Jane Knight *Editor*

International Education Hubs

Student, Talent, Knowledge-Innovation Models

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This book is dedicated to Ruth Hayhoe and Philip Altbach, both highly respected scholars and dear friends. This dedication not only honors their contribution to our field of comparative and international higher education but also acknowledges their role as mentors for the next generation of scholars, academic leaders, and policymakers. They have been highly influential and supportive in my own journey of understanding the international dimensions of higher education around the world. For that I extend my grateful appreciation and dedicate this book to them, and to future scholars working on the internationalization of higher education.

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Chapter 1
Introduction

Jane Knight

For centuries, higher education has had an international dimension. Witness the movement of scholars and knowledge around the world since early times and the concept of universe in the naming of universities as the first formal institutions of higher learning. Fast-forward to the twentieth century when international mobility of students exploded and international academic relations were strengthened by the founding of worldwide university networks and associations. Yet, internationalization of education, a term which has only been in use for about three decades, has fundamentally changed the landscape of higher education in a relatively short period of time. Internationalization means different things to different people, institutions, and countries. It is driven by diversity of rationales, finds expressions in a variety of activities, and brings multiple benefits, risks, and unintended outcomes. Education hubs are a recent manifestation of internationalization, demonstrating the changing and responsive nature of internationalization to the complex realities of today's more globalized world.

Globalization has had an enormous impact on the internationalization of higher education. The unprecedented developments in information technologies and social media, the pervasive impact of economic liberalization and trade agreements, and the increased flow of people, ideas, capital, values, services, goods, and technology across borders are examples of agenda- changing globalization forces. Internationalization is different but closely related to the dynamic process of globalization. The key concept of *internation* involves relationships between and among countries, people, systems, and cultures. This differs significantly from the core concept of *global or worldwide flow* and scope of globalization (Knight 2008). Heated debate continues as to whether globalization is a catalyst for internationalization of higher education or vice versa, internationalization of higher education

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is an agent of globalization (Cross et al. 2011; Donn and Al Manthri 2010; Scott 2005). Both perspectives recognize the complex and dynamic relationship between the two processes.

Interpreting Internationalization

Internationalization is not a new term nor is the continuing debate about its meaning. Internationalization has been used for years in political science and governmental relations, but its popularity in the education sector has soared only since the early 1980s. Prior to this time, "international education" and "international cooperation" were favored terms and still are in some countries.

The challenge in any definition of internationalization is the need for it to be generic enough to apply to many different countries, cultures, and education systems. This is no easy task. While it is not the intention to develop a universal definition, it is imperative that it can be used in a broad range of contexts and for comparative purposes across countries and regions of the world. A definition needs to avoid being an instrument that standardizes or homogenizes the internationalization process around the world by specifying the rationales, benefits, outcomes, actors, activities, and stakeholders of internationalization. These vary enormously across regions, nations, and from institution to institution. What is critical is that the international dimension relates to all aspects of higher education and the role that it plays in society.

Worth noting is that the suffix "ization" denotes internationalization as a process usually implying change. It is equally important that internationalization is not described as an "ism" or ideology as in internationalism. Nor is it an "ality" as in internationality or the condition of being international. It is firmly rooted as a process which further distinguishes it from the notion of international education per se.

For the purposes of this book, internationalization of higher education is defined as "the process of integrating an international, intercultural or global dimension into the purpose, functions (primarily teaching/learning, research, service) or delivery of higher education" (Knight 2004, p 7). The strength of this definition is that it is not prescriptive and focuses on education objectives and functions. The weakness now evident, however, is that traditional values associated with internationalization such as partnership, collaboration, mutual benefit, and exchange are not articulated – only assumed. Including these values in a definition is possible but it could raise new risks of being too prescriptive. Instead, the discourse and practice of internationalization needs to be reoriented to values (Knight 2012) and especially academic values.

Not only has internationalization transformed higher education, it has undergone fundamental changes itself. A critical development in the conceptualization of internationalization has been the recognition of "internationalization at home" and "crossborder education" as two pillars of the internationalization process. During the last 10 years, there has been unprecedented growth and attention paid to crossborder student, program, and provider mobility. The accent on mobility has forced proponents of campus based or "internationalization at home" to give greater

prominence to the intercultural and international dimensions of teaching/learning, research, extracurricular activities, intercultural skills, and relationships with local cultural community groups. It is shortsighted to believe that internationalization is based solely on academic mobility between nations. It can happen in the classroom, on campus, and in the community by focusing on intercultural issues.

The two pillars are closely linked; they are interdependent. Crossborder education has significant implications for campus- based internationalization and vice versa. Interestingly, many of the new developments in internationalization seem to be associated with crossborder activities including education hubs. There are several terms, such as transnational, borderless, and offshore, that are frequently used interchangeably with crossborder education. Crossborder education is the preferred term in this book as it acknowledges the importance of jurisdictional borders in this age of intense international activity and engagement.

Understanding Crossborder Education

There is no question that crossborder education, interpreted broadly to mean the movement of people, programs, providers, knowledge, policy, and innovation across borders, has grown in scope, scale, and impact (Knight 2008). It has been driven by different and sometimes conflicting rationales and has brought both benefits and risks to students, receiving/sending countries, and public/private institutions and providers (Altbach and Knight 2011).

Crossborder education has gradually shifted from a development cooperation framework, to a partnership and exchange approach, and now to a commercial and competitiveness model. This includes the morphing of international student mobility, traditionally associated with generous scholarship schemes for students from developing countries during the 1950s to 1980s into the big business of international student recruitment and the great brain race of the twenty-first century. It also involves an unparalleled growth in international branch campuses and collaborative programs such as twinning, franchise, and double/joint degree programs all of which take academic programs to students in their home countries and involve both pros and cons for various stakeholders. International education hubs represent the most recent development in crossborder education and build on the escalation of program and institutional/provider mobility.

The evolution of terminology used to describe the international dimensions of higher education is a revealing lens with which to look at internationalization in general and crossborder education in particular. The bolded terms in Table 1.1 illustrate the increase in the number and diversity of concepts now being used to describe academic mobility of people, programs, providers, projects, and policy across national borders.

