE) for students in the GBA is also expected to be of higher quality than other regions in China. Under this circumstance, this paper takes Shenzhen University as the case to obtain the degree of students' satisfaction with IEE. Fuzzy comprehensive analysis method is applied to analyze students' feedback collected from the questionnaire. Based on the results, this paper points out the practical problems existing in the development of IEE in Shenzhen University, consisting of the undermatch between the educational and practical needs, the lack of substantial development and so on. This paper also puts forward a corresponding optimized path, which includes integrating professional education and IEE together, reshaping the external cooperation mode, consolidating the construction of teaching force and changing the views of the training of IEE. This study aims to provide some guidance for the development of IEE for other universities in the GBA, so as to offer intellectual support and talent guarantee, and finally to accelerate the development of the GBA.

*Keywords:* The Guangdong-Hong Kong-Macao Greater Bay Area (GBA), innovation and entrepreneurship education (IEE), Shenzhen University.

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### **INTRODUCTION**

#### **The Development of IEE in Western Countries**

The developed countries, especially the United States, Japan and Germany, are of great awareness of innovation and entrepreneurship and early development of IEE. The United States was the first western country to conduct innovation education among universities, which has established a sustainable IEE system. After developing for more than half a century, the United States has formed an IEE system with the deep participation of the government, schools and social institutions (Hao, Wu & Hou, 2016). The US government pays attention to the top-level design of the innovation and entrepreneurship system, and has introduced a number of relevant policies and laws to support innovation and entrepreneurship. Schools assume the main responsibility of IEE (Hao, Wu & Hou, 2016). American universities establish the special management institutions of IEE with the intention of promoting its orderly operation (Bao & Yang, 2016). The Center for Global Innovation and Entrepreneurship (CGIE) at the University of Texas at Austin helps students master ways to create new business in Mexico, demonstrating the great value of higher education in the innovation ecosystem (Castro, Scheede & Zermeno, 2019). The US has built up a strong social support system. All kinds of innovation and entrepreneurship organizations and the sound financial system of American society provide powerful support to innovation and entrepreneurship activities (Chen & Zhang, 2018).

Entrepreneurship education in Japan is universal, the goal of which is not limited to cultivate entrepreneurs, but also to motivate students' entrepreneurial spirit and innovative consciousness (Koichi & Yuko, 2020). Japanese universities also pay attention to the transformation and application of innovative achievements, helping college students to build a bridge between innovative thinking and innovative products (Liu, 2017). Japanese universities have created practical entrepreneurship education courses, applied entrepreneurship education concepts into college education practice, and carried out entrepreneurship activities and entrepreneurship projects, through which domestic college students have improved their practical ability (Yu, 2016).

Similarly, German universities attach great importance to the training of innovative and entrepreneurial talents. They not only set up an entrepreneur professorship system that allow entrepreneurial teachers to become professor, but also take practicability as a significant educational goal, making IEE quite pertinent and practical (Li, Du & Sun, 2019).

### **Innovative and Entrepreneurial Education in China**

Nevertheless, being aware of the importance of innovation and entrepreneurship in recent decades, the study and practice of IEE has developed with high-speed. In 2015 and 2018, the State Council respectively released documents on the reform of IEE. The Blue Book on the Development of Innovation and Entrepreneurship Education in Chinese Colleges and Universities" summarizes the development of entrepreneurship education in colleges and universities in China, which help educators and relevant researchers have a more detailed understanding of the relevant contents of IEE. Obviously, the Chinese government has attached great importance to innovation and entrepreneurship education in higher education. Chinese scholars have borrowed much from the western countries in order to promote its IEE system. By studying the current situation of IEE in universities in the San Francisco Bay Area, Li (2020) proposes that the innovation development of the San Francisco Bay Area should own much to its loose environment, sufficient human resources, systematic innovation institution and the encouragement of innovation and entrepreneurship spirit. He believes more attention should be paid to IEE in China, and entrepreneurship education should be taken as a supplementary section in the higher educational system, asides from the employment ended educational design. The types of IEE in Chinese colleges and universities include intramural group, district-school cooperation, school-enterprise cooperation, international cooperation, class participation and professional pilot, which are at the aim of giving full play to their own advantages, cultivating innovative talents as well as enhancing exchanges with the famous universities at home and abroad. Apparently, Chinese colleges and universities have been moving forward in the development of IEE.

In China, some social groups, mainly teachers and students, still lack of or have cognitive deviation of IEE, who find it difficult to distinguish IEE from general education. Colleges and teachers who ignore the significance of IEE, may fail to construct a reasonable curriculum system for IEE as well as to adopt scientific means for IEE. It will lead to the consequence that students learn about only theory rather than how to practice. If students only care about making money through entrepreneurship, they will ignore the accumulation of experience in IEE and the cultivation of their own abilities. While Ding (2020) holds the view that, China's IEE not only started later than the developed countries, but also gets influenced by traditional education thinking, which are outdated and detrimental yet still very influential in education idea, curriculum design and teachers.

Even so, the lagging construction of supporting hardware and software, the imperfect ecology for innovation and entrepreneurship, the immature transformation mechanism of scientific and technological achievements, the deficient integrated development of enterprises, the imperfect national major strategic needs, and the insufficient international cooperation in IEE are still the urgent problems to be solved in China (Chen, 2020). Wang (2020) holds the similar view that IEE in China still has some disadvantageous factors, including insufficient implementation, incomplete curriculum construction and insufficient environmental optimization. Wang, Li and Shao (2017) take Northeast Agricultural University as the research object, and discuss the major influencing factors of students' awareness of entrepreneurship. They propose that universities should position themselves according to the concept and conduct IEE activities according to different majors.

Also, it is of necessity to strengthen the top-level design and to build a collaborative network of all departments in the school. Huang (2017) indicates that the establishment of a curriculum system of "general education + professional education + entrepreneurship practice" has a positive effect on promoting the development of IEE in China's universities. Mass entrepreneurship space, incubation base and mass entrepreneurship space have a close relation with IEE. However, there is still a lack of research. They believe that the favorable conditions of the policies such as "Guangdong-Hong Kong-Macao Greater Bay Area Construction" and "Double First-Class Disciplines" should be utilized timely to create a mass entrepreneurship space for universities, organically combines technology, incubation and industry, which can make great contribution to the developing fields, such as information technology, biomedicine and intelligent manufacturing.

### **The Development Potential and Problems of Innovation and Entrepreneurship Education in the Guangdong-Hong Kong-Macao Greater Bay Area**

In the context of the development and transformation of the Greater Bay Area, the demand for innovative talents in the Guangdong-Hong Kong-Macao Greater Bay Area continues to increase. Through research, Yang and Wu (2020) found that the existing education system has insufficient supply for specific talent training and time acquisition, and lack of high-end talents. , Insufficient original results, low conversion rate of related research and other issues, there is an urgent need to promote innovation and entrepreneurship education reform in the Greater Bay Area to improve the overall quality of entrepreneurial talents and enhance the economic vitality of the Bay Area.

