

Reimagining the notion of Hong Kong as an education hub: National imperative for higher education policy

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ABSTRACT

This article examines the evolving concept of Hong Kong as an education hub, with a focus on the influence of the Greater Bay Area (GBA) strategy on higher education development. It begins by reviewing the impacts of the policy of developing Hong Kong into an education hub on the city's educational landscape and global competitiveness. Subsequently, the article investigates the GBA's role as a subnational higher education region, highlighting the heightened strategic cooperation between Hong Kong and the Chinese Mainland in the higher education arena. The cases of the Chinese University of Hong Kong, Shenzhen and the Hong Kong University of Science and Technology, Guangzhou are examined as examples of cross-border education in the GBA, shedding light on their role in fostering research collaboration and knowledge exchange. The article reimagines the notion of an education hub, underscoring Hong Kong's transition *from a gateway to a radiator*, and discusses the implications of this shift for the city's global and national positioning. Through this analysis, the article examines the dynamics and future prospects of education hub in Hong Kong, particularly within the context of emphasising integration with the Chinese Mainland.

1. Introduction

Hong Kong has long positioned itself as a regional education hub. However, the notion of Hong Kong as an education hub has undergone significant evolution, given the emergence of the Greater Bay Area (GBA) as a regional integration and the resulting transformations in the city's higher education landscape. This article aims to explore the dynamic nature of Hong Kong's education hub development, with a specific focus on the influences and implications of the GBA. Drawing on the conceptualisation of an education hub in existing literature, it reviews the Hong Kong Special Administrative Region (HKSAR) government's policies and initiatives, the achievements and challenges encountered, and the implications for Hong Kong's position in both the national and global higher education landscapes. The article then turns to exemplify collaborative efforts, knowledge exchange, and talent development within the GBA by taking the cases of the Chinese University of Hong Kong, Shenzhen (CUHK-SZ) and the Hong Kong University of Science and Technology, Guangzhou (HKUST-GZ) as examples. By envisioning Hong Kong's transition from "China's gateway to the world" to "a proactive radiator within the GBA", the article reinvents the city's positioning as an education hub.

2. The notion of education hub and its implications for Hong Kong

2.1. Defining the notion of education hub

Education hubs are strategic configurations that emerge within the context of higher education internationalisation. They represent a response to the intensification of transnational (also known as cross-border, borderless, offshore) higher education activities involving the global movement of students, academics, academic programs, and education providers (Kosmützky and Putty, 2016). According to Knight's (2011, p. 227) widely cited definition:

An education hub is a concerted and planned effort by a country (or zone, city) to build a critical mass of education/knowledge actors and strengthen its efforts to exert more influence in the new marketplace of education.

The "new marketplace" component reveals the prevalence of neoliberalism in higher education, substantially shaping the education hub concept. In simpler terms, education hubs are significantly influenced by market-oriented ideologies, where market values and modes of

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operation dominate the policy discourse concerning the development of transnational higher education. Notably, a critical aspect of the education hub concept is the commercialisation of higher education through the import and export of foreign demand and supply. Various countries have recognised the potential advantages of engaging in this import and export of foreign education, actively striving to attract foreign higher education providers and consumers (Knight, 2002). This has led to the emergence of numerous transnational education initiatives, including the establishment of campus branches, twinning programs, franchises, as well as double and joint degree programs. These endeavours have significantly broadened the array of options accessible to both international and domestic students (Caruana, 2016; Kleibert, 2021). These developments align well with Lane and Kinser's (2011a); cited in Olds, 2023; p. 310) conceptualisation, which defines education hubs as:

Designated region[s] intended to attract foreign investment, retain local students, build a regional reputation by providing access to high-quality education and training for both international and domestic students, and create a knowledge-based economy.

Built on the idea of establishing a knowledge-based economy, Beecher et al., (2020, pp. 88) believe that:

An education hub represents a national initiative to create knowledge centres that will support the development of new skills to compete regionally and globally in the knowledge economy. Education hubs strengthen the development of local and regional human capital by concentrating education, industrial and economic policies that attract foreign expertise. Their primary goals are to educate students, create expertise in their workforce that is valued in the knowledge economy and drive economic prosperity and societal progress by forming strategic partnerships between governments, universities and industries.

This definition encapsulates the aspiration to use cross-border education to enhance economic competitiveness in the knowledge economy. It underscores the role of education hubs in nurturing human capital by attracting talent to drive research activities, enhance knowledge production, and foster innovation (Mok and Yu, 2011). In this sense, education hubs aim to create a critical mass of skilled workers who can significantly contribute to building a knowledge-based economy and increasing economic competitiveness (Caruana, 2016; Sidhu, 2009).