The focus of this book is on international education hubs in general and, in particular, the three different models of education hubs – student, talent, and knowledge/innovation. These terms appear in the first column of Table 1.1 and

Table 1.1 Evolution of international education terminology

Recent terms last 10 years	New terms last 20 years	Existing terms last 30 years	Traditional terms last 50 years
Generic terms			
Regionalization	Globalization	Internationalization	International education
Planetization	**Borderless education**	Multicultural education	International development cooperation
Glocalization	**Crossborder education**	Intercultural education	Comparative education
Global citizenship	**Transnational education**	Global education	Correspondence education
Knowledge enterprise	**Virtual education**	**Distance education**	
Green internationalization	**Internationalization "abroad"**	**Offshore or overseas education**	
Global rankings	Internationalization "at home"		
Education hubs			
Innovation			
Specific elements			
International competencies	Education providers	International students	Foreign students
Talent hub	Corporate universities	Study abroad	Student exchange
Student hub	Liberalization of education services	Institution agreements	Development projects
Knowledge/innovation hub	Networks	Partnership projects	Cultural agreements
Degree mills	**Virtual universities**	Area studies	Language study
Visa factories	**Branch campus**	Binational cooperation	
Joint, double degrees	**Twinning and franchise programs**		
Branding, status-building			
Binational universities			

Source: Knight (2012, updated)

represent a new generation of crossborder education activities where mobility, critical mass, and collaboration between international/local universities, students, research institutes, and private industry are key concepts. Education hubs come in different shapes and sizes. The more interesting and prevalent form is a country-level hub where a country is building and positioning itself as an attractive and acknowledged center of education, training, knowledge production, and innovation activities. There are city- and zone-level hubs emerging as well but they are not the focus of this publication.

Purpose and Scope of Book

As of 2012, most of the information on education hubs is grey literature – primarily policy documents and business plans. Media articles abound and often report on a country's ambitious plans and marketing hyperbole. It is important to note that "education hub" is a self-acclaimed label. Anyone can use it to describe their education efforts and many do. For instance, individual universities and branch campuses call themselves hubs, cities with no crossborder education activity at all are using the education hub label, and small countries with great internationalization aspirations but little action are using the term. The increased use and popularity of "education hub" is evident but leads to speculation as to whether the term is being used as a branding label to increase international visibility, a short-lived fad based on the growing demand for crossborder education, or a serious new innovation and worthy of serious study.

There seem to be as many definitions of education hub as there are countries trying to become a hub, but the converse is true for the availability of reliable information. There is a dearth of empirical data or analysis of these new developments and no objective indicators to determine the type and viability of an education hub. The exuberant use of the term education hub prompts one to ask what is rhetoric and what is reality? In short, the increasing efforts to develop education hubs deserve a more systematic and informed analysis of their rationales, characteristics, development, and accomplishments. This kind of close examination of the phenomenon of international education hubs is the goal of this book. The term international education hub signals the interplay of local and international actors in crossborder education. All education countries in this book are international in nature and thus the term education hub implies the existence of crossborder education, training, and research activities.

As part of the analysis, a working definition of education hubs and a typology of three models of education hubs (student, talent, knowledge/innovation) have been developed. A framework focusing on the objectives, policy sectors, key actors, and strategies of the three different types of education hubs has been created as an analytical tool. Six countries serve as case studies. They represent what appear to be the most serious and advanced efforts to be an education hub as their work has been in progress over several years. The countries are located in Southeast Asia,

Southern Africa, and the Gulf States which allows for differences in national and regional contexts to come into play.

The six countries are Qatar, United Arab Emirates, Hong Kong Special Administrative Region, Malaysia, Singapore, and Botswana. The in-depth case studies were conducted by in-country experts who are involved in the hub development or are closely monitoring it. In several cases, international experts joined the country authors to help prepare the case study chapter. While all authors bring expertise and experience with education hubs, they represent an interesting selection of perspectives, disciplines, and specializations.

Each country hub responds to the local context, priorities, and needs and so they all develop in different ways. To permit some kind of crosscutting analysis, a common case study outline was provided as guidance to the authors. It was generic and flexible enough to allow the distinct features of each hub to be accommodated and highlighted. Four additional country hub countries, Korea, Sri Lanka, Mauritius, and Bahrain, are also included in the book. Due to a lack of information and/or progress in these four countries, in-depth studies were not possible. Thus, they have been identified as emerging hubs because they were only recently announced (Sri Lanka and Mauritius) or because progress has been somewhat stalled since the initial pronouncement (Bahrain) or because there is a lack of clarity as to whether the hub initiative will be a country-level or zone-level hub (Korea). A crosscutting analysis of the case studies was completed by the author/editor of the book. To facilitate the analysis, an informal survey was done with the case study authors and in many cases, further interviews were conducted.

It is important to be clear about the scope of this book. The primary focus is on countries or jurisdictions which are claiming to be an education hub, not individual cities or zones. A countrywide (or in the case of Hong Kong, a SAR-wide) approach was taken so as to ensure that all types of crossborder education initiatives were included in the analysis. This means that international branch campuses, education cities, science and technology parks, international collaborative program arrangements like twinning or franchise, education-free zones, and R&D companies are included in the case studies. It is this critical mass of crossborder activities and the relationships between local and foreign actors which are critical to the development of an education hub. Several education/knowledge cities and research/knowledge zones have been identified, but the individual city or zone level of education hub is not the focus of this book.

A significant constraint in a multi-country review of education hubs is the lack of common crossborder education definitions and the scarcity of any national-level data on collaborative initiatives such as twinning, franchise, and double/joint programs. Even the absence of a common definition for foreign students across international agencies like OECD and UNESCO results in contradictory and confusing data on international student numbers. This reality puts the robustness of data for comparative purposes in question. It has been said many times before, but it bears repeating, crossborder education plays a significant role in higher education provision and it is incumbent on institutions, national, and international agencies to seriously confront the lack of capacity and political will to collect the necessary data.

In Chap. 12, data is collected from a variety of international sources in an attempt to develop a number of indicators to discern the three types of hubs and their viability. In spite of the absence of robust information, it is imperative to move forward with the analysis of crossborder education provision and education hubs and to continually speak out on the need for reliable statistics.