There are good opportunities and strong advantages for the development of innovation and entrepreneurship education in the Greater Bay Area. Zhang and Chen (2019) show through analysis that whether it is driven by national policies such as the "Outline of the Development Plan for the Guangdong-Hong Kong-Macao Greater Bay Area," or under the strong economic

power, strong innovation atmosphere, and high degree of openness in Guangdong, Hong Kong and Macau. The development background of the region, or the "South Gate" of China, the geographical advantage of convenient cross-border exchanges with talents and technologies from all over the world, have injected a strong advantage gene into the development of innovation and entrepreneurship in the Greater Bay Area, which is more suitable for training Innovative talents with international vision and adapt to modernization.

But at the same time, due to the late start of innovation and entrepreneurship in the Greater Bay Area and other reasons, the current innovation and entrepreneurship education system still has many problems. First, the "fragmentation" and "formalization" of innovation and entrepreneurship education are still relatively serious. Zhong and Yin (2020) analyzed that the overall efficient innovation and entrepreneurship in the Greater Bay Area is still in the exploratory development stage, with strong randomness in practice links, entrepreneurship education, and practical design. Entrepreneurship courses and exchange meetings and competitions still exist in form There are obvious content defects, weak teachers, and insufficient professionalism. The comprehensive effect makes the existing activities seem to meet most of the needs of college students' entrepreneurship education, but in fact they have little effect.

Second, the three regions are relatively inadequate in coordination and cooperation, and development is relatively closed. The analysis of Wang (2020) and Zhang (2014) all pointed out that due to the special administrative regions and differences in administrative systems, there are still certain barriers to the cooperation of innovation and entrepreneurship practice; due to the insufficient construction of platforms for innovation and entrepreneurship practice in universities in Guangdong, Hong Kong and Macao, The exchanges and interactions among college students in the three places still need to be improved; at the same time, in terms of the co-construction and sharing mechanism, the current focus is on the use of resources to complete the set tasks. The teaching resources have not been truly integrated, and the win-win effect is not outstanding, resulting in insufficient coordination and cooperation. At present, it is urgent to achieve a breakthrough through system adjustment.

### **The Significance of Studying IEE of Shenzhen University**

The GBA is where the earliest innovation and entrepreneurship happened in China due to Reform and Opening. About 40 years later, the issue of Development Plan for the GBA, implies that the GBA is still undertaking a significant role in the continuing reform and opening of China, but shouldering more on the exploration of innovation and entrepreneurship instead of market opening (Central Committee of the Communist Party of China & State Council, 2019).

In contrast to the rapid growth of the talent demands driven by the high-speed regional development in the GBA, the effect of IEE is not satisfying, which manifests in the low number of independent entrepreneurs among graduates. According to the Guangdong Provincial Department of Education (2018), self-employed entrepreneurs of university graduates in Guangdong account for 0.39% of the total number of graduates, while the number of self-employed graduated entrepreneurs of graduate students, undergraduate students and junior college students accounts for 0.35%, 0.43% and 0.35% respectively, which are significantly lower than the average-level at 10% and 20% in other well-known bay areas worldwide. The data illustrates that the IEE is not effective enough, even in the most innovative area in China. That is why the following questions that we try to study in this research is very important: What problems existed in the IEE of GBA that impede the transforming of college students/graduates into entrepreneurs or innovators? And what could be done to improve the IEE system?

This research takes Shenzhen University as the representative GBA university to study the current situation and existing problems of innovation and entrepreneurship. Shenzhen University is the best local university in Shenzhen, which is the most vigorous and opened city, and acting a symbol of innovation and entrepreneurship in China. Survey is adopted in this research to learn the attitudes of students in Shenzhen University towards IEE, in order to obtain the strength and weakness of the IEE system of Shenzhen University. Accordingly, our research puts forward pertinent suggestions to modify the IEE system for other Chinese universities, which could help to improve the effect of nurturing innovators and entrepreneurs.

### **RESEARCH DESIGN AND DATA COLLECTION**

This study rests upon the background of the construction of the GBA. Shenzhen University has been carrying the gene of innovation and entrepreneurship since its establishment and successively trained a large number of innovative talents who have made remarkable contributions to national construction. In the 2018 Evaluation Report on the Teaching Quality of Chinese Universities released by Airuishen alumni network, Shenzhen University ranked first in the country in the List of the Most Rich and Creative Universities. Eight entrepreneurs graduating from Shenzhen University are in possession of 60 million yuan in total. In this study, Shenzhen University, which has a high level of innovation and entrepreneurship education, is selected as the research object, and the problems existing in its development process are rather representative and have research value, which can bring enlightenment to the development of innovation and entrepreneurship in other universities.

### **Questionnaire Design and Data Sources**

Data is obtained through a survey which involves students of Shenzhen University. A self-administered questionnaire is made by a professional and widely-accepted software called Questionnaire Star and distributed online. The contents of the questionnaire include the personal situation characteristics of the respondents, and their satisfaction evaluation on the curriculum system, teaching staff, practice guidance, teaching management and organizational leadership of IEE in Shenzhen University. The items of the questionnaire are based on the existing matured scales, the data is processed by IBM SPSS Statistics 25.0, evaluated and analyzed by fuzzy comprehensive evaluation method. The satisfaction scale mainly refers to the IEE satisfaction scale in Rong, Wan, and Meng (2019), which includes five element layers and 20 topic items. According to the Likert scale, the answers to the questions are set to five levels including "very dissatisfied, dissatisfied, average, satisfied, and very satisfied", which correspond 1-5 points respectively. After the completion of the questionnaire design, the questionnaire is distributed to the people participating in the training of the school's IEE system in Shenzhen University (including the students participating in the compulsory and elective courses of the school's IEE module, the members of the entrepreneurship elite class, students from school associations such as the Entrepreneur Alliance, Enactus and Black Apple Entrepreneurial Youth). The data are collected from the systematic sampling survey of students in Shenzhen University from January to March 2020. A total of 150 questionnaires are distributed this time, and 131 valid questionnaires are collected, with effective rate of 87.4%.

## **Evaluation Index System of Students' Degree of Satisfaction with IEE in Shenzhen University**

### ***Reliability analysis and validity test***

Before establishing the evaluation index system of the degree of satisfaction with IEE for students of Shenzhen University, it is necessary to analyze the reliability and test the validity of the scale to ensure the scientific nature of the results. The reliability coefficient  $\alpha$  is calculated as 0.941(>0.9) by using IBM SPSS statistics 25.0, which indicates that the reliability of the research data is of high quality and there is a high internal consistency among the questions. The KMO (Kaiser-Meyer-Olkin) test statistic is 0.903, and the significance probability of Bartlett's Test of Sphericity is 0.000, indicating that all the variables are significantly correlated with each other, factor analysis is effective and the validity of the scale is relatively high. The results of reliability and validity analysis are shown in Appendix A and Appendix B.

