



Research on the Training Mechanism of Macao's Cultural and Creative Talents Based on the T-GUE Collaborative Model

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ABSTRACT

As a significant engine driving global economic development, the cultural and creative industries (CCI) hold a unique position in Macao within the Greater Bay Area, serving as a platform for Sino-foreign trade cooperation, a world leisure tourism center, and a hub for East-West cultural exchanges. Particularly in the post-pandemic era, Macao faces a shortage of cultural and creative talents, which hinders the development of its core competitiveness. The cultivation of such talents is a complex, dynamic, and collaborative system that requires close cooperation among the government, universities, and enterprises. This study proposes the T-GUE (Talent-Government, University, Enterprise) collaboration mechanism, deeply analyzing the current situation and challenges of cultivating Macao's cultural and creative talents. By streamlining the interaction between talent, government, universities, and enterprises, this study aims to optimize the talent training system and improve the quality of talent cultivation, thereby promoting the coordinated development of the regional economy and the cultural and creative industries.

Keywords: Macao, cultural and creative industries, T-GUE collaboration model, talent cultivation

1. THEORETICAL FOUNDATIONS OF THE T-GUE COLLABORATION MECHANISM

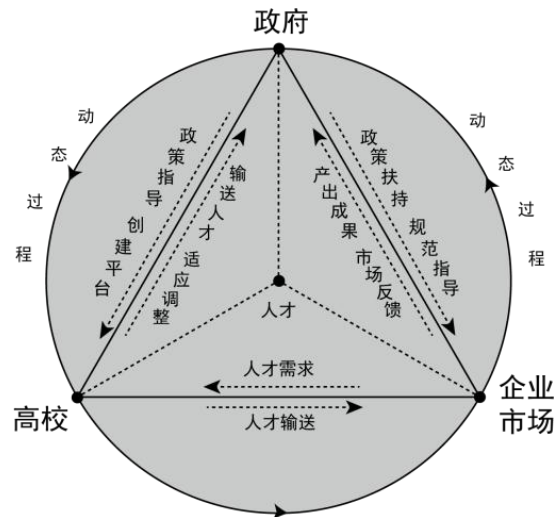
The cultivation of cultural and creative talents is a dynamic and interconnected system, where close cooperation between government, universities, and enterprises is essential. Richard Florida's theory of the creative class (2002) asserts that creative talents are the driving force behind modern economic growth. This theory offers significant insights into attracting and retaining creative talents in Macao. Additionally, John Howkins' theory of the creative economy (2001) explains how industries can achieve economic growth through innovation and creativity. Based on these theoretical foundations, the study proposes the T-GUE collaboration model (Talent-Government, University, Enterprise), hereinafter referred to as "T-GUE." This model constructs a dynamic mechanism centered on talent, with government, universities, and enterprises working together in synergy. Analyzing the cultivation of cultural and creative talents in Macao through the T-GUE framework helps to understand the collaborative relationship among the three entities and fosters the development of Macao's cultural and creative industries.

Within this framework, the roles of government, universities, and enterprises are distinct but interdependent. First, the government plays a crucial supporting and guiding role in the T-GUE model. Hesmondhalgh (2018) explored the impact of cultural policies on the cultivation of creative talents. The government primarily promotes the development of the cultural and creative industries by enacting favorable policies, providing financial support, tax incentives, and coordinating resource allocation, including financial, land, and cultural resources. At the same time, the government helps regulate industries through setting standards and ensuring the healthy development of cultural and creative enterprises.

Universities, on the other hand, are the core institutions responsible for talent cultivation and innovation research. Through specialized programs and research activities, universities advance the innovation within cultural and creative sectors and cultivate high-quality creative talents. Furthermore, universities provide students with practical platforms, allowing them to participate in real-world projects, thereby enhancing their practical and innovative abilities. In the closed-loop system of university education, students and social resources are absorbed and transformed into professional talents equipped with creative abilities.

Lastly, enterprises in the T-GUE model are the driving force behind market application and industrialization. Through internal mechanisms that incorporate innovative thinking, modern management concepts, and high-end human capital, enterprises bring refined operations to market-ready, creative products that meet societal needs. They translate university

research into practical products and services, driving the development of the cultural and creative industries, while providing employment opportunities and career paths for creative talents, further stimulating their innovative potential.



2. CURRENT SITUATION OF CULTURAL AND CREATIVE TALENT CULTIVATION IN MACAO

With the promotion of the Greater Bay Area development plan, Macao's role in regional economic and cultural development is increasingly prominent. Traditionally reliant on the gaming industry, Macao has, since the early 21st century, introduced a series of supportive policies aimed at fostering the development of high-quality cultural and creative industries. Corresponding research and practices have followed, providing a clear direction for the industry and bolstering Macao's cultural and creative talent development efforts.