Outline of Book

The book is essentially divided into three parts. The first part provides an introduction and analytical framework to review the phenomenon of education hubs. The second part includes the six in-depth case studies and a chapter on emerging hubs. The last part provides the crosscutting and comparative analysis of education hubs and identifies some key issues for further reflection and research.

More specifically, the second chapter looks at the three generations of crossborder education in order to give some historical perspective and context to understanding education hubs. This is followed by a conceptual analysis of the meaning and drivers of education hub including a definition and categorization of the rationales. A proposed typology of three education hub models ends the chapter and leads to the analytical framework discussed in Chap. 3. The purpose of the framework is to identify key elements and characteristics for the student type of education hub, the talent-focused education hub, and the knowledge/innovation model. The major components of the analytical framework are the focus, objectives, influential policy sectors, key actors, and strategies for each type of education hub. The case study chapters start with the two located in the Gulf States – Qatar and United Arab Emirates – followed by the three in Southeast Asia (Hong Kong, Malaysia plus Singapore), and finally Botswana, the only self-acclaimed education hub in Africa.

Qatar

Qatar is one of the first countries to announce its intention to become a regional education hub and invest in its development. Over the past decade, Qatar has focused on decreasing its dependence on natural resources and moving forward to become one of the major players in the knowledge economy. Understanding the great challenge lying ahead, Qatar decided to pursue its goals through education and by transforming itself into an education hub. In less than 15 years, Qatar has become home to over ten foreign academic institutions, top science and research organizations, and over 4,000 students and researchers from the region and around the world. The case study examines the rationales, initiatives, and policies guiding the development of Qatar as an education hub and elaborates on the three hub components: academic programs through branch campuses, the Qatar Science and Technology Park and related research initiatives, and the establishment of new science

and medical institutions. The chapter looks at the aspirations of a young nation to use education to add value to the "human capital" that will move Qatar toward the knowledge economy. The chapter looks at the approach used by the Qatar Foundation to invite foreign universities to establish a branch campus within Qatar's Education City and to focus on a specific program area for which they are well respected. A significant feature of the Qatar approach is the generous and ongoing financing of branch campus operations, research programs, and the new science and research facilities. The long-term intention of the education hub initiative is to enhance and retain the needed human resources and to develop a research culture and capacity. This in turn will contribute to knowledge generation and innovation and the future success of Qatar.

United Arab Emirates

The UAE hosts the largest number of international branch campus in the world. It is well known for its success in attracting branch campuses to two of its economic free zones – Knowledge Village and the Dubai International Academic City. But Dubai isn't the only emirate successfully involved in crossborder education. Two other emirates – Abu Dhabi and Ras al-Khaimah – are actively engaged in international education and research efforts as well as hosting branch campuses. A striking feature of the UAE education hub approach is that there is no national plan or coordinating mechanism. Each emirate develops its own strategic plan and local initiatives. It is widely recognized that UAE is dependent on foreign workforce to move it from an oil-based economy to one that is more service and knowledge oriented. To that end, UAE needs foreign talent and realizes that becoming an education hub will support its efforts to train and retain the large expatriate population of students as well as attract international students and workers from the region and beyond.

Hong Kong

After experiencing the Asian financial crisis in 1998 and the 2008 global financial crisis, the Government of the Hong Kong Special Administrative Region (HKSAR) realized that depending upon the traditional economic pillars (i.e., international finance, tourism, property market, and logistics) would not sufficiently sustain continual economic growth in the city-state. Recognizing that trade in higher education services is becoming increasingly popular in Asia, and that higher education is an effective soft power tool, the HKSAR government has worked on developing itself as a regional education hub by making education services one of the new economic driving forces. This chapter critically reviews the policy context

for the regional education hub project initiated in Hong Kong and discusses key drivers and rationales, major actors, and stakeholders involved in the hub initiative. The chapter closely examines regulations and policies governing the hub project and discusses the challenges and barriers for making the quest for the regional hub status a successful project.

Malaysia

Malaysia's agenda for establishing itself as an education hub is driven by the need to build its capacity in human capital, knowledge, and innovation, as well as strengthening education as a trade sector for revenue generation. The progress thus far has been guided by central government policies and regulations to transform higher education in general and education hub development in particular. Strategic policy sectors and actors such as departments of higher education, immigration, human resources development, industry, finance, and investment are all involved in the building of Malaysia as an education hub. Malaysia's current profile is that of a student hub based on the exponential growth of the international student body, particularly in the private sector, during the past decade. The chapter explains that while the country's commitment and progress is much lauded, there are still several critical issues that need to be addressed for Malaysia to stand firm on its status as an education hub. These include the diversification of the current international student demography, graduate employability, skilled workforce development, and brain drain. The chapter also suggests that Malaysia should reevaluate its resources, political will, and capacity toward transitioning into a talent and/or knowledge model of education hub. Malaysia's future rests on its ability to integrate the various components of education hub to ensure that there is added value gained from its diverse and important crossborder education activities.

Singapore

Portrayed as an exemplar of modernization, Singapore's investment in human capital and unique style of governance has paid handsome dividends in terms of economic development and social stability. Over 15 years, Singapore has been decidedly committed to transitioning from the Global Schoolhouse project to a twenty-first-century knowledge hub. This chapter describes key initiatives introduced to remodel the city-state into a global knowledge and education hub and a site for the continuing accumulation of capital, talent, and knowledge. Notwithstanding its clarity of vision and strategy, there are a number of practical complexities confronting Singapore's plans to "leapfrog" into the "value-added" realms of knowledge and innovation-related production. The chapter interrogates the state's calculative rationality which

foregrounds the Global North in imagination and aspiration. An argument is made instead for reimagining the local as a space for the ideas and insights which support creativity and innovation.

Botswana

Botswana's management of its economic growth has been narrowly based on diamond mining. While Botswana's sovereign wealth has enabled it to offer tertiary education places to all who qualify, including placements overseas, rapid economic development has come with lagging educational capacity and gaps in the professional skills needed for a more diversified economy and a role in the global knowledge economy. Consequently, as part of a policy to diversify into a number of market niches where Botswana has competitive advantages, the government sought to develop the country as an education hub. It considered and rejected an expensive special-purpose facility to build an elite campus cluster and instead sought to build Botswana as a country-level education hub. The education hub strategy aims to modernize the education sector, build domestic capacity, reduce the dependence and costs of overseas placements, internationalize the outlook of students and the workforce, and attract international students and investment. Based in part on the concept of economic clusters, the education hub strategy and business plan were formed in cooperation with other sector hub strategies for transport, diamond industry, agriculture, health, and innovation.