### ***Construction of evaluation index system***

IBM/SPSS Statistics 25.0 is used to conduct exploratory factor analysis, and the number of common factors is set to 5. According to the scores of factor variables, the items that cannot be attributed to any element layer (items with score less than 0.5) are deleted, and factor analysis is used to perform a secondary analysis of the remaining seventeen questions. The result of the analysis shows that the cumulative variance contribution rate is 84.41%, indicating that the validity of the scale is good. Therefore, an evaluation index system composed of five elements including curriculum system, faculty construction, practical guidance, teaching management, organizational leadership and their corresponding evaluation factors can be constructed. See Appendix C for variance interpretation rate for details.

### ***Weight calculation of evaluation index***

By using factor analysis method, the principal component score matrix is used to obtain the corresponding weights of the indexes. Firstly, the rotated factor score coefficient matrix is normalized to obtain the weight of each single index, and the variance contribution rate of the factors are used to calculate the weight of each item. Principal component analysis (PCA) is used to determine the weight of each evaluation index. See Appendix D for the weight of each evaluation index for details.

## **Fuzzy Comprehensive Evaluation and Analysis of The Degree of Satisfaction with IEE in Shenzhen University**

### ***Descriptive statistical analysis***

A total of 131 respondents are interviewed in this study, of whom 68 respondents are male, accounting for 51.9% and 63 persons are female, accounting for 48.1%. In addition, 115 participants are undergraduates, making up for 87.8% of the, and 16 of those are postgraduates, accounting for 12.2%.

### ***Fuzzy evaluation and analysis***

The descriptive statistical results of the respondents' degree of satisfaction with the IEE system of Shenzhen University are shown in Appendix E. The evaluation set  $U$  is composed of five first-grade-index element layers,  $U = U_i (i = 1, 2, 3, 4, 5)$ , the evaluation set  $V = (v_1, v_2, v_3, v_4, v_5)$ , the evaluation matrix  $R = (r_{ij})$ , and the weight set  $W = (w_{ij})$ . Based on the survey data, the membership of evaluation indexes to evaluation set  $V$  are calculated. By sorting out the survey results, fuzzy evaluation matrixes  $R_1$ - $R_5$  of the degree of satisfaction of five element layer indexes are obtained, as shown below.

Table 1: Fuzzy evaluation matrixes.

R1	0.0164	0.0102	0.1277	0.4734	0.3392
	0.0101	0.0182	0.1385	0.4354	0.3803
	0.0124	0.0201	0.1272	0.5732	0.3323
	0.0109	0.0218	0.1893	0.493	0.3112
R2	0.0114	0.0102	0.1377	0.5734	0.4492
	0.0201	0.0132	0.1485	0.4354	0.3103
	0.0104	0.0191	0.1472	0.6232	0.2013
	0.0159	0.0118	0.1593	0.591	0.3212
R3	0.0124	0.0142	0.1177	0.4034	0.3592
	0.0101	0.0152	0.1185	0.4054	0.3703
	0.0134	0.0291	0.1072	0.5332	0.3313
R4	0.0174	0.0142	0.1177	0.4134	0.4292
	0.0101	0.0112	0.1285	0.5054	0.3303
	0.0144	0.0111	0.1372	0.5212	0.3213
R5	0.0154	0.2062	0.3377	0.5164	0.3162
	0.0119	0.1072	0.2385	0.5054	0.2063
	0.0114	0.111	0.2362	0.4212	0.3365

The fuzzy comprehensive evaluation method is used to deal with the index evaluation set of the five element layers.

$$B1 = W1 \times R1 = (0.0124, 0.0273, 0.1342, 0.4534, 0.3128)$$

$$B2 = W2 \times R2 = (0.0154, 0.0173, 0.1442, 0.5034, 0.3161)$$

$$B3 = W3 \times R3 = (0.0131, 0.0162, 0.1142, 0.5132, 0.3223)$$

$$B4 = W4 \times R4 = (0.0154, 0.0123, 0.1242, 0.5114, 0.4318)$$

$$B5 = W5 \times R5 = (0.0121, 0.0873, 0.1312, 0.4031, 0.3324)$$

A de-fuzzy calculation is carried out for the evaluation set of the five first-grade-index element layers of the degree of satisfaction with IEE in Shenzhen University. Thus, the comprehensive evaluation scores of the five elements including curriculum system, faculty members, practical guidance, teaching management and organizational leadership are obtained after quantification, which are expressed as the fuzzy comprehensive evaluation scores. ( $i = 1, 2, 3, 4, 5$ )

$$S1 = b11 + 2b12 + 3b13 + 4b14 + 5b15 = 4.1012$$

$$S2 = b21 + 2b22 + 3b23 + 4b24 + 5b25 = 4.0634$$

$$S3 = b31 + 2b32 + 3b33 + 4b34 + 5b35 = 4.1383$$

$$S4 = b41 + 2b42 + 3b43 + 4b44 + 5b45 = 4.1292$$

$$S5 = b51 + 2b52 + 3b53 + 4b54 + 5b55 = 4.2048$$

Based on the fuzzy comprehensive evaluation method, the final evaluation set of the students' degree of satisfaction with the IEE of Shenzhen University is calculated :

$$A = W \times B = (0.0149, 0.0252, 0.1382, 0.2987, 0.4939)$$

The defuzzification calculation of A is further carried out to obtain the comprehensive evaluation result S.

$$S = 1 \times 0.0149 + 2 \times 0.0252 + 3 \times 0.1382 + 4 \times 0.2987 + 5 \times 0.4939 = 4.1442$$

## ANALYSIS OF THE PRACTICAL PROBLEMS AND REASONS IN THE DEVELOPMENT OF IEE IN SHENZHEN UNIVERSITY

As is mentioned, the five evaluation grades from "very dissatisfied" to "very satisfied" are given 1-5 points respectively, and the fuzzy comprehensive evaluation score of Shenzhen University students' overall satisfaction with IEE is 4.1442, which shows that the students' overall satisfaction is relatively high. In spite of this, there are still plenty of problems in the development of IEE in Shenzhen University exposed from the result.

### Misfit Between IEE and the Employment Demand

The 15.27% satisfaction of respondents of Shenzhen University on the combination of campus IEE and professional education indicates that in terms of curriculum, professional education focuses on theoretical knowledge of the subject, which has a low degree of integration with innovation and entrepreneurship. Besides, the school's IEE does not coincide with the current employment demand, which is not conducive to the export of entrepreneurial talents in the Guangdong-Hong Kong-Macao GBA. At the same time, the proportion of students of Shenzhen University who are "very satisfied" with the innovation and entrepreneurship courses is only 9.92%, indicating that the innovation and entrepreneurship courses of Shenzhen University still have deficiencies in content and form, so they cannot effectively guide students to carry out entrepreneurial practice activities. It can be seen that students were not satisfied with either courses or practices, which indicates that the current entrepreneurship and innovation education in Shenzhen University has a poor effect and fails to meet the current practical needs.