Knight's (2013) three-model framework effectively categorises these economic dimensions of the education hub concept. Specifically, the "student hub" model focuses on revenue generation from international student fees, increasing access to higher education for local students, building the capacity of local higher education institutions, internationalising the domestic higher education system, and enhancing the profile, branding, and ranking of higher education institutions and the country. The "talent hub" model aims to expand the talent pool of skilled workers, develop a service- or knowledge-based economy, increase economic competitiveness and influence regionally and globally, and strengthen the quality and relevance of the labour force. The "knowledge/innovation hub" model seeks to build a knowledge- and innovation-based economy, attract foreign direct investment, and develop local research and development (R&D) centres.

In sum, these economic rationales justify the policy initiatives of individual governments to develop education hubs. With an emphasis on deliberate state planning (Knight, 2011, 2013; Lee, 2015), education hubs are defined as strategic initiatives aimed at creating a critical mass of local and international actors engaged in education, training, knowledge production, and innovation, and repositioning a territory in the global and regional educational and economic landscape (Lane and Kinser, 2011b). By focusing on the role of bringing skills and innovations into individual societies, education hubs aim to facilitate the shift towards new industries and sectors by integrating education, industrial, and economic policies that attract foreign expertise and nurture human

capital (Mok and Yu, 2011; Lee, 2014). Through educating both international and local students, cultivating a skilled workforce valued in the knowledge economy and fostering partnerships between governments, universities and industries, education hubs are expected to contribute to the economic prosperity and societal advancement of countries, regions, or cities in an increasingly interconnected world (Beecher et al., 2020; Olds, 2007).

2.2. Developing Hong Kong into an education hub

Adopting the economic dimensions of the education hub concept, Hong Kong has actively strived to establish itself as a regional education hub since the early 2000s. This vision rationalised the HKSAR government's policies of opening higher education services to non-local students (Tung, 2004) and developing the education industry, which identified education as a new economic pillar for boosting the city's competitiveness (Tsang, 2009). This strategic orientation reflected the recognition that investing in education and attracting international students could diversify the city's economy and elevate its status as a global city.

A crucial aspect of Hong Kong's education hub strategy has been the gradual increase in the number of non-local enrolments in higher education. Thus, the University Grants Committee (UGC), the governing body responsible for steering higher education, decided to raise the proportion of non-local students gradually (UGC, 2004) and announced an increase in the authorised proportion of non-local students from 10% to 20% in bachelor programs at publicly funded institutions (Universities Grants Committee UGC, 2010).

Meanwhile, private higher education has played a significant role in Hong Kong's education hub strategy (Chan and Ng, 2008; Lo et al., 2017). The promotion of private education was evident in the introduction of a user-pay principle and the withdrawal of UGC subsidies from certain programmes. The HKSAR government encouraged a self-financing model in postgraduate taught programmes and sub-degree programmes, leading to the rapid growth of full-cost recovery programs in both public and private higher education institutions and impacting both local and international students. The underlying rationale for these initiatives was to create educational opportunities that would attract non-local higher education providers and students and promote Hong Kong as an attractive destination for higher education, aligning with the market-driven logic of the city's education hub strategy.

To complement these efforts, the HKSAR government also took steps to facilitate the immigration and employment of international students (Lo, 2015). Relaxing regulations on immigration and employment allowed international students to engage in part-time work and internships during their study period, providing them with work experience and a deeper understanding of the local culture. Furthermore, after graduation, students were given the opportunity to stay in Hong Kong and work, contributing to the city's talent pool.

To stimulate the inflow of non-local students, the HKSAR government established the HKSAR government scholarship fund that aimed to attract outstanding non-local students in 2008. The HKSAR government further launched a sub-scheme in 2014 to provide support to students hailing from developing economies of the Asia-Pacific Economic Cooperation. Subsequently, in 2016, a specific sub-scheme, known as the Belt and Road Scholarship, was initiated to cater to students from designated countries located within the regions encompassed by the Belt and Road Initiative (Education Bureau, 2023). These initiatives not only expanded the geographical diversity of the student body but also fostered academic and cultural exchange between Hong Kong and other regions, strengthening the city's international educational network.

Fig. 1 illustrates the impact of the education hub strategy, as it has led to a significant increase in the number of non-local students within the UGC-funded sector. The data reveals that non-local student enrolment rose from 1239, representing 1% of the total student enrolment,