The six case studies are followed by a chapter on "Emerging Hubs" which provides brief profiles of Korea, Sri Lanka, Mauritius, and Bahrain. These four countries have all expressed their aspirations to be an education hub. But, for different reasons, they have not yet completely realized their goal. Both Sri Lanka and Mauritius announced their plans to become an education hub in 2010. It is still too early to determine whether these are serious endeavors with the requisite policies, actors, and investments in place or whether they are part of a major marketing and branding campaign to attract more international students. Information on concrete plans is difficult to obtain in spite of rather ambitious plans. It will be important to see whether their education hub announcements are translated into action and yield results. Bahrain was early to pronounce itself as an education hub. In 2005, it released its plans to work with a private investment firm from Kuwait to build an education city and modern science and technology park. While Bahrain is home to several branch campuses and hosts international students, its plans to become an integrated and recognized education hub seem to have stalled. Finally, Korea is part of this chapter because of its substantial progress in building the Songdo Global University Campus in Incheon Free Economic Zone even though to date, it has had limited success in attracting foreign branch campuses. Jeju Global Education campus is Korea's second economic free zone dedicated to all levels of education. It is primarily focused on attracting foreign secondary and tertiary education providers to Korea to retain the large numbers of Korean students who go abroad every year for

education. It is still up in the air as to whether Korea identifies itself as an education hub country or sees itself as building two separate education zones.

The last two chapters focus on a crosscutting analysis of the country case studies and an examination of key issues and challenges related to education hub development. In Chap. 11, the key themes for the comparative analysis include: the dates of announcement and perceived progress to date, the planning approach (reactive, proactive, or strategic), the implementation model (fragmented, coordinated, strategic) to hub development, the driving rationales, the involvement of key policy sectors and influential actors, as well as the impact on beneficiaries. The chapter closes with an analysis of the relationship among the three types of education hubs and questions whether there is a linear development from student to talent to knowledge type of hub.

The last chapter tackles some core issues related to education hubs within the broader context of crossborder education. The topics addressed are: the link between the top international student destination and education hub countries, the development of zone- or city-level education hubs, the distribution of branch campuses across education hub countries, the regional nature and engagement of education hubs, and the key challenges related to quality assurance and qualification recognition. A discussion on the feasibility and usefulness of developing indicators for the three types of education hubs follows and includes a trial set of indicators to illustrate both possibilities and pitfalls. To end the chapter and conclude the book, the last section raises questions which merit further reflection and research to deepen our knowledge about education hub experiences. These questions vary by type of education hub and include regulatory, policy and operational issues, as well as larger concerns about results, impact, benefits and risks, and sustainability. The chapter concludes by raising the idea of what follows education hubs in terms of the fourth generation of crossborder education.

Acknowledgments This book is the result of a large and dedicated team of individuals who brought their expertise and commitment to the analysis of education hub developments over the last decade. Grateful appreciation is extended to all of the case study authors. It was an enormous amount of work to locate planning and policy documents, conduct interviews with key actors, and track down hard data on the scope and scale of crossborder education activities and hub operations. Each education hub is a work in progress, and all their efforts to capture and communicate the past, present, and future dimensions of the hub's development have enriched our understanding of this new generation of crossborder higher education. A special acknowledgment and vote of thanks is made to Lois Dou for her superior research skills, insightful analysis, and dogged determination to find the requisite information and data.

A deliberate effort was made to include the next generation of internationalization researchers in the preparation of this book. Recognition and appreciation go to graduate students of the Ontario Institute for Studies in Education, University of Toronto – Jack Lee, Mohammed Khan, Hana Lee, and Kristjan Sigurdson, all of whom contributed to the conceptualization of the book, the analytical framework, and case study research. Particular mention is made of Hana Lee's contribution to understanding the hub developments in Korea. The opportunity to debate issues and share first drafts with David Wilmoth and Stephan Vincent Lancrin deepened my understanding of education hubs, and I am most grateful for their intellectual and moral support. This book is only the beginning of a long journey to understanding the phenomenon of education hubs. Thank you in advance to the reader for sharing your insights, queries, and experiences with me about this complex and fascinating development in crossborder education.

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Chapter 2
Understanding Education Hubs Within the Context of Crossborder Education

Jane Knight

Introduction

Internationalization is one of the major forces impacting and shaping higher education as it changes to meet the challenges of the twenty-first century. Overall, the picture of internationalization that is emerging is one of complexity, diversity and differentiation. One aspect of internationalization which is particularly important and controversial is crossborder education. It is no longer just students who are moving to other countries for education opportunities. Academic programmes, education institutions and new providers are moving across borders to deliver education and training programmes in foreign countries. Furthermore, countries, cities and zones are seeing the usefulness of developing themselves as education hubs where different types of crossborder education, training and research are linked and bring added value. The changes in crossborder education are dramatic. These new developments are full of potential benefits, but many of the consequences, intended and unintended, are still unknown.

International education hubs are the latest development in crossborder education. They represent a third generation of crossborder education where mobility, critical mass and collaboration between international/local universities, students, research institutes and private industry are key elements. The concept of an education hub rests on the motivation to be perceived and act as a reputed centre for higher education, training and research within the region and beyond. Therefore, an education hub is not an individual branch campus, or only a large number of international students, or just a science and technology park. It is more than a single initiative or institution. An education hub involves a coordinated and

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strategic effort to build a critical mass of local and foreign actors – including students, education institutions, training companies, knowledge industries and science and technology centres (Knight 2011a). Through interaction, networks and in some cases co-location, actors engage in education, training, knowledge production and innovation initiatives.