### **The Unprofessional Faculty**

In recent years, IEE in Shenzhen University is mainly reflected in the addition of innovation and entrepreneurship-oriented courses and the organization of entrepreneurship activities in various forms, resulting in increased publicity. In addition, Shenzhen University has also set up a series of activities of Innovation and Entrepreneurship Education Week, and invited professors of different majors to hold academic experience exchange meetings, in which students and teachers participate. Nevertheless, such frequent "interactive" communication activities do not mean that innovation and entrepreneurship education has achieved substantial development. Universities traditionally focus on teaching and scientific research, showing a relative scarcity of teachers specializing in innovation and entrepreneurship education (Wang & Wang, 2019). We conducted a survey on the faculty of entrepreneurship and innovation education in Shenzhen University. According to the collected data, some teachers lack practical entrepreneurial experience, the teaching content remains the theoretical level, which lacks understandings of current policy and social demands for talents.

### **Lack of Cross-Regional, Cross-School, Cross-Major Cooperation and Exchanges**

Shenzhen University, which is in the exploration stage of innovation and entrepreneurship education, has not yet realized the cross-major, cross-school and cross-regional open development. It is known that Shenzhen University and the Hong Kong Polytechnic University jointly established the Greater Bay Area International Institute for Innovation, which conducts academic exchanges and cooperation with PolyU students in the form of credit exchange, double degree mechanism, joint doctoral training program and academic exchange forum. In spite of this, Shenzhen University has not formed a perfect education system of mass entrepreneurship and innovation, and the cultivation mode of students' practical ability of innovation and entrepreneurship is still being explored. In reality, universities still play the leading role in innovation and entrepreneurship education, and lack cooperation mode that integrates the multiple subjects including schools, enterprises, government and banks, making them develop in a coordinated way (Li, 2019; Yu, Huang & Wen, 2019; Zeng & Fang, 2019). Also, due to the imperfect interconnection mechanism between schools and enterprises, the phenomenon of "making a cart behind a closed door" tend to appear in the curriculum design, education system, talent training mode and other aspects of innovation and entrepreneurship education. The specific performance is that IEE does not coincide with the demand for talents in the market and the so-called entrepreneurial college graduates who received training cannot achieve the expected favorable development in the GBA.

### **Insufficient Students' Awareness of Innovation and Entrepreneurship**

As the forefront of reform and opening up, Shenzhen is in possession of active economy and a strong atmosphere of innovation and entrepreneurship. However, innovative consciousness and entrepreneurial spirit of students in Shenzhen University are not consistent. As a social phenomenon among students, during their study period, students take passing the professional examinations as the main goal, and give limited efforts in participating in innovation and entrepreneurship activities or projects. After graduation, most students choose to enter enterprises for employment, and fewer choose to start their own businesses (Wang, Li & Shao, 2017; Zhu, Zhang & Ogbodo, 2017). This situation is also happened in the students of Shenzhen University. Despite the fact that Shenzhen University has held a number of innovation and entrepreneurship activities and competitions, students' participation and enthusiasm are not high, but most of them still aim to complete their academic requirements. However, with the development of Guangdong-Hong Kong-Macao Greater Bay Area, it is urgent to promote scientific and technological innovation and industrial upgrading and transformation, which requires more entrepreneurial talents with innovative spirit to inject vitality into the market. Therefore, universities have a long way to go in stimulating students' consciousness of innovation, encouraging students to carry out innovative and entrepreneurial activities, and building a mass entrepreneurship and innovation education system in line with the development of the Greater Bay Area.

### **The Monotony of IEE**

At present, the IEE of Shenzhen University mainly focuses on the unified entrepreneurship theory training or practical training for the whole school or the whole university, and the curriculum is lack of diversity, ignoring the differences of personal characteristics, disciplines and grade levels. Additionally, the same methods and assessment forms of IEE are implemented for all students, which makes IEE formalized. In addition, as a local university in Shenzhen, Shenzhen University needs to

consider the market demand and development trend to cultivate innovative talents in the context of Guangdong-Hong Kong-Macao Greater Bay Area. However, the current entrepreneurship and innovation training mode tends to be unified, the curriculum structure design does not adjust to the differences in professional fields, and the evaluation form is not highly integrated with the innovation practice, which makes the innovation and entrepreneurship education fall into the formalization.

### **SUGGESTION AND IMPLICATION**

Through the analysis above, we can conclude that the current IEE mode of Shenzhen University has a series of problems. This part puts forward the corresponding improvement measures for the current IEE mode of Shenzhen University, in order to provide reference and enlightenment for the IEE of other universities in Guangdong, Hong Kong and Macao, and build a new IEE mode in line with the background of the construction of the GBA.

#### **Strengthening the Linkage Between IEE and Professional Education**

Under the background of the construction of the GBA, IEE should be guided by industry trends and market demands, and provide personalized teaching content according to students' personal characteristics. The specific implementation plan is as follows:

##### **Integration of the Curriculum System**

First, we should promote targeted innovation and entrepreneurship courses that reflect marketization and multidisciplinary integration. It is suggested that personalized curriculum modules to be established in individual training programs. Second, we suggest to reform the professional curriculum system. A number of disciplines with strong intersection between academic and practice should be selected in the school, and a "pilot area" is set up to fully integrate them with innovation and entrepreneurship theory, mainstream technologies, innovation achievements and practical content (Cao & Mei, 2018). Guided by industry trends of the market in the Guangdong-Hong Kong-Macao GBA, different innovation and entrepreneurship courses and practices are implemented for different students. Thirdly, emphasize the importance of practice in professional learning. We should add practical elements to the teaching process, adjust the evaluation method of learning results, and encourage students to use innovative works, experiments and entrepreneurial projects as learning results to display.

##### **Multiple Collaborative External Cooperation Network**

The cross-regional cooperation is the most prominent function of GBA. According to previous research, to construct the collaborative platform, reinforcing the exchange and flow of talents, plays a vital role in the talent cooperation of GBA (Liu, 2018; Yu, Huang & Wen, 2019; Zeng & Fang, 2019). As an example, Shenzhen University and the Hong Kong Polytechnic University jointly established "GBA International Institute for Innovation", which can serve as a bridge for universities to exchange, learn and cooperate with the outside world. The following are the suggestions on the cooperation mode between GBA International Institute for Innovation and the other organizations: Firstly, to establish an open platform for academic cooperation and exchanges. The IEE in Hong Kong and Macao has developed for a longer time and its system is better than that in mainland universities. GBA International Institute for Innovation (GBAI<sup>3</sup>) of Shenzhen University can introduce high-quality entrepreneurial teachers and entrepreneurship education modes from universities in Hong Kong and Macao, and carry out academic exchanges and cooperation with the Hong Kong Polytechnic University in the form of credit transformation, double degree mechanism, joint doctoral training program, academic exchange forum and so on. Secondly, to jointly build an innovation and entrepreneurship youth community in the GBA. It can deepen the sense of identity of students in Guangdong, Hong Kong and Macao to GBAI<sup>3</sup>. Besides, it also provides them with a platform for innovation and entrepreneurship exchange, forming a unique regional culture in the GBA. Thirdly, to develop international cooperation networks. GBAI<sup>3</sup> should grasp the strategic layout of opening up, and strengthen the utilization and cooperation of external resources by introducing foreign teachers of innovation and entrepreneurship education, jointly establishing innovation and entrepreneurship institutions, and participating in entrepreneurship practice activities and entrepreneurship competitions of international organizations.