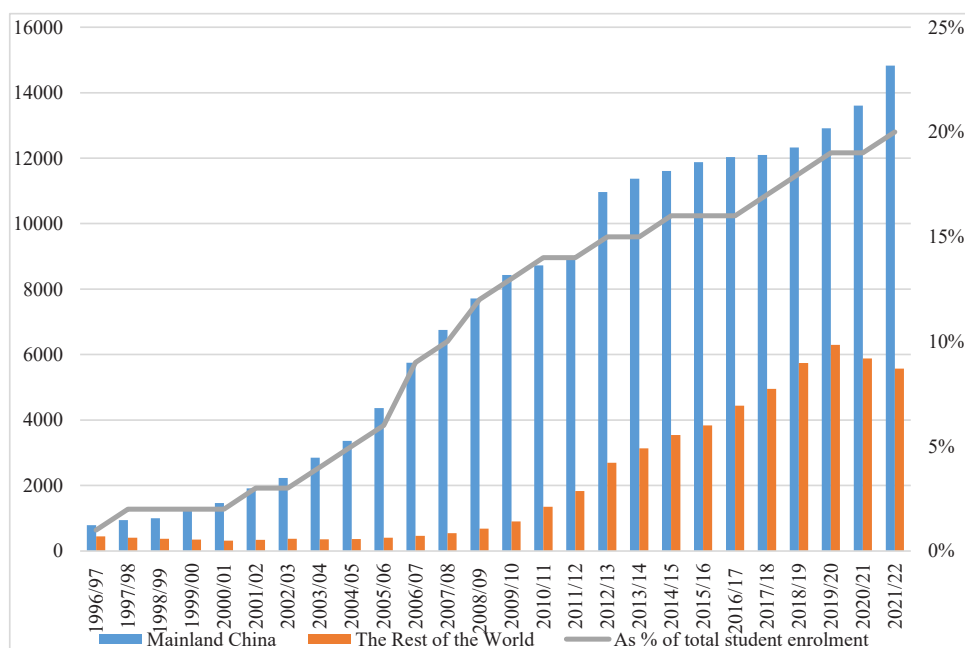


Fig. 1. Non-local student enrolment in UGC-funded programmes (1996/1997–2021/22).

during the academic years 1996/1997–20,398, equivalent to 20% of the total student enrolment, during the academic years 2021/2022. However, approximately 70% of the entire non-local student population in Hong Kong since 2000/2001 originates from Mainland China, which has been a significant point of contention. Thus, the education hub strategy had faced criticism for its internationalisation initiatives being perceived as a form of “mainlandisation” (Lai and Maclean, 2011) or “delocalisation” (Lui, 2014) of higher education. These criticisms stem from the HKSAR government’s decision to tap into the Chinese market as a viable approach to developing the education industry, leveraging the strong bond with Mainland China as a competitive advantage for Hong Kong’s position (Tsang, 2011). Meanwhile, a survey conducted in the late 2000s revealed that despite the HKSAR government’s efforts to establish the city as an education hub since 2000, its universities were not widely recognised among students beyond the Asia-Pacific region (Cheng et al., 2011).

Simultaneously, although attracting non-local higher education providers and the resulting expansion of transnational education provisions broadened access to higher education, domestic students enrolled in self-financing transnational programmes often faced stigmatisation as “inferior” compared to those who secured places in government-funded universities (Waters and Leung, 2017). This labelling occurred within the context of higher education massification, as Hong Kong’s private higher education sector experienced substantial growth over the past two decades, transforming the higher education system from an elite to a mass-oriented one. This rapid expansion, coupled with a shrinking student population, raised concerns about the value and recognition of degrees obtained through self-financing programmes (Lo et al., 2017). Consequently, discontent grew among young people who felt the brunt of intense competition and the financial burden associated with the commercialisation of higher education. They also faced a decrease in opportunities for upward social mobility that higher education traditionally offered (Jiang, 2023).

The discontent has led to a recalibration of the neoliberal and opening-door tendencies in higher education policy during the 2010s (Lo, 2017). As a response, the HKSAR government recognised the tension between meeting local demand and developing the education industry, proposing continuous advancements in student financial assistance schemes (Leung, 2013). Subsequently, publicly funded

institutions offered more senior-year undergraduate places to sub-degree graduates for the pursuit of bachelor’s degrees; the HKSAR government provided subsidies to programs within the self-financing sector that were identified as supporting industries with a high demand for skilled talent (CSPE, 2023a). Later, it extended the coverage of its subsidy by providing grants to all undergraduate students attending self-financing programmes, including those with vocational and professional education and training (CSPE, 2023b). The HKSAR government also decided to allocate all approved UGC-funded places to local students, although the proportion of UGC-funded universities’ allowance to admit non-local students remained unchanged (Education Bureau, 2014). These policy adjustments underscore a renewed emphasis on the public nature of higher education in Hong Kong rather than solely focusing on developing the education industry, thereby moderating the pace of the education hub strategy.

2.3. Conceptualising Hong Kong as a gateway

Earlier research on education hubs suggests that Hong Kong’s hub strategy has been characterised by its *laissez-faire* tradition. Specifically, the HKSAR government’s involvement in the transnational higher education market has been limited, as it traditionally adheres to free market principles that underpin the city’s economic policy and drive its international trade and financial activities. Unlike its competitors, such as Singapore, Malaysia and South Korea, which actively incentivise overseas universities to establish operations within their territories, Hong Kong’s approach is primarily market driven (Beecher et al., 2020; Lo and Wan, 2021; Richards, 2019). Consequently, foreign higher education providers are free to enter the higher education market, with the HKSAR government’s role focused on ensuring proper registration and maintaining quality standards. Rather than interfering, the HKSAR government’s main responsibility lies in assessing quality and providing transparency to empower consumers with the necessary information for making informed decisions (Lo, 2017).