It is understood that education hubs have different objectives and characteristics which distinguish them from one another. In general, the term education hub is used by countries which are trying to position themselves as centres for student recruitment, education and training and in some cases research and innovation. A variety of factors are driving these efforts and include income generation, modernization of domestic tertiary education sector, economic competitiveness, need for trained workforce, regional profile, soft power and a desire to move to a knowledge- and service-based economy (Knight and Morshidi 2011). But are education hubs just a fad? Are they more rhetoric than reality? A common perception is that being recognized as an education hub will increase a country's reputation, competitiveness and geopolitical status within the region and beyond. Are education hubs nothing more than a branding exercise designed to increase status and a sense of soft power (Knight 2010)? Or are they a remarkable new development and an innovation in crossborder education which is worthy of serious consideration? The next section puts international education hubs into context by examining key precedents such as the movement of students, programmes, higher education institutions and private companies across borders.

Three Generations of Crossborder Education

Any study of higher education shows that academic mobility has been happening for a very long time. Scholars and knowledge have been moving around the world for centuries. But, by the early 1990s, the movement of programmes and higher education institutions between countries increased substantially due to increasing demand for higher education and the quest by some countries and higher education institutions to strengthen international academic relations and find new education markets. No longer were there isolated incidences of foreign programmes and providers resident in a few countries around the world, the numbers started to grow exponentially. By early 2000, some nations began to develop a critical mass of foreign providers, programmes and students, and the third generation of crossborder education – education hubs, cities and zones – began to appear. The purpose of Table 2.1 is to summarize the highlights of each of the three generations. Worth noting is that these generations are not mutually exclusive. In fact, education hubs build on and extend first- and second-generation activities. In the following section, each generation is examined so as to understand the differences and similarities among them and to raise some of the related issues and challenges.

Table 2.1 Three generations of crossborder education

Crossborder education	Primary focus	Description
First generation	Student/people mobility Movement of students, faculty and scholars to a foreign country for education and research purposes	*Students*: full degree or short-term study, research, fieldwork, internships and exchange programmes *Faculty*: for teaching, professional development and research purposes *Scholars*: to strengthen international research collaboration and networks
Second generation	Programme and provider mobility Movement of programmes or institutions/companies across jurisdictional borders for delivery of education and training in a foreign country	*Programme mobility* Twinning Franchised Articulated/validated Joint/double award Online/distance *Provider mobility* Branch campus Virtual university MOOCS Merger/acquisition Independent institutions
Third generation	Education hubs Countries attract foreign students, researchers, workers, programmes, providers and R&D companies for education, training, knowledge production and innovation purposes	*Student hub* – students, programme and providers move to foreign country for education purposes *Talent hub* – students and worker move to foreign country for education and training and stay for employment purposes *Knowledge/innovation hub* – education researchers, scholars, HEIs and R&D centres move to foreign country to produce knowledge and innovation

Source: Knight (2014)

First Generation: Student Mobility

Nobody could have predicted the meteoric rise in all forms of student mobility in the last 50 years. The increase in mobile students from about 238,000 in the 1960s (Chen and Barnett 2000) to 4.1 million in 2010 (OECD 2012) is staggering. If forecasts are correct, this number will double in another 10–15 years. In the past four decades, the numbers of students, the types of mobility experiences, the driving rationales and the destination countries have changed dramatically.

When the term student mobility is used in a comprehensive sense, it usually refers to international students who are taking a full degree abroad or, secondly, students who are participating in a semester or year abroad programme as part of their academic programme at their home university. More recently, it also involves students who are enrolled in collaborative degree programmes such as double/joint, franchise, twinning or sandwich programmes. In a strict sense, student mobility may not be required in these collaborative programmes, but it is strongly encouraged and usual practice. However, student mobility involves more than course/programme work for it can include research, fieldwork, internships or practicums as part of the programme. Given the importance of understanding foreign cultures and languages, students especially those who cannot afford the time or costs of semester abroad are participating in short-term cultural workshops, tours and activities. New forms of virtual mobility are emerging and merit further attention and research. Virtual mobility involves the use of ICT technologies to encourage crossborder collaboration for teaching and learning and replaces the necessity of international physical travel. The benefits of working together virtually with counterpart teachers and students to enrich the learning experience and enhance intercultural understanding and the exchange of knowledge are many. Virtual mobility should not be confused with online or distance education as it involves direct collaboration and exchange in a virtual learning environment and not merely access to learning opportunities or programmes through electronic means.

Three key issues related to the different forms of physical or virtual mobility are earning credits for course work taken outside of the home institution, determining which institution awards the programme qualification and assuring that the credential is recognized in the home, host or other countries where the student may want to take further education or seek employment. The granting and recognition of degrees is becoming more complex and troublesome. This is especially true for collaborative programmes such as double or multiple degree programmes. Chapter 12 discusses this issue in more detail.

Regionalization now plays a significant role in choice of foreign study location. It is predicted that about 70 % of student mobility will occur within Asia (UNESCO 2010) in the future. Why Asia? The successful recruitment efforts of Japan, Malaysia, Singapore and China are bearing fruit, and, secondly, India, Indonesia and China represent three countries with huge numbers of secondary students wanting to proceed to tertiary education at home and abroad. Table 2.2 lists the top ten destination countries in the world.

Just as no one anticipated the growth in student mobility, no one could have predicted that international student recruitment would be directly linked to national innovation, science and technology strategies as well as trade and immigration policies in the quest for human talent to serve the service and knowledge economy. The brain train or circulation concept is the current term used to describe the trek of students and young professionals from country to country for study and employment reasons. But the notion of circulation masks the fact that there is net brain drain for some countries, usually smaller developing countries, and there is net brain gain for more economically advanced countries. By 2025, it is estimated that

Table 2.2 Foreign student top destination countries in 2009

Countries	Standing	Total number in 2009
United States	1	660,581
United Kingdom	2	368,968
Australia	3	257,637
France	4	249,143
Germany	5	197,895
Japan	6	131,599
Russian Federal	7	129,690
Canada	8	93,479 (2008)
Malaysia	9	57,824
South Korea	10	50,030
Spain	11	48,517
Singapore	12	40,401

Source: UNESCO (2012)

7.8 million students will be enrolled in foreign countries for their tertiary education (Bohm et al. 2002) indicating that the first-generation crossborder education activities will continue to expand in scope and scale. The rationales and impact of student mobility will change however, as countries look to attract and retain students to fulfil their need for knowledge workers and skilled labour.