Macao's CCI primarily spans four key sectors: "design and creation," "exhibitions and performances," "art collections," and "digital media." According to Macao's Census and Statistics Bureau, despite the economic downturn during the COVID-19 pandemic in 2020, the overall cultural and creative industry in Macao has been showing a steady upward trend in recent years. By 2023, the added value of the industry reached MOP 3.3 billion, accounting for 1.10% of the region's GDP, with the design sector leading the way with service revenues of MOP 2.7 billion.

In addition, the number of institutions operating in the design sector has steadily increased, growing from 1,398 in 2019 to 1,415 by 2022. These figures indicate that Macao's cultural and creative industries have considerable potential for future development.

Table 1: Growth of Cultural and Creative Industry Value (MOP) and Share of GDP

Year	Value (Billion MOP)	Share of GDP (%)
2019	30	0.99%
2020	27	0.91%
2021	28.5	0.95%
2022	31	1.02%
2023	33	1.10%

Table 2: Major Cultural and Creative Programs in Macao's Universities

Year	Design and Creation(Billion MOP)	Exhibitions and Performances(Billion MOP)	Art Collections(Billion MOP)	Digital Media(Billion MOP)
2019	24	16	10	18
2020	22	14	9	16
2021	23	15	10	17
2022	25	17	11	19
2023	27	19	12	21

Furthermore, Macao's universities have made significant progress in cultural and creative talent training, with institutions such as the University of Macao, Macao Polytechnic Institute, City University of Macao, and Macao University of Science and Technology offering various relevant programs at the undergraduate, master's, and doctoral levels. These programs not only meet the needs of local students but also attract international students, thereby fostering the academic development and international cooperation in Macao's cultural and creative industries.

University	Related Programs in Cultural and Creative Fields	Degree Levels
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University of Macau (Department of Communication, Department of Arts and Design)	(Department of Communication) Undergraduate: Creative Media, Public Communication, Journalism and Mass Communication (Department of Arts and Design) Master's: Chinese Painting, Western Painting, Digital and New Media PhD: Cultivating talents with abilities in Art Curation and Cultural Management	Bachelor's / Master's / PhD
	Macao Polytechnic Institute (School of Arts and Design) Undergraduate: Design, Visual Arts, Media Arts Master's: Interdisciplinary Master of Arts	Bachelor's / Master's
	City University of Macau (School of Innovation Design) Undergraduate: Design Arts Master's: Urban Planning and Design, Arts, Design PhD: Urban Planning and Design, Arts, Design	Bachelor's / Master's / PhD
Macao University of Science and Technology (Faculty of Humanities and Arts)	Undergraduate: Art Design, Journalism, Film Production, Digital Media Arts, Performing Arts Master's: Communication, Design, Architecture, Interactive Media Arts, Fine Arts, Film Management, Film Production, Innovative Music PhD: Communication, Design, Fine Arts, Film Management, Architecture, Digital Media, Music	Bachelor's / Master's / PhD
	Macao Institute for Tourism Studies Undergraduate: Cultural and Heritage Management, International Business and Innovation Communication, Marketing and Brand Management	Bachelor's

In addition, the Macao Special Administrative Region government has actively promoted the development strategy of the Greater Bay Area by closely cooperating with Guangdong Province and the Hong Kong Special Administrative Region, launching a series of cultural and creative projects. For example, under the framework of the Hengqin Guangdong-Macao In-Depth Cooperation Zone, Macao and Guangdong Province have jointly established several cultural and creative projects. This collaboration not only facilitates resource sharing and complementary advantages between the two regions but also provides Macao enterprises and talents with preferential tax policies and convenient business services, attracting a large number of cultural and creative enterprises to settle in the area. Meanwhile, the Macao government continues to deepen regional cooperation and expand the market for cultural and creative industries through international collaboration. The Macao Trade and Investment Promotion Institute organized enterprises to participate in the "Greater Bay Area—Europe (France) Economic and Trade Cooperation Exchange," strengthening Macao's ties with international markets and opening new development paths for Macao enterprises in the cultural and creative fields. Macao has further advanced regional cooperation by releasing a series of new policies supporting the cultural and creative industries. For instance, Hengqin has introduced new support measures, including project funding and streamlined administrative procedures, to attract and retain high-end cultural and creative talents. Moreover, Macao has jointly signed several cooperation agreements with Hong Kong and Guangdong Province to promote the coordinated development of the cultural and creative industries in the Greater Bay Area. Through university-enterprise cooperation and international exchanges, Macao continues to enhance the competitiveness of its cultural and creative industries.