Operating in this *laissez-faire* manner, Hong Kong’s pursuit of becoming an education hub is deeply influenced by its historical role as China’s gateway to the world. Although Hong Kong aims to elevate its global city status through the hub strategy (Lui, 2014), its primary focus within the national development planning lies in subnational

regionalisation with the Pearl River Delta in southern China. This subnational regionalism becomes a proposition for the hub strategy in Hong Kong (Lee, 2015). Furthermore, with over 70% of non-local students originating from the Chinese Mainland, Knight (2013) notes that “[Hong Kong] can be described more as an education gateway with China more than a thriving regional student-oriented education hub” (p. 385). However, its higher education policy is aligned with the student and talent hub models, which highlight the importance of generating income and attracting talent, primarily shape policymaking in the city (Lo, 2017).

Within this subnational regional framework, Hong Kong assumes the role of a bridge, facilitating the international mobility of Mainland Chinese students (Postiglione, 2005). Under this conceptualisation, students from Mainland China can begin their educational journey in Hong Kong before pursuing further studies at foreign universities. Indeed, research indicates that Mainland Chinese students perceive studying in Hong Kong as a strategic pathway to enhance their international mobility, because obtaining degrees from Hong Kong’s highly internationalised universities provides abundant opportunities for further studies abroad (Xu, 2015). This perspective highlights Hong Kong’s significant contribution to the internationalisation of higher education in China. The governing principle of “One Country, Two Systems” reinforces this conceptualisation. With a focus on the “One Country” principle, Hong Kong is obliged to serve China’s national interests, resulting in the city providing broader access to higher education for Mainland Chinese students. Simultaneously, the “Two Systems” aspect of the principle allows Hong Kong to maintain its distinct higher education system, which differs from that of Mainland China, thereby offering Mainland Chinese students a unique and distinctive learning experience (Lo, 2015). Consequently, the term “education hub” reveals the national imperative inherent in transnational higher education in Hong Kong.

However, as discussed earlier, the local resistance to and subsequent recalibration of the neoliberal and opening-door tendencies in higher education policy have resulted in a renewed focus on the public aspect of higher education in Hong Kong (Lo, 2017). This readjustment decelerates the progress of the education hub strategy.

3. The emergence of the GBA and its impacts on higher education

3.1. The GBA as a subnational higher education region

Since this article posits that the GBA plan injects fresh impetus into the development of higher education in Hong Kong, this section explores the potential of the GBA to evolve into a subnational higher education region. It emphasises the government’s push for integration among the cities in the area and highlights the world-class standing of Hong Kong’s universities.

Although Hong Kong had been included in China’s 11th Five-Year Plan issued in 2006, the introduction of the GBA development plan in the 13th Five-Year Plan in 2016 solidified the involvement of Hong Kong in the national agenda (Constitutional and Mainland Affairs Bureau CMAB, 2017, 2019). The GBA plan, which encompasses Hong Kong, Macao and nine cities in the Guangdong Province of Southern China, aims to promote cross-border collaboration and integration among cities in the GBA, leveraging their respective strengths and resources to support China’s “going global” strategy (Lo et al., 2022). With a focus on innovation, technology, and cooperation, including in higher education, the plan seeks to achieve socio-economic development and foster regional competitiveness.

In the context of education, the GBA development plan emphasises the importance of collaboration between universities in the region. Recognising universities’ pivotal role in driving innovation and knowledge transfer, the plan encourages research projects, student exchange programs, and joint educational initiatives. The goal is to create a

dynamic and interconnected knowledge ecosystem that facilitates the flow of ideas, talents, and resources across the GBA.

To solidify and institutionalise these collaborative efforts, two blueprint documents were published. The Framework Agreement on Deepening Guangdong-Hong Kong-Macao Cooperation in the Development of the GBA, signed in 2017, provides a framework for deepening academic exchanges and cooperation among cities in the region. This agreement serves as a blueprint for enhancing collaboration in education and other sectors. Additionally, the Outline Development Plan for the GBA, promulgated by the Chinese Central Government in 2019, outlines the strategic direction for the GBA’s development, including the strengthening of cooperation between universities. These agreements provide a policy framework and impetus for the development of the GBA as a subnational higher education region (Constitutional and Mainland Affairs Bureau CMAB, 2017, 2019).

The integration of universities into the national development agenda has provided a compelling rationale for collaborative initiatives within the GBA in the higher education sector in Hong Kong. These initiatives encompass the establishment of branch campuses, joint research centres, and cross-border research funding schemes (Lo and Tang, 2020). Indeed, the HKSAR government supports universities in their plans to offer educational services in the GBA, acknowledging the potential benefits of cross-border collaboration (Lam, 2021). Currently, seven Hong Kong universities have either established or announced their intention to establish branch campuses in the Guangdong Province, thereby further enhancing educational integration within the GBA. Notably, five of them are ranked among the world’s top 100 universities. Furthermore, to promote regional integration and attract talent, the HKSAR government provides internship opportunities in innovation and technology to students studying science, technology, engineering and mathematics (STEM) subjects at these branch campuses; graduates from these branch campuses are permitted to work in Hong Kong after graduation (Lee, 2022). Table 1 provides a summary of these branch campus projects.