Second Generation: Programme and Provider Mobility

In the early 1990s, the movement of programmes and providers across borders began to increase substantially and have an impact on the number of students who could access foreign higher education programmes and qualifications without leaving home. Examples of crossborder *programme* mobility include twinning and franchise programmes, articulation arrangements, joint/double degrees and the latest development – massive open online courses (MOOCs) (OBHE 2012a, b). Branch campuses, embedded teaching centres and virtual universities are examples of crossborder *institution/provider* mobility (Knight 2007). Both have become more popular and absorbed large numbers of students wanting a foreign academic programme and qualification.

Unfortunately, there is no comprehensive and reliable database on programme and provider mobility. Many countries do not collect this data at the national level. More challenging is the reality that countries do not use the same definition or set of criteria to identify twinning, franchise and double/joint degree programmes. While this problem already exists for international student statistics, it is even more problematic to capture reliable data for programme mobility. Singapore, Malaysia and Hong Kong are hosts to the largest concentration of twinning and franchise programmes in the world. They monitor and maintain data on the types and enrolments of imported academic programmes by applying a quality assurance or accreditation

Table 2.3 Increase in number of branch campus 2002–2011

	2002	2006	2009	2011	Planned
Total number of branch campus	24	82	162	200	37
Number of source/sending countries		17	22	24	
Number of host/receiving countries		36	51	67	
Number of branch campus hosted by region					
Africa			5	18	1
Asia Pacific			44	69	31
Europe			32	48	3
Latin America			18	10	0
Middle East			55	55	1
North America			8	10	1
Branch closures		6	5	12	

Source: Knight (2014) taken from OBHE (2009, 2012a, b) data

system for all foreign programmes coming into the country or offered in collaboration with a local institution. Lessons learned from these experiences could inform other countries importing a large number of foreign programmes.

Provider mobility presents a different scenario. Universities have been setting up campuses in foreign countries for decades albeit in very small numbers and often without accreditation or licensing from the host country. A more recent development includes new or alternate providers, such as multinational corporations and non-governmental bodies, providing education programmes in foreign countries. Factors driving this growth include the increased demand for tertiary education arising from larger secondary school cohorts and the knowledge economy's need for a skilled labour force. Many countries found it more attractive to host branch campuses of foreign public and private universities than to invest in the physical and human infrastructure needed for an expanded higher education sector (Verbik and Merkley 2006). At the same time, regional and world trade agreements now include education as a tradable service spurring private and public education providers to seek new commercial possibilities in crossborder education. It became clear that large numbers of students found it more attractive and economical to study at home at international branch campuses than to go abroad.

An international branch campus is defined as 'a satellite operation of a recognized higher education institution or provider which offers academic programs and credentials in a different country than the home institution' (Knight 2008, p. 122). According to the OBHE data (2012a, b), there were just 24 branch campuses in 2002. But one decade later, there are more than 200 operating in all regions of the world. It is revealing to see the distribution and growth of these new initiatives by region. Table 2.3 shows that as of 2011, Asia is home to 69 of the 200 branch campuses around the world. This is an increase of 25 since 2009. This represents the largest number in a single region, and the forecast for increased growth suggests that there will be an additional 31 by 2014. This brings the total to 100 branch campuses in Asia. The growth of branch campuses in the Middle East has remained

stable at 55 since 2009 with only one is in the planning stages as of 2011. Of particular interest is that the number of receiving or host countries of branch campuses has almost doubled from 36 in 2006 to 67 in 2011. At the same time, there are some branch campus closings, 5 from 2006 to 2009 and 12 between 2009 and 2011 (OBHE 2012b).

The regional distribution of branch campus source countries looks very different. North America is the leading exporter of branch campuses at 82 (primarily from the United States), Europe is second at 68 and then Asia Pacific at 38 (OBHE 2012a, b). Asia is in a particularly dynamic situation as it is the top region in terms of hosting or receiving the largest number of branch campuses and is third place in terms of establishing them abroad.

Overall, this unanticipated increase in branch campuses during the last decade highlights the second generation of crossborder education and strongly influences the emergence of the third generation.

Third Generation: Education Hubs

Education hubs are the most recent development and constitute the third wave of crossborder education initiatives. Education hubs build on and can include first- and second-generation crossborder activities, but they represent a wider and more strategic configuration of actors and activities. An education hub is a concerted and planned effort by a country (or zone, city) to build a critical mass of local and international actors to strengthen the higher education sector, expand the talent pool and/or contribute to the knowledge economy.

In 2012, there are only a handful of countries around the world which are seriously trying to develop themselves as an education hub. These include Hong Kong, Singapore, Malaysia, the United Arab Emirates, Qatar and Botswana (Knight 2011b). Others such as Bahrain, Mauritius, Korea and Sri Lanka are still in initial or perhaps 'stalled' stages. Some countries such as Bhutan seem to be using the term education hub only as a branding label to attract more international students and providers. In addition, there are cities around the world, for instance, Panama City, Bangalore in India and Monterrey in Mexico, that are trying to position themselves as education or knowledge cities. Several city-level initiatives, Panama being a prime example, are trying to be international in scale, while others are local-level initiatives. The diversity of approaches and motives to developing an education hub begs the question as to what, exactly, does an education hub mean and involve.

There is no single model or 'one-size-fits-all approach' to establishing an international education hub. Each country or jurisdiction has its own set of drivers, approaches and expectations. A new feature of the third generation of crossborder education is the emphasis on knowledge production and innovation. Education and training initiatives have been traditionally associated with the first two generations of crossborder education, and the addition of knowledge generation and application is a noteworthy development and feature of education hubs.

Characteristics and Meaning of an Education Hub

The term hub is being used by many sectors – transportation, finance, communication and fashion. For instance, from the economic sector, there are 'hub-and-spoke' free trade agreements (Alba et al. 2010) just as there are transportation node and hub networks. The concept of 'cluster', conceived as a network of connected actors working in a specific field and located in the same area, is becoming more popular in the world of business, science, health and manufacturing. These terms, when used in an applied sense, denote a group, gathering, centre, nucleus, core, critical mass or collection. Thus, the idea of hub is an elastic concept used to denote some kind of relationship or interconnectedness at different levels with a diversity of actors and activities.