3. Bottlenecks and Challenges in Talent Cultivation in Macao

Despite certain achievements, Macao's efforts to cultivate cultural and creative talents have encountered several significant challenges. Kate Oakley's (2011) research points out that cultural entrepreneurship, while contributing to the development of cultural and creative industries, faces challenges such as insufficient funding, intense market competition, and limited policy support. Since Macao's handover, it has gradually placed greater emphasis on cultivating creative talents. Although there has been progress, due to its late start, Macao's cultural and creative enterprises still need to strengthen their efforts in talent cultivation and entrepreneurship support to meet these challenges.

Macao's government has long adhered to a policy of "positive non-interventionism" and "limited government" management, which has significantly constrained the potential for talent aggregation and posed as a major obstacle to the advancement of the cultural and creative industries. According to statistics from the Macao Census and Statistics Bureau, in 2023, the number of people employed in cultural industries reached 12,067, accounting for only 3.1% of the overall workforce in Macao. This reflects the cautious approach Macao has taken towards talent policies, which has resulted in a talent pool that is insufficient in both quality and quantity. Furthermore, Macao's imbalanced industrial structure has led to a cultural and creative sector that remains underdeveloped. Moreover, although Macao's universities enroll many non-local students, the lack of comprehensive talent attraction policies, coupled with high living costs, makes it difficult for creative talents to remain in Macao long-term. This has further exacerbated the talent shortage in the cultural and creative industries.

Macao's higher education institutions also face significant challenges in their professional curriculum design. According to data from the Macao Census and Statistics Bureau, the University of Macao offers only about five undergraduate programs related to the cultural and creative industries. Macao Polytechnic Institute has a limited number of programs, such as visual arts, media arts, and design, which are primarily theory-oriented and lack comprehensive practical training and interdisciplinary

integration. This has left these programs unable to fully meet market demands. Furthermore, the limited and unstable faculty, mostly composed of part-time lecturers, hampers the formation of a robust academic foundation. Based on human capital theory, a stable and high-quality faculty team is crucial to improving education quality.

Additionally, the cooperation between Macao's universities and local enterprises remains shallow and limited. Only about 30% of students majoring in cultural and creative fields are able to secure internships through university-industry cooperation, which severely restricts students' practical abilities and competitiveness in the job market. Lastly, the degree of international cooperation in Macao's universities is relatively low. Although some universities offer exchange programs and international partnerships, the percentage of participating students is modest. For instance, participation rates in exchange programs at the University of Macao and Macao Polytechnic Institute are only about 10% and 8%, respectively, far below the standards of international education, limiting students' access to diverse cultural perspectives and advanced knowledge.

Moreover, most cultural and creative enterprises in Macao lack long-term strategic vision, which severely restricts talent development and industry growth. First, enterprises have demonstrated insufficient investment and engagement in talent cultivation. Instead of viewing talent cultivation as a long-term investment, they underinvest in employee training, internship programs, and career development planning. For example, only about 20% of Macao's cultural and creative enterprises have established long-term cooperation with universities, and the coverage and quality of internship programs remain low. Furthermore, many enterprises still follow traditional management models, with an underdeveloped culture of innovation. More than 60% of enterprises reported lacking systematic innovation management mechanisms, and employees' innovative awareness and abilities remain underdeveloped. In addition, university-enterprise cooperation has not fully capitalized on universities' research and educational resources, resulting in limited success in translating academic research into practical industry outcomes.

Finally, enterprises face challenges in designing incentive mechanisms and career development pathways. They have not provided competitive compensation and development opportunities, leading to severe talent outflow. According to recent data, the average salary in Macao's cultural and creative industries is lower than that in other cities in the Greater Bay Area, with about 40% of cultural and creative talents choosing to work in Hong Kong or Shenzhen after graduation.

4. ENHANCEMENT STRATEGIES FOR TALENT CULTIVATION BASED ON THE T-GUE COLLABORATION MODEL

To improve the quality of cultural and creative talent cultivation in Macao, a comprehensive strategy that involves stronger collaboration between the government, universities, and enterprises is required. Drawing on Lundvall's (1992) innovation system theory, the following enhancement strategies are proposed:

(1) Government Support: Enhancing Talent Policies and Incentives

Macao lacks a specialized cultural and creative talent exchange platform. As the institutional environment in the Greater Bay Area continues to converge, Macao's development direction will align more closely with that of mainland China. Thus, it is imperative to establish a cultural and creative talent database in Macao. This platform should connect elite talents from Macao, Hong Kong, and Guangdong, facilitating precise matching between human resources and industry needs. Moreover, the Macao government should create an environment conducive to talent retention by providing competitive salaries, career development opportunities, and favorable living conditions. Drawing on Florida's (2002) theory of the creative class, Macao must create an environment that attracts and retains creative talents.