Moreover, the Chinese Central Government has opened doors for Hong Kong researchers and institutions to participate in national R&D projects and funding schemes. This recognition of Hong Kong’s research capabilities and expertise underscores the desire to integrate its knowledge resources into the national innovation system. By allowing Hong Kong researchers and institutions to bid for science and technology funding and participate in national R&D endeavours, the Chinese government aims to leverage Hong Kong’s strengths and contribute to the advancement of China’s technological capabilities (Lam, 2018, 2021). According to the HKSAR government’s figures, as of 2022, there are 2320 collaborative academic research projects underway between higher education institutions in Hong Kong and the Mainland; six Hong Kong universities have established industry-academia-research bases or research institutes in Shenzhen, further enhancing cooperation with Mainland Chinese institutions in the field of scientific research (Legislative Council LegCo, 2023).

In this policy context, recent studies highlight the growing connections in science and technology between Hong Kong and Guangdong, as evidenced by the close collaboration among universities in the region. These studies emphasise the substantial benefits of mutually complementary and advanced intercity collaboration and development for the higher education sectors of both Hong Kong and Guangdong, underscoring the potential for significant advancements in talent, innovation, and knowledge exchange within the GBA framework. The studies further note that, facilitated by the GBA plan and supported by local, provincial, and central governments, this collaboration not only enhances talent exchange and fosters industry-academia-government collaboration but also improves the overall regional and international competitiveness of the higher education sectors (Kang and Jiang, 2020; Oleksiyenko and Liu, 2023; Tang, 2022; Wang et al., 2021; Xie et al., 2021; Xie et al., 2023a).

In sum, the policy discourses surrounding the development of the

Table 1

Branch campus projects of Hong Kong's universities in Mainland China.

Hong Kong institution	Branch campus project
Hong Kong Baptist University	In 2005, Beijing Normal University and Hong Kong Baptist University jointly established Beijing Normal University-Hong Kong Baptist University United International College in Zhuhai, with a focus on liberal arts education.
Chinese University of Hong Kong	In 2012, the Chinese University of Hong Kong, in collaboration with Shenzhen University and the Shenzhen Municipal Government, established the Chinese University of Hong Kong, Shenzhen, comprising six schools.
Hong Kong University of Science and Technology	In 2022, the Hong Kong University of Science and Technology partnered with Guangzhou University and the Guangzhou Municipal Government to establish the Hong Kong University of Science and Technology, Guangzhou, consisting of two colleges.
City University of Hong Kong	The City University of Hong Kong, Dongguan, is an institution jointly established by the City University of Hong Kong and Dongguan University of Technology, and its establishment was approved by the Chinese Ministry of Education in 2022.
Hong Kong Polytechnic University	In 2019, the Hong Kong Polytechnic University signed a framework agreement for cooperation with the Foshan Municipal Government to establish a campus in Foshan.
Hong Kong Metropolitan University	In 2020, the Hong Kong Metropolitan University entered into collaboration agreements with the Zhaoqing Municipal Government and Zhaoqing University to establish Hong Kong Metropolitan University, Zhaoqing.
University of Hong Kong	In 2021, the University of Hong Kong signed a memorandum of understanding with the Shenzhen Municipal Government to establish a campus in Shenzhen.

Note: The Hong Kong Metropolitan University is a self-financing university established by the HKSAR government, while the rest of the universities are funded by the HKSAR Government through the UGC.

Source: Compiled from institutions' websites.

GBA and the integration of Hong Kong into the national agenda reflect the emergence of the GBA as a subnational region for higher education. More importantly, the territorial restructuring, exemplified by the GBA development plan, has played a significant role in reshaping the higher education landscape in Hong Kong. This transformative process is expected to continue as the GBA further develops.

3.2. The cases of CUHK-SZ and HKUST-GZ

In exploring the institutional efforts on facilitating research capacity development in the context of the subnational regionalisation, CUHK-SZ and HKUST-GZ, both collaborative educational institutions established by prestigious public universities in Hong Kong, serve as prime examples of cross-border education within the GBA discussed in this article. These two universities were selected due to their world-class status, consistently ranking among the top 100 in the world, and their identity as research-focused institutions. Moreover, they are currently operational, making them ideal illustrations of the practical applications of cross-border education within the GBA.