Definition and Key Concepts of Education Hub[1]

Given the diversity of education hub models plus the lack of any systematic study of the phenomenon to date, an analysis of the common characteristics of education hubs is warranted. Working on the assumption that the number and types of education hubs will increase, any working definition needs to be generic enough to apply to all levels of education hubs as well as the scope of engagement and impact. A proposed working definition, regardless of what level it is (country, zone or city) or in what region of the world it is located, is as follows:

> an education hub is a planned effort to build a critical mass of local and international actors strategically engaged in crossborder education, training, knowledge production and innovation initiatives. (Knight 2011a, p. 227)

The identification of driving rationales, expected outcomes, sponsors, major actors and specific types of activities is intentionally omitted to allow the definition to apply to the emerging diversity of hubs. To fully understand the meaning and dimensions of the proposed definition, it is helpful to examine each core concept.

The concept of *planned effort* indicates that a hub is an intentional or deliberate project and would normally involve a strategy, policy framework and some public and private investment. In other words, a hub is more than a coincidental interaction or co-location of actors working in the education and knowledge sectors. The notion of being planned helps to decrease the chances that it is merely a fad or branding exercise or a serendipitous set of temporary interactions among key players.

The notion of *critical mass* suggests that there is more than one actor and set of activities involved. This means that a single branch campus, or franchise programme, or science and technology park, or internationally engaged institution does not constitute a hub. A hub is different from individual first- and second-generation crossborder activities as it brings these kinds of initiatives together into some kind

[1] The section is adapted from Knight (2011a).

of planned or coordinated project. The concept of critical mass intentionally goes beyond a random collection of crossborder activities as it denotes that there is a key combination of actors. The term co-location was considered and deliberately not included in the definition even though it is significant to the meaning of a hub. The use of the term co-location at city, zone and national levels means different things. Actors can be co-located in a single or multiple locations because of complementarities of services, but it does not imply that all actors must be co-located in one designated area. Larger countries like Malaysia and the United Arab Emirates are good examples of multiple activities and multiple co-location sites, while Hong Kong Special Administrative Region and Singapore, essentially city states, are small enough that the notion of one co-location site can apply.

The inclusion of *local and international actors* indicates that an education hub involves both domestic and foreign players. Given that international actors and activities are involved, the nature of the hub is international by definition. Nevertheless, it still may be necessary to use the term international education hub to distinguish it from a city/zone level hub which involves local actors only and no crossborder education. Actors can include local, regional and international students, scholars, institutions, companies, organizations, research centres and knowledge industries. The term actor is used in an inclusive manner so as to cover providers, producers and users of the education, training and knowledge services and products. The diversity of actors will vary from hub to hub depending on the rationales and functions of the hub, and thus types of actors are intentionally not specified in the definition. Chapter 3 examines the different sectors and types of actors as part of the analytical framework, and Chap. 11 provides an analysis of the various key players active in the country-level education hub case studies.

The idea of *strategically engaged* is central to the definition as it emphasizes a deliberate connection, interaction or relationship among the actors. While the nature of the engagement will differ from hub to hub, a fundamental principle is that there is added value when the actors are connected, collaborate or share common facilities and resources. This does not deny that there will be competition among actors who offer similar services, but the pros of being part of a strategic and interactive initiative appear to outweigh the cons. The nature and numbers of the interactions are unlimited given the diversity of local and international actors and users. Secondly, given that an education hub is planned, a master plan or overall strategy, along with the aligned policies and regulations, helps lead to success and sustainability. This supports the important concept of ‘strategic’ in the definition.

Crossborder education, training, knowledge and innovation initiatives depict the broad categories of activities and outputs of hubs. There is a wide selection of initiatives or services that are available depending on the type of hub, priorities of the individual actors and the sponsor’s strategic plan.

Worth noting is that the level of hub is not included in the definition because the level (zone, city, country) is determined by the sponsors of the hub as is the reach or engagement of actors and the spread of impact and influence. For example, a zone-, city-, and country-level education hub can aim to attract actors from their immediate vicinity or beyond, and the impact can be local, national, regional or global.

Therefore, level and scope of activities is not a part of the generic definition but would normally be part of the description of a specific education hub.

Finally, an education hub has not been defined in physical or spatial terms such as a designated area as this may be too limiting. Rather the central concept is one of connectedness or a network of interactions among engaged local and international actors undertaking crossborder education activities to achieve their individual objectives as well as the collective goals.

Education Hubs: Level, Engagement and Impact

A scan of the existing education hubs indicates that it is important to note three critical aspects: level, engagement and impact. The first is the 'level' or magnitude of the hub such as city, zone and country. This indicates whether it is located in a specific geographical area like a city or zone or whether it is more widespread as in country level where interconnectedness among actors and initiatives is more important than co-location in a common geographical area. The second aspect involves the '*engagement*' *or reach* for attracting actors to be part of the activities, services of a hub. For example, an education hub can include local, regional and international actors such as foreign higher education institutions, R&D companies and students. The third aspect is the *impact* or spread of influence and benefit of the education hub. For instance, the impact of the education hub, such as the supply of education and skilled workers or generation of new knowledge/innovation, can benefit a specific zone, state, country, region or beyond.

Thus, the three concepts of level, engagement and impact are central to studying education hubs. For the purposes of this book, the *level* is primarily country level, meaning that national-level planning and policies are normally involved. Secondly, the connections among the actors and initiatives are important, but co-location is not mandatory. An example of a country-level hub is Malaysia as it has a number of different crossborder education initiatives. They include seven different international branch campuses located in different states, a national-level international student recruitment strategy which involves local and foreign universities all over the country, a special economic zone called Iskandar which includes an education city, and multiple international partnerships and joint academic programmes between domestic and foreign higher educations. In other cases, such as the United Arab Emirates, there is no national-level hub strategy, but there are multiple international education activities located in different sites or zones across the country. Singapore is an interesting example, as it is considered to be a country-level hub because it involves a large number of interconnected policies and initiatives but geographically it is a small city state.