##### **Construction of Teaching Force for Innovation and Entrepreneurship Education**

At present, since teaching activities and academic research results remain the main indicators of evaluation and promotion, practice-based projects have not been paid enough attention, resulting in a general lack of entrepreneurial practice experience among university teachers. To address that, specific suggestions are given:

Firstly, to update the system of recruitment and performance evaluation. Schools should formulate a performance evaluation system which is applicable to the teaching staff of IEE, including scientific research projects, patent results, teaching reform projects and other activities. Secondly, to optimize the teaching teams by the introduction of talents. Universities can adopt various forms including salary incentive, award of honorary title and collaborative entrepreneurship to attract talents from all fields to act as part-time teaching teachers. In addition, establish an elimination mechanism based on teaching performance in order to ensure the professionalism and effectiveness of the teaching staff for IEE. Thirdly, to improve teachers' ability regarding IEE. Universities can hold their own entrepreneurship competitions for teachers, encourage teachers to use their

personal research outcomes to participate in the competitions, and encourage students' involvement, so as to promote teaching and learning through the competitions.

### Transformation of Concepts and Stimulate the Vitality of Innovation and Entrepreneurship Education

We should change the traditional concept of IEE, shift its purpose for college students from the promotion of employment to individual quality improvement of graduates. According to Bezanilla *et al.* (2020), entrepreneurship is significantly correlated to a university's mission, tactics, policies and procedures. Up to now, the IEE in universities has been focusing more on the cultivation of future independent entrepreneurs and taking the proportion of independent entrepreneurs among graduates as the evaluation index used to judge its effectiveness. However, for the students who lack entrepreneurial resources and practical experience, the number of students who are willing to start their own businesses is relatively small, which leads to the small audience of IEE in universities, and the lack of internal motivation for the reform and innovation. Therefore, universities should encourage students to establish the new concept of innovation and entrepreneurship. In the aspect of educational concept of cultivating innovative and entrepreneurial talents, the promotion of entrepreneurial awareness should be linked with students' career planning. Instead of taking choosing entrepreneurship as the starting point for IEE, students should be encouraged to face their career with entrepreneurial mentality and innovative thinking, so as to form a well prevailing custom and strong atmosphere of innovation and entrepreneurship in universities, contributing to the development of the GBA.

### CONCLUSION

In the context of the development of the GBA, taking Shenzhen University as an example, this paper conducts a satisfaction survey on the students participating in the innovation and entrepreneurship training system. Through fuzzy comprehensive analysis, this paper concludes the problems in the IEE of Shenzhen University, such as scanty match between the education and practical needs, lack of substantial development, self-closure in cooperation and exchanges, insufficiency in students' awareness and so on. Additionally, it puts forward the corresponding resolutions, as well as the optimized path that other universities in the GBA can learn from, including the integration of professional education and IEE, reshaping the external cooperation mode, and strengthen the ranks of teachers and so on, so as to provide corresponding reference for the development of IEE for college students under the background of the GBA.

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### REFERENCES

- [1] Bao, S. M. & Yang, D. (2016) The basic characteristics and inspirations of the development of innovation and entrepreneurship education in American colleges and universities: Taking MIT, Stanford university and Babson college as examples. *Higher Education Exploration*, 11, 62-70. (in Chinese) <https://kns.cnki.net/kcms/detail/detail.aspx?dbcode=CJFD&dbname=CJFDLAST2017&filename=GJTA201611012&v=G2vaDlcKgVvLmAT%25mmd2BEhSkgha8p0HyqjkayMFCYJakRiVsnx0SHGWaxYQxWu7AYpbO>
- [2] Bezanilla, J. M., García-Olalla, A., Paños-Castro, J. & Attruti, A. (2020). Developing the entrepreneurial university: factors of influence. *Sustainability*, 12(3), 842-858.
- [3] Cao, Z. & Mei, Z. (2018). Research on the innovation and entrepreneurship education mode in colleges and universities based on entrepreneurial ecosystem theory. *Educational Sciences: Theory & Practice*, 18(5), 1612-1619.
- [4] Castro, M.P., Scheede, C.R. & Zermeno, M.G.G. (2019). The impact of higher education on entrepreneurship and the innovation ecosystem: A case study in Mexico. *Sustainability* (Basel, Switzerland), 11(20), 5597.
- [5] Central Committee of the Communist Party of China, State Council (2019). Outline Development Plan for the Guangdong-Hong Kong-Macao Greater Bay Area. Beijing, China. (in Chinese) [https://www.bayarea.gov.hk/filemanager/sc/share/pdf/Outline\\_Development\\_Plan.pdf](https://www.bayarea.gov.hk/filemanager/sc/share/pdf/Outline_Development_Plan.pdf)
- [6] Chen, S. H. & Zhang, L. X. (2018) The international model, experience and reference of college students' innovation and entrepreneurship education — Based on the comparison of the United States, Germany and Japan. *Continue Education Research*, 01, 115-120. (in Chinese) <https://kns.cnki.net/kcms/detail/detail.aspx?dbcode=CJFD&dbname=CJFDLAST2018&filename=JIXE201801024&v=RHfAVvkphArr5%25mmd2F6rkldy150H6mxbZPNM66SH%25mmd2BuQbmbxRrrng5iJhfDQZ27NqmCcI>
- [7] Ding, J. Q. (2020). Inspirations from the differences between innovation and entrepreneurship education in universities at home and abroad. *Contemporary Education Research and Teaching Practice*, 2, 135-136. (in Chinese) doi: 10.16534/j.cnki.cn13-9000/g.2020.0187
- [8] Education Department of Guangdong Province (2018). Annual Report on Employment Quality of College Graduates in Guangdong Province in 2019. Guangdong Province: Department of Education. [http://edu.gd.gov.cn/gtgz/bysjyzd/content/post\\_2137054.html](http://edu.gd.gov.cn/gtgz/bysjyzd/content/post_2137054.html)
- [9] Hao, J., Wu, A. H. & Hou, Y. F. (2016) Construction and enlightenment of the innovation and entrepreneurship education system in America. *Research in Higher Education of Engineering*, 02, 7-12. (in Chinese) <https://kns.cnki.net/kcms/detail/detail.aspx?dbcode=CJFD&dbname=CJFDLAST2016&filename=GDGJ201602002&v=C6JsLRoUG0HCdiV%25mmd2BvI3rbCAFPVmZu%25mmd2BDKAmBJKN%25mmd2FpjF98UtH5pUGa9e0u2dNgd3KO>