CUHK-SZ was founded in 2012. From an institutional perspective, the establishment of branch campuses provided Hong Kong universities with the opportunity to expand their physical presence, attract and accommodate a larger pool of potential students, thus increasing their reputation and competitiveness (Tao and Hou, 2023). The national-level strategic drive and applied industrial foundation in the GBA also provides a favourable environment for Hong Kong universities to collaborate with institutions and industries and conduct cutting-edge research in Mainland China. This collaboration can facilitate knowledge and technology transfer between Hong Kong and the mainland, further

promoting the development of education and innovation in the region. In addition, the majority of Hong Kong-based businesses have established their factories and R&D bases in the GBA, which provides valuable opportunities for Hong Kong students with internships and employment in the region (Chen, 2010). These two reasons, arguably, can also apply to the establishment of HKUST-GZ.

Shenzhen, Hong Kong's neighbouring city and the third most economically and technologically developed city in China, serves as a global technology centre. Thus, the establishment of CUHK-SZ is seen as a commitment to building a first-class research university in China with a global vision that can rival the standards of Shenzhen, a city renowned for its innovation and technological advancements. Given that Shenzhen's higher education development is not as competitive as other first-tier cities such as Guangzhou due to its late start and small-scale development (Xie et al., 2022), the local government of Shenzhen decided to achieve "unconventional development of higher education in scale, quality, structure and efficiency" (Xu, 2022, p. 9). Against this background, CUHK-SZ was established, aiming to become a pillar of Shenzhen's development and contribute to the long-term integrated development of the GBA and the reform and innovation of the country's higher education (CUHK-SZ, 2023b).

Operating within the GBA framework, a new GBA "2+2" undergraduate programme that spans both CUHK and CUHK-SZ was launched in 2022. This cross-border programme offers students internship opportunities, especially advantageous for those who wish to pursue a career in the region (Chinese University of Hong Kong and Shenzhen CUHK-SZ, 2022). In addition, the two campuses will be intensifying their collaborative research efforts in areas such as artificial intelligence, microelectronics, robotics, and other related disciplines to address the socio-economic needs of the GBA, as stated in the newly signed trilateral agreement in 2023 (CUHK-SZ, 2023b).

The gradual expansion of CUHK-SZ in terms of scale, quality enhancement, and increased academic strength contains a crucial function of 'talent reservoir' for cultivating and attracting innovative talents, bolstering the foundation of innovation and elevating innovation capabilities in Shenzhen. For the employed graduates, 56.68% choose to work in the city, in various industries such as internet companies, biotechnology companies, top investment banks, and public utilities, providing strong talent support for the "dual-zone" construction (i.e., GBA and the Shenzhen Special Economic Zone) (CUHK-SZ, 2023a).

Characterised by "internationalisation at the doorway", CUHK-SZ is committed to cultivating innovative high-level talents with an international perspective, emphasising an internationalised educational experience (Xie et al., 2023b). A notable outcome is that 78.02% of graduates pursue further studies, with 72.30% enrolled in top 50 global universities for master's or doctoral degrees, particularly in STEM, management, economics, and public policy (CUHK-SZ, 2023a). These graduates, equipped with specialised expertise, become sought-after international talents. Considering the trend of "studying abroad–returning home for development" (National Bureau of Statistics of China NBSC, 2019), CUHK-SZ graduates' attachment to their alma mater and established social networks within the GBA might motivate them to seek career opportunities in the region (Xie et al., 2023b).

CUHK-SZ has fostered collaboration and exchanges with local authorities and numerous research institutes and companies in the GBA, which is crucial to technology innovation and knowledge transfer and to the coordinated development within the region. For example, in 2019, under the leadership of CUHK-SZ, the Shenzhen Institute of Artificial Intelligence and Robotics and the Shenzhen Institute of Big Data received accreditation as basic research institutions by the Shenzhen Municipal Government (.). In 2020, CUHK-SZ and the Authority of Qianhai established a strategic cooperation framework agreement, aiming to implement President Xi Jinping's directives during the 40th anniversary celebration of the Shenzhen Special Economic Zone. They will jointly build a Shenzhen-Hong Kong Modern Service Industry

Cooperation Zone to attract young talents for innovation and entrepreneurship exchanges (Chinese University of Hong Kong and Shenzhen CUHK-SZ, 2020). In 2021, CUHK-SZ's Institute of Urban Underground Space and Energy (IUSE) partnered with the Shenzhen Urban Public Safety Technology Research Institute and Shenzhen Yitu Information Technology Co., Ltd. This collaboration aims to enhance capabilities in urban underground space detection, planning, and monitoring, and establish an IT service platform for underground space in the GBA (Chinese University of Hong Kong and Shenzhen CUHK-SZ, 2021). Additionally, IUSE and the Longgang District Institute of Scientific and Sustainable Development will collaborate on geothermal energy and clean energy projects, promoting research and cultivating technical talents.