Strengthening Cultural Industry Policy Support. Based on Hesmondhalgh's (2018) research, the government should provide tax incentives, financial support, and policy guidance to foster the growth of cultural and creative enterprises. The Macao government must reform its talent cultivation and attraction model, enhancing legislation concerning talent mobility. It should also provide equal incentives for talents across cities in the Greater Bay Area. The housing subsidy policy introduced by the Macao government in 2022, which offers affordable housing for cultural and creative talents, is a step in the right direction. Going forward, Macao can learn from Hong Kong and Singapore by adopting more open and flexible policies to attract and retain high-level creative talents.

Establishing a Talent Database and Talent Matching Mechanism. Macao should build a comprehensive database that includes cultural and creative talents from fields such as design, digital media, and performing arts. This database should feature detailed talent information, including professional backgrounds, work experience, and skill assessments, making it easier for enterprises and institutions to find suitable candidates. Establishing a well-functioning talent resource database will facilitate more efficient talent matching with institutional needs. Furthermore, Macao should establish an elite talent platform that covers the Greater Bay Area, promoting talent exchange and collaboration between Macao, Hong Kong, and Guangdong. Recent cooperation agreements between Macao and these regions have already laid the groundwork for coordinated development in the cultural and creative industries.

(2) University Training: Comprehensive Development of Cultural and Creative Talents

Macao must adopt a systematic approach to nurturing high-quality local cultural and creative talents from the ground up. Although the education system offers a variety of cultural and creative courses, most of these are concentrated in higher education. To address this gap, Macao should introduce cultural and creative education as a compulsory subject at the high school level. Moreover, it is crucial to increase the interdisciplinary integration of practical and theoretical courses to foster creativity and innovation in students. Universities should further strengthen collaborations with enterprises, promoting deep

integration between talent cultivation and industry needs. This can be achieved by encouraging students to participate in real-world projects and by inviting professionals from various sectors to offer their expertise.

Leveraging International Educational Resources. Macao should also enhance its international collaboration by following the model proposed by Oakley (2011). Through international cooperation and exchanges, Macao can access global resources, harnessing the advantages of its East-West cultural fusion and existing industries. Universities should actively participate in exchange programs, joint degree programs, and research collaborations. These initiatives will not only broaden students' global perspectives but also foster the development of top-tier cultural and creative talents with global thinking and international vision, thereby enhancing the competitiveness of Macao's cultural and creative industries on the world stage.

(3) Enterprise Support: Meeting Industry Development Needs.

Enterprises in Macao should regard talent cultivation as a long-term strategic investment and increase their efforts in talent selection, development, and support. Companies can establish dedicated training funds to encourage employees to participate in professional development and continuing education programs, thus improving their skills and innovative capabilities. According to the latest data from the Macao Economic and Technological Development Bureau, demand for highly qualified cultural and creative talents continues to grow. Enterprises must increase their investment in education and training to meet this demand. Only through well-designed career development plans can companies attract and retain high-level creative talents. The average salary in Macao's cultural and creative industries is lower than that in other cities in the Greater Bay Area. Enterprises should adjust salary levels and provide more career opportunities to reduce talent turnover.

Promoting Deep Integration of Industry, Education, and Research. Macao's enterprises must strengthen their partnerships with universities by jointly developing curricula, setting up internship programs, and collaborating on research initiatives. These efforts will ensure that universities cultivate talents who meet the actual needs of the industry. For example, the cooperation model between Macao University of Science and Technology and local enterprises should be deepened to include more innovative and creative design tasks, thus enhancing students' practical and innovative skills. Furthermore, enterprises must actively foster an innovative culture by encouraging employees to participate in creative design and experimentation. Establishing a systematic innovation management mechanism will provide employees with a supportive environment for innovation. By drawing on the experience of Shenzhen, Macao's enterprises can combine culture and technology to upgrade traditional cultural and creative industries, forming new growth points and competitive advantages.

Active Participation in International Enterprise Cooperation and Exchanges. According to innovation system theory, innovation culture and environment are critical to a company's competitiveness. By strengthening their links with international markets, Macao's enterprises can enhance their technological, managerial, and creative capabilities. Companies should organize their employees to participate in international cultural and creative industry exchanges and trade fairs, expanding their international horizons and improving their innovation and competitiveness.

5. CONCLUSION

Under the guidance of central government policies, Macao has made notable progress in cultivating cultural and creative talents. However, to achieve further development, its education system, policy support, and training environment still require optimization. Macao must neither cling to tradition nor adopt foreign models wholesale. Long-term development requires the establishment of a "talent-building Macao" strategy, underpinned by a broad vision and strategic foresight to optimize talent cultivation mechanisms. Only through the joint efforts of schools, enterprises, and the government can Macao cultivate and attract diverse talents with global perspectives, thereby promoting the sustainable development and prosperity of its cultural and creative industries.

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