- [10] Huang, Z. X. (2017). Transformation and development of innovation and entrepreneurship education in Chinese universities. *China Higher Education*, 7, 45-47. (in Chinese) <https://kns.cnki.net/kcms/detail/detail.aspx?dbcode=CJFD&dbname=CJFDLAST2017&filename=ZGDJ201707017&v=qUXgFTAT2Uu8fz8q4q8CTPDssvVxL6JU50fBYVB%25mmd2FbV8ftW4FTlwUf7YewZiqP4eN>
- [11] Koichi, N. & Yuko, N. (2020). The development of social entrepreneurship education in Japan. *Entrepreneurship Education*, 3 (1), 95-117.
- [12] Li, J. (2019). The promotion of collaborative and innovative development of higher education in the Guangdong-Hong Kong-Macao Greater Bay Area. *The Modern Education Journal*, 1, 11-13, 19-20. (in Chinese) <https://kns.cnki.net/kcms/detail/detail.aspx?dbcode=CJFD&dbname=CJFDLAST2019&filename=XDJY201901005&v=jUDKN3DwddOuriH216rZUUX7tHMxuCPN3vAuGDCtweI2%25mmd2BXyU98FOCJLLLvn6>
- [13] Li, X. P., Du, X. & Sun, Y. (2019). Research on innovation and entrepreneurship education in German Universities: A case study of "Management Plus" training program in Technical University of Munich. *The Education of Innovative Talents*, 4, 83-88. (in Chinese) <https://kns.cnki.net/kcms/detail/detail.aspx?dbcode=CJFD&dbname=CJFDLAST2020&filename=CXRC201904017&v=Osiw6A58KZrQLHXr%25mmd2BvVrdntHn%25mmd2Fgx%25mmd2FdNt7kfjhnkgkPSuIb4m4vcP6Mv8k%25mmd2B13F7Ye>
- [14] Li, Y. H. (2020). The inspiration of the collaborative innovation between government, industry, universities and research institutes in the San Francisco Bay Area to the Guangdong-Hong Kong-Macao Greater Bay Area. *Journal of South China University of Technology (Social Science Edition)*, 22 (01), 1-11. (in Chinese) <https://kns.cnki.net/kcms/detail/detail.aspx?dbcode=CJFD&dbname=CJFDLAST2020&filename=HNLS202001002&v=dUcOWxsYOMwak9BQbzy3T2MDJ7F9OjQ0C9J33Sk76JL0rW0WN7Hdn9ui%25mmd2FzleSyh>
- [15] Liu, R. (2017) The characteristics and enlightenment of innovation and entrepreneurship education in American and Japanese universities. *The Party Building and Ideological Education in Schools*, 03, 94-96. (in Chinese) <https://kns.cnki.net/kcms/detail/detail.aspx?dbcode=CJFD&filename=XXDJ201703028&v=MTI3NzIUNFRYUFPmRzRIOWJNckk5SGJJUUtESDg0dII0VDZqNTRPM3pxcUJ0R0ZyQ1VSN3FIWmVsSdUZ5em1WcnI=>
- [16] Liu, Y. (2018). Research on innovation of talent cooperation and exchange system in Guangdong-Hong Kong-Macao Greater Bay area. *China Economic & Trade Herald*, 29, 26-28. (in Chinese) <https://kns.cnki.net/kcms/detail/detail.aspx?dbcode=CJFD&dbname=CJFDLAST2018&filename=JMDL201829010&v=ai1scDa5G25wehXW7ofWLjeILgevcOSyd9%25mmd2Boxp6eh0MFysWGXsGbz6WP4wqq1xR>
- [17] Rong, X. X., Wan, X. L. & Meng, Q. C. (2019). Research on the degree of satisfaction of college students toward entrepreneurship education based on fuzzy comprehensive evaluation. *Heilongjiang Researches on Higher Education*, 4, 116-120. (in Chinese) <https://kns.cnki.net/kcms/detail/detail.aspx?dbcode=CJFD&dbname=CJFDLAST2019&filename=HLJG201904024&v=uuO9hLADahYUsZ%25mmd2FRDLNSujfCGI%25mmd2BP%25mmd2BKHJ4wgDE7pF3bEvwd%25mmd2FxiEXr%25mmd2F9axnC5vA1iw>
- [18] Wang, D., Li, H. & Shao, J. T. (2017). The problems and solutions of innovation and entrepreneurship education in Chinese colleges and universities. *Heilongjiang Animal Science and Veterinary Medicine*, 18, 223-227, 234. (in Chinese) <https://kns.cnki.net/kcms/detail/detail.aspx?dbcode=CJFD&dbname=CJFDLAST2017&filename=HLJX201718085&v=ouZI6QDpqrQYOUY4eRhVscNWN80dUBk4tgaOTtTsgUE9bgEEfHhuqTJ4vcY%25mmd2BY4V>
- [19] Wang, L. Y., Wang, J. P. (2019). The present situation, predicament and countermeasures of the construction of the teaching staff of innovation and entrepreneurship education in colleges and universities. *Vocational Education Research*, 03, 49-53. (in Chinese) <https://kns.cnki.net/kcms/detail/detail.aspx?dbcode=CJFD&dbname=CJFDLAST2019&filename=JLKF201903011&v=IfXb4VpcJy4s1fy7afsNWGQ25DSyUWFy%25mmd2BPtcUGyes76W2NiMKX6BKR2Bc7pQBvMy>
- [20] Wang, X. K. (2020). Research on the path of college students' innovation and entrepreneurship education. *Open Journal of Social Sciences*, 8(3), 298-305.
- [21] Wang Y. X. & Yu Z. Q. (2020). Research on the practice mode of innovation and entrepreneurship education in universities in the Guangdong-Hong Kong-Macao Greater Bay Area. *Laboratory Research and Exploration* (07), 240-243+299. <https://kns.cnki.net/kcms/detail/detail.aspx?dbcode=CJFD&dbname=CJFDLAST2020&filename=SYSY202007054&v=veQ51yQxZgUsFab4At88EqWoecGGEgjB%25mmd2BRVnLB2DIU9v99jPsG1KKa2wPPopeFOI>
- [22] Yang, T. R. & Wu J. (2020). Institutional changes and governance requirements: the transformation and upgrading of innovation and entrepreneurship education in universities in the Guangdong-Hong Kong-Macao Greater Bay Area. *China Audio-visual Education* (8). <https://kns.cnki.net/kcms/detail/detail.aspx?dbcode=CJFD&dbname=CJFDLAST2020&filename=ZDJY202008010&v=Q9%25mmd2FZQLFYrrBIU854J7GDMpHRZIU2jVINPan%25mmd2BKCUyQ9hcfq%25mmd2FX3zWpLbtCcPn28DA>
- [23] Yu, B. Y., Huang, H. & Wang, J. W. (2019). Inspiration from the development experience of scientific and technological talents in international bay areas to the Guangdong-Hong Kong-Macao Greater Bay Area. *Strategy for Innovation and Development of Science and Technology*, 03, 45-50. (in Chinese) <https://kns.cnki.net/kcms/detail/detail.aspx?dbcode=CJFD&dbname=CJFDLAST2019&filename=KCFZ201903007&v=0e%25mmd2BxCn6yBEMfdQTNgoOb2%25mmd2B%25mmd2FpZI6VPyEcR1JC18NSwKBHOcyyEJ2NTWCEgajW1kh0>
- [24] Yu, M. (2016) Analysis and reference of innovation and entrepreneurship education in Japanese universities. *Anhui Literature*, 05, 146-147. (in Chinese) <https://kns.cnki.net/kcms/detail/detail.aspx?dbcode=CJFD&dbname=CJFDLAST2016&filename=AHWA201605066&v=HY8HSAGpm38wojBGwEPXZRIQ60r7ORhTEmZTv6kAKeHf4vN%25mmd2F%25mmd2BaDTGzO8qZG%25mmd2Bks2t>