HKUST-GZ, which commenced operation in 2022, is the first legally-independent university co-established by Hong Kong and the Mainland under *The Overall Plan of Nansha of Guangzhou for Deepening the Comprehensive Global Cooperation among Guangdong, Hong Kong and Macau*. The plan supports the introduction of top-notch foreign educational resources to Nansha, a state-level development area in Guangzhou (one of China's three largest cities), for the purpose of high-level cooperative education and aims to advance the construction of first-class universities and disciplines. As stated by the University President Ni Mingxuan (HKUST, 2022a), HKUST-GZ is founded to "fulfil the fundamental duties of an educator and to contribute to the development of Nansha, the GBA, the country, and the world".

Aligning with the demand for interdisciplinary professionals in the GBA, the vision for HKUST and HKUST-GZ is to cultivate top-tier talents who possess a forward-thinking mindset and the ability to adapt to the evolving landscape of sci-tech industries and society; and to nurture leaders with creative thinking, innovative abilities, and the capacity for knowledge (Qiu, 2019). To achieve this, a unified university system featuring two complementary campuses has been launched, aiming to prevent the duplication of academic programmes. Provided with more flexibility, students can enrol in courses and degrees offered by both campuses. HKUST-GZ adopts an innovative academic structure based on four trans-disciplinary hubs, incorporating 16 cutting-edge research thrust areas, which allows faculty and students to bridge diverse knowledge from multiple disciplines and explore new frontiers of cross-disciplinary research for discovering novel solutions to global problems (Hong Kong University of Science and Technology (HKUST), 2020; HKUST, 2022b).

HKUST-GZ is expected to serve as an engine for innovation-driven development by establishing technological advantages for new industries, setting industry standards, and developing new business models in the GBA. Professor Shi-Wei Lee, Dean of the Systems Hub at HKUST-GZ, envisioned that,

The basic research can be conducted in HKUST and HKUST-GZ, while technology transfer or entrepreneurship can take place in Shenzhen. Shenzhen boasts a robust microelectronics industry, with Huaqiangbei (a district in Shenzhen, added by the authors) offering a plethora of assembly parts that can be acquired within a day. This means low-cost and rapid iteration, which is important for start-ups. After that, the mass production can be carried out in locations such as Dongguan and Huizhou (cities in Guangdong, added by the authors). The industrial collaboration in the GBA is extremely close, making it a paradise for entrepreneurs. (Southern Plus, 2021)

This vision illustrates the goal of mutual complementarity emphasised in the regional integration of the GBA (Kang and Jiang, 2020; Wang et al., 2021).

HKUST-GZ has also established partnerships with some research institutes and corporations to boost the Bay Area talent pool and promote research/technological innovation and knowledge exchange in various fields. For example, in 2021, HKUST-GZ and the International Digital Economy Academy signed a strategic cooperation agreement to enhance cross-border technological innovation cooperation in areas like

artificial intelligence, digital economy, and financial technology among Guangzhou, Shenzhen, and Hong Kong. The agreement includes collaboration in talent recruitment, student training, project cooperation, and the sharing of technological resources (He, 2021). Additionally, HKUST-GZ initiated discussions with Guangzhou Metro Group Company for a joint graduate training program, aiming to advance transportation talent development in the GBA by leveraging their respective technological and industry advantages (Daily, 2021). These examples reveal an intensification of industry-academia-government collaboration with the GBA framework.

Overall, the establishment of branch campuses in the GBA by Hong Kong universities can be regarded as a calculated manoeuvre that accrues mutual advantages for both the institutions and the region at large.

3.3. Reconceptualising Hong Kong as a radiator

The launch of the GBA development plan represents a reinvigoration of the national imperative, as it accelerates and institutionalises the subnational regionalisation and substantially shapes Hong Kong's higher education policy and beyond. Simultaneously, the government has abandoned the laissez-faire approach and introduced a "proactive governance" principle (Lam, 2017, 2018). This change in governing principles allows the government to increase its involvement and support in fostering innovation, as emphasised in the GBA plan. Specifically, the HKSAR government has reviewed its research policy and funding strategy, as it aims to double the gross expenditure on R&D as a percentage of gross domestic product by increasing both public and private investment in R&D (Lo and Tang, 2020). To achieve this goal, the government launched the research matching grant scheme and allocated additional funding for university research. Various reviews of research policy, funding and governance have been conducted. These reviews recommend increasing public expenditure on R&D, mobilising private sector support, improving the research grant allocation mechanism, and enhancing research talent retention. The emphasis on societal impact in research assessment and the inclusion of research impact as part of the assessment criteria demonstrate a shift toward valuing the broader social relevance of research. These changes aim to facilitate universities in adopting an entrepreneurial role, engaging with government institutions and private enterprises within a triple helix system (Beecher et al., 2020).

These policy changes align with the GBA plan, which emphasises innovation-driven and reform-led strategies, aiming to capture international innovation resources and build a globally competitive innovation development area. With five universities ranked among the world's top 100,¹ Hong Kong is expected to contribute to the development of the GBA by leveraging its scientific R&D capabilities and international academic networks (Lee, 2022). This explains the active pursuit of collaborations by Hong Kong universities in the GBA, including initiatives such as establishing branch campuses, promoting academic integration, and facilitating research collaborations. This policy goal of radiating academic capacity justifies the establishment of CUHK-SZ and HKUST-GZ. They also capture the conditions under which universities play a crucial role in synergising government, industry, and university efforts, leading to dynamic cross-border collaborations within the GBA (Wang et al., 2021).