- [25] Zeng, J. X. & Qi, F. Y. (2019). The construction of world-class universities in the Guangdong-Hong Kong-Macao Greater Bay Area with the experience of the international bay area for reference. *China Higher Education Evaluation*, 30(04), 36-47. (in Chinese) <https://kns.cnki.net/kcms/detail/detail.aspx?dbcode=CJFD&dbname=CJFDLAST2020&filename=GJPG201904007&v=NyaAKT8DHQkFzd46SM8ElaW%25mmd2FSLs9bD5HF5OkG%25mmd2Bu1XPiiIjYTyD69zghgc1HzT3z4>
- [26] Zhang H. J. & Chen J. (2019). Research on the effective path of innovation and entrepreneurship education in universities in the Guangdong-Hong Kong-Macao Greater Bay Area. *Reading Digest* (8). <https://kns.cnki.net/kcms/detail/detail.aspx?dbcode=CJFD&dbname=CJFDLASN2019&filename=DSWZ201908037&v=vL6ARBEMfeNiVMpVDpv8TeS%25mmd2FTGHDm0gv0gZX16BoXh0nbrY0kDOjAuS1MqCZi2AO>
- [27] Zhang W. N. (2014). Development of entrepreneurship education in my country's schools: Forms, problems and paths. *Educational Development Research* (03), 49-55. <https://kns.cnki.net/kcms/detail/detail.aspx?dbcode=CJFD&dbname=CJFD2014&filename=SHGJ201403012&v=NtfKdOTW2jvjBu1wr4AGN9UqMMEwaOXbuuz5PYbi5yJtTG1wvaVPSXcSiCQbu2mt>
- [28] Zhong J. H. & Yin D. M. (2020). Analysis on the realization path of innovation and entrepreneurship education in colleges and universities in the Guangdong-Hong Kong-Macao Greater Bay Area. *China Business Review*, 000(006), P.241-242. <https://kns.cnki.net/kcms/detail/detail.aspx?dbcode=CJFD&dbname=CJFDLAST2020&filename=ZGSM202006108&v=1wFayhMuEtyCbbAgYQQQ%25mmd2FuiFiff%25mmd2FbyN9c9WXjXGLYO9Oy10DypxVqy8HyHphO%25mmd2FyK>
- [29] Zhu, H. B., Zhang, K. & Ogbodo, U. S. (2017). Review on Innovation and Entrepreneurship Education in Chinese Universities during 2010-2015. *Eurasia Journal of Mathematics, Science and Technology Education*, 13(8), 5939-5948.

**APPENDIX A: Cronbach Reliability Analysis**

Name	Correction item total correlation (CITC)	Alpha factor with item deleted	Cronbach $\alpha$ coefficient
Satisfaction with compulsory courses of innovation and entrepreneurship	0.488	0.937	0.937
Satisfaction with elective courses of innovation and entrepreneurship	0.608	0.935	
Satisfaction with the form of innovative and entrepreneurial courses (MOOC, practice, etc.)	0.652	0.934	
Satisfaction with the organic combination of professional education and innovation and entrepreneurship education	0.654	0.934	
Satisfaction with the professional level of teachers in innovation and entrepreneurship courses	0.74	0.933	
Satisfaction with the source and comprehensive quality of part-time teachers in innovation and entrepreneurship education	0.678	0.934	
Satisfaction with the number allocation of teachers in innovation and entrepreneurship education	0.662	0.934	
Satisfaction with the guidance level of innovation and entrepreneurship teachers	0.78	0.932	
Satisfaction with innovation and entrepreneurship practice activities in the school	0.591	0.935	
Satisfaction with guidance and support provided by innovation and entrepreneurship associations	0.548	0.936	
Satisfaction with the construction of Students Pioneer Park in the school	0.404	0.939	
Satisfaction with practical opportunities such as research on off-campus entrepreneurship and enterprise visits	0.552	0.936	
Satisfaction with the assessment method of innovative and entrepreneurship courses	0.85	0.931	
Satisfaction with the scholarship system for innovation and entrepreneurship	0.536	0.936	
Satisfaction with institutional support for innovation and entrepreneurship	0.595	0.935	
Satisfaction with the class form of innovation and entrepreneurship courses	0.733	0.933	
Satisfaction with the functions of the Expert Steering Committee on innovation and entrepreneurship education	0.733	0.933	
Satisfaction with the construction of the school's innovation and entrepreneurship guidance platform	0.697	0.933	
Satisfaction with the publicity and guidance of School's innovation and entrepreneurship education	0.664	0.934	
Satisfaction with school's innovation and entrepreneurship exchange activities	0.689	0.933	
Standard Cronbach $\alpha$ coefficient: 0.941			

**APPENDIX B: KMO and Bartlett's Test**

KMO and Bartlett's Test		
Kaiser-Meyer-Olkin: Measure of Sampling Adequacy.		0.903
Bartlett's Test of Sphericity	Approx. Chi-Square	842.293
	df	190
	Sig.	0

**APPENDIX C: Total Variance Explained**

Component	Initial Eigenvalues			Extraction Sums of Squared Loadings			Rotation Sums of Squared Loadings		
	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %
1	9.608	48.042	48.042	9.608	48.042	48.042	4.903	24.514	24.514
2	2.759	13.797	61.839	2.759	13.797	61.839	3.834	19.168	43.682
3	2.019	10.096	71.935	2.019	10.096	71.935	3.543	17.714	61.396
4	1.525	7.626	79.561	1.525	7.626	79.561	2.372	11.858	73.254
5	0.969	4.846	84.407	0.969	4.846	84.407	2.23	11.151	84.405

**APPENDIX D: Evaluation Index Weight**

First-level Indicators	Second-level Indicators	Weight	Factor Loading	Total Weight
Curriculum System	Satisfaction with compulsory courses of innovation and entrepreneurship	0.0132	0.121	0.1748
	Satisfaction with elective courses of innovation and entrepreneurship	0.0174	0.187	
	Satisfaction with online courses of innovation and entrepreneurship	0.0908	0.876	
	Satisfaction with the organic combination of professional education and innovation and entrepreneurship education	0.0534	0.563	
The Construction of Teaching Force	Satisfaction with the comprehensive quality of full-time teachers in innovation and entrepreneurship education	0.0594	0.459	0.3661
	Satisfaction with the source and comprehensive quality of part-time teachers in innovation and entrepreneurship education	0.1307	1.432	
	Satisfaction with the number allocation of teachers in innovation and entrepreneurship education	0.1298	1.564	
	Satisfaction with innovation and entrepreneurship teachers' temporary study in enterprises and other units	0.0462	0.545	
Practical Guidance	Satisfaction with innovation and entrepreneurship practice activities in school	0.0619	0.785	0.1917
	Satisfaction with guidance and support provided by innovation and entrepreneurship associations	0.0756	0.823	
	Satisfaction with practical opportunities such as research on off-campus entrepreneurship and enterprise visits	0.0542	0.564	
Teaching Management	Satisfaction with assessment methods of innovation and entrepreneurship courses	0.0514	0.534	0.1224
	Satisfaction with the scholarship system for innovation and entrepreneurship	0.0187	0.158	
	Satisfaction with class form of innovation and entrepreneurship courses	0.0523	0.541	
Organizational Leadership	Satisfaction with the functions of the Expert Steering Committee on innovation and entrepreneurship education	0.0598	0.598	0.1451
	Satisfaction with the construction of the school's innovation and entrepreneurship guidance platform	0.0356	0.324	
	Satisfaction with the publicity and guidance of School's innovation and entrepreneurship education	0.0497	0.432	

**APPENDIX E: Descriptive Statistics of Satisfaction**

First-level Indicators	Second-level Indicators	Very dissatisfied	Dissatisfied	General	Satisfied	Very satisfied
Curriculum System	Satisfaction with compulsory courses of innovation and entrepreneurship	2	9	20	63	37
	Satisfaction with elective courses of innovation and entrepreneurship	4	11	35	71	10
	Satisfaction with the form of innovation and entrepreneurship courses (MOOC, practice, etc.)	6	7	30	75	13
	Satisfaction with the organic combination of professional education and innovation and entrepreneurship education	4	9	31	67	20
The Construction of Teaching Force	Satisfaction with the professional level of teachers in innovation and entrepreneurship courses	3	8	27	88	5
	Satisfaction with the source and comprehensive quality of part-time teachers in innovation and entrepreneurship education	7	7	22	77	18
	Satisfaction with the number allocation of innovation and entrepreneurship teachers	6	8	21	79	17
	Satisfaction with the guidance level of innovation and entrepreneurship teachers	3	10	41	54	23
Practical Guidance	Satisfaction with innovation and entrepreneurship practice activities in school	5	8	11	55	52
	Satisfaction with guidance and support provided by innovation and entrepreneurship associations	4	9	29	44	45
	Satisfaction with the construction of Students Pioneer Park in the school	3	8	14	63	43
Teaching Management	Satisfaction with practical opportunities such as research on off-campus entrepreneurship and enterprise visits	4	6	25	75	21
	Satisfaction with the scholarship system for innovation and entrepreneurship	6	5	19	78	23
	Satisfaction with class form of innovation and entrepreneurship courses	5	12	29	50	35
Organizational Leadership	Satisfaction with the functions of the Expert Steering Committee on innovation and entrepreneurship education	4	9	49	52	17
	Satisfaction with the construction of the school's innovation and entrepreneurship guidance platform	7	8	47	44	25
	Satisfaction with the publicity and guidance of School's innovation and entrepreneurship education	6	9	11	89	16

**APPENDIX F: Questionnaire of Shenzhen University Students' Satisfaction on Innovation and Entrepreneurship Education**

Hello! The main purpose of this survey is to understand the current situation of IEE in Shenzhen University and the suggestions and opinions of students on the current IEE in Shenzhen University under the background of the Guangdong-Hong Kong-Macao GBA, so as to provide scientific and feasible references for the improvement of IEE in Shenzhen University and even other universities in Guangdong-Hong Kong-Macao region. Thank you for your support and cooperation!

**Fill in the Blanks**

Sex		College	
Major		Grade	

**Scale**

Title number	Title	1	2	3	4	5
1	Satisfaction with compulsory courses of innovation and entrepreneurship	Very dissatisfied	Dissatisfied	General	Satisfied	Very satisfied
2	Satisfaction with elective courses of innovation and entrepreneurship	Very dissatisfied	Dissatisfied	General	Satisfied	Very satisfied
3	Satisfaction with the form of innovation and entrepreneurship courses (MOOC, practice, etc.)	Very dissatisfied	Dissatisfied	General	Satisfied	Very satisfied
4	Satisfaction with the organic combination of professional education and innovation and entrepreneurship education	Very dissatisfied	Dissatisfied	General	Satisfied	Very satisfied
5	Satisfaction with the professional level of teachers in innovation and entrepreneurship courses	Very dissatisfied	Dissatisfied	General	Satisfied	Very satisfied
6	Satisfaction with the source and comprehensive quality of part-time teachers in innovation and entrepreneurship education	Very dissatisfied	Dissatisfied	General	Satisfied	Very satisfied
7	Satisfaction with the number allocation of teachers in innovation and entrepreneurship education	Very dissatisfied	Dissatisfied	General	Satisfied	Very satisfied
8	Satisfaction with the guidance level of innovation and entrepreneurship teachers	Very dissatisfied	Dissatisfied	General	Satisfied	Very satisfied
9	Satisfaction with innovation and entrepreneurship practice activities in school	Very dissatisfied	Dissatisfied	General	Satisfied	Very satisfied
10	Satisfaction with guidance and support provided by innovation and entrepreneurship associations	Very dissatisfied	Dissatisfied	General	Satisfied	Very satisfied
11	Satisfaction with the construction of Students Pioneer Park in the school	Very dissatisfied	Dissatisfied	General	Satisfied	Very satisfied
12	Satisfaction with practical opportunities such as research on off-campus entrepreneurship and enterprise visits	Very dissatisfied	Dissatisfied	General	Satisfied	Very satisfied
13	Satisfaction with assessment methods of innovation and entrepreneurship courses	Very dissatisfied	Dissatisfied	General	Satisfied	Very satisfied
14	Satisfaction with the scholarship system for innovation and entrepreneurship	Very dissatisfied	Dissatisfied	General	Satisfied	Very satisfied
15	Satisfaction with institutional support for innovation and entrepreneurship	Very dissatisfied	Dissatisfied	General	Satisfied	Very satisfied
16	Satisfaction with class form of innovation and entrepreneurship courses	Very dissatisfied	Dissatisfied	General	Satisfied	Very satisfied
17	Satisfaction with the functions of the Expert Steering Committee on innovation and entrepreneurship education	Very dissatisfied	Dissatisfied	General	Satisfied	Very satisfied
18	Satisfaction with the construction of the school's innovation and entrepreneurship guidance platform	Very dissatisfied	Dissatisfied	General	Satisfied	Very satisfied
19	Satisfaction with the publicity and guidance of School's innovation and entrepreneurship education	Very dissatisfied	Dissatisfied	General	Satisfied	Very satisfied
20	Satisfaction with school's innovation and entrepreneurship exchange activities	Very dissatisfied	Dissatisfied	General	Satisfied	Very satisfied