More importantly, emphasising the utilisation of the international standing and R&D capacity of Hong Kong universities not only signifies a shift towards the knowledge/innovation hub model (Knight, 2013) but also redefines the conceptualisation of Hong Kong as an education hub. The gateway model, which highlights Hong Kong's role as a bridge for

¹ They are the University of Hong Kong, the Chinese University of Hong Kong, the Hong Kong University of Science and Technology, the Hong Kong Polytechnic University, and City University of Hong Kong (Quacquarelli Symonds Limited QS, 2023; Times Higher Education THE, 2023).

Mainland Chinese students to pursue overseas higher education, is no longer sufficient to capture the current positioning of the city within the GBA plan. The current focus on harnessing the international standing and R&D capacity of Hong Kong universities repositions the city as a radiator, emitting its world-class academic excellence to its neighbouring cities to contribute to the national development of China. Specifically:

A radiator represents Hong Kong's evolving role as an educational hub within the GBA strategy, signifying its shift towards actively radiating education and knowledge outward into other parts of the GBA. This transformation implies deeper integration with the Chinese Mainland and underscores Hong Kong's pivotal role in contributing to the development of the GBA as an educational and knowledge centre.

In this sense, the radiator model can be seen as a form of capacity building within the GBA framework. Highlighting Hong Kong's role as an education hub in the subnational regionalisation of higher education makes it unique, as education hub strategies and cross-border education activities in other contexts are largely embedded in internationalisation and globalisation (Olds, 2023).

The emergence of the GBA and its impacts on the repositioning of Hong Kong not only involve adjustments to the education hub strategy but also highlight the importance of higher education governance within the context of "One Country, Two Systems". These developments reflect revisions in the dynamics of global-national-local policymaking in higher education. Specifically, the reconceptualisation of Hong Kong's role as an education hub illustrates how higher education governance in the city has been reshaped following its unification with China. This reshaping emphasises integration with Chinese national development and aligns with the policy goal of serving the motherland (Lo, 2023). While pursuing global competitiveness remains a part of the policy agenda, this reconceptualisation clarifies the interplay between the national agenda, represented by the GBA plan, and the local responses, manifested in the policy changes implemented in Hong Kong, within the broader landscape of global competition.

4. Conclusion

This article explores Hong Kong's evolution as an education hub within the GBA strategy, analysing its impact on the city's educational landscape and global competitiveness. It emphasises the role of the GBA as a subnational higher education region, with a focus on strategic cooperation between Hong Kong and the Chinese Mainland. Through the case studies of CUHK-SZ and HKUST-GZ, the article highlights the significance of the GBA in fostering collaboration and knowledge exchange. It reveals the transformation of Hong Kong from a gateway to a radiator in the educational landscape, prompting a reevaluation and reconceptualisation of its global and national positioning in higher education.

On the one hand, the repositioning of Hong Kong's higher education sector within the GBA framework facilitates the increasing connection between cities in science and technology within the GBA. It has the potential to strengthen the flow of talent and promote academic exchange by establishing cooperative initiatives within the GBA framework. As a result of this increased collaboration, the GBA is well-positioned to expedite industry-academia-government collaboration and enhance the international competitiveness of the higher education sectors in the region (Tang, 2022; Xie et al., 2021). On the other hand, existing literature cautions that the repositioning might lead to the emergence of an inward-looking culture and an increased reliance on Mainland China. Although a deeper integration with the Chinese Mainland does not necessarily imply a weakening of global connections, concerns have been raised regarding Hong Kong's declining inclination to maintain its access to global networks (Lo, 2020). It is important to note that the repositioning of Hong Kong's higher education sector

within the GBA is still in its early stages. It is too early to say what the long-term impact of this repositioning will be. However, the GBA is a major force in the national higher education landscape, and Hong Kong's universities will need to carefully navigate the challenges and opportunities that lie ahead (Lo et al., 2022).

Finally, the article acknowledges a limitation in its review of the existing literature, which primarily focuses on opportunities, initiatives, and frameworks for collaboration initiated by the GBA plan. However, it overlooks the aspect of intercity competition in the regional integration process and does not consider its implications for the future of higher education in Hong Kong (cf. Lo et al., 2022). To address this gap, future research should incorporate empirical studies that delve into the complex dynamics between collaboration and competition among cities within the GBA. By doing so, a more comprehensive understanding of the dynamics of Hong Kong as an education hub can be achieved.

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During the preparation of this work the authors used Bard in order to improve readability and language. After using this tool, the authors reviewed and edited the content as needed and take full responsibility for the content of the publication.

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