In terms of *engagement*, all education hub case studies in this book are international in character as they include education providers, students and companies which are both local and foreign. Some hubs can be more regional in their international focus. The term international is used to make a distinction between a

domestic-level hub that only involves local actors. In fact, it is the interaction and collaboration between local and international actors which is fundamental to the concept of an international education hub. Finally, the concept of impact or spread is also geographical but is more complex and difficult to articulate and measure. A key question is whether the motives and results of a hub strategy are directed to domestic benefits and impact, or is the hub intended to have influence and effects beyond national borders to the region and the rest of the world.

Qatar is an interesting example, as it clearly states in its planning documents that as an education hub, the benefits are for Qatar and the rest of the region while at the same time asserting its position and influence in the international scene of higher education. In fact, most countries that are investing funds and efforts to being an education hub have aspirations to be recognized as a centre of education excellence and economic activities. The differences between level, engagement and impact may seem murky at this point, but the in-depth hub case studies in this book will illustrate that most hubs aim to have a regional or global geopolitical impact while ensuring that there are concrete national-level benefits.

Rationales

As previously discussed, crossborder education is one of the two fundamental pillars of internationalization, and, secondly, education hubs represent the third generation of crossborder education. Thus, it makes sense that the rationales driving education hubs have a direct relationship to why institutions and countries are engaged in the internationalization process in general and crossborder education in particular. A review of the most important internationalization rationales reveals five major categories: academic, economic, political, social-cultural and status (Knight 2008). These five types of rationales include both 'international at home' and 'crossborder education activities'. Chapter 11 provides an in-depth look at crossborder rationales and illustrates a close link with these five major types.

Any analysis of crossborder education requires a 360-degree analysis to accommodate the perspectives of local and foreign actors and stakeholders. Table 2.4 illustrates the perspective of three different stakeholders involved in crossborder education: the host or receiving country, the students from the host country enrolled in foreign academic programmes and the foreign institution or provider from the sending country. It is clear that the diversity of rationales driving crossborder programme and provider mobility differ by stakeholder. But all are related to academic issues such as increased access, diversity of programme offer and foreign qualifications.

In terms of economic rationales, institutions/providers from the sending country may have income generation in mind, while the students believe that taking a foreign programme in their home country decreases the travel, accommodation and cost of living in a foreign country. Reputation and profile seem to apply to all stakeholders as the host country wants to increase its profile in the region and

Table 2.4 Stakeholder perspectives on crossborder education

Rationales	Government education departments (host/receiving country)	Students (in host country)	Institution/provider (from sending country)
Increased access to higher education	Increased opportunities for education training of local, expatriate and international students	Ability to gain foreign qualification without leaving home. Can continue to meet family and work commitments	Attracted to unmet need for higher education and training and or invitation to establish presence in foreign country
Cost/income	Students do not require funding to go abroad for education therefore decrease in foreign currency costs	Less expensive to take foreign programme at home as no travel or accommodation costs. But tuition fees of quality foreign providers may be higher than local HEIs	Strong imperative to generate a profit for crossborder operations as well as increased profile
Selection of courses and programmes	Foreign providers can offer modern courses with international content relevant to needs of industry and employers	Increased access to courses/programmes in high demand by labour market	Tendency to offer high demand courses which require little infrastructure or investment unless provided by host country
Language/cultural and safety aspects	Relevance of teaching practices, course curriculum and new skills to culture and values. Impact of foreign providers on the selection of academic programmes offered by domestic institutions	Can have access to courses in foreign and/or indigenous language. Remain in familiar cultural and linguistic environment	Language of instruction and relevance of curriculum to host country. Additional academic and linguistic support may be needed
Quality	International branch campuses and foreign programmes can demonstrate new pedagogical and management approaches	Can be exposed to higher- or lower-quality course provision	Depending on delivery mode, quality may be at risk. Assurance of relevant and high quality courses may require significant investment
Recognition of qualification	Local and foreign employers and high education institutions need to recognize foreign credential for employment or further study purposes	Foreign qualification has to be recognized for academic and employment purposes	May be difficult for academic award and for institution to be recognized in foreign country
Reputation and profile	Country can be seen as centre of education excellence if reputable foreign programmes and branch campuses are available. Increase attractiveness/competitiveness of country	Due to massive marketing campaigns, international profile can be mistakenly equated with quality of provider/programme	Profile and visibility are key factors for high enrolments and strategic alliances

Knight (2014, updated)

beyond, the students want to study with reputable foreign institutions and the sending institutions or providers are trying to enhance their brand and status as an international institution.

Overview of Education Hub Rationales

The major reasons driving education hubs have a slightly different emphasis than the ones described above for internationalization in general and crossborder mobility of programme and providers. However, the link is clear. The importance of well-thought-out and clearly articulated rationales cannot be overstated as they are the first step in a sequence of related actions. Well-defined rationales are translated into specific objectives for planning an education hub, objectives are then turned into action through the articulation and implementation of strategies, and strategies directly contribute to the identification of anticipated outcomes and the eventual impact. In short, explicit rationales form the foundation for a hub master plan. The following section describes five groups of rationales that appear to be the most prevalent among the case study hubs included in this book. The individual case study chapters delve more deeply into these driving forces, while the following section provides an overview.

Economic reasons constitute the first category. They are dominant and take many forms. For instance, strengthening the 'education industry' (a term more often used than 'education sector' in hub discussions) is a common principal economic rationale. Attracting foreign investment is a second, and lastly, economic diversification to build a successful knowledge and service economy is the third economic motivation.

The second category consists of *education and training reasons*. It is necessary to use the more precise term of education and training than the generic term 'academic rationales' which is used to delineate internationalization because education hubs differentiate between academic activities such as teaching and training and those projects related to research and knowledge production. The three core motives in this category include (1) aligning education and training with industry needs, (2) improving access to learning opportunities for local, expatriate and international students and (3) enhancing the overall quality of higher education in the host country.

Knowledge generation and innovation is the third category. It focuses on (1) creating or enhancing the research culture, capacity and outputs and (2) supporting applied research for innovation purposes. In addition, the importance of blue-sky or more theoretical research is also cited as a rationale of some education hubs.

The fourth category emphasizes *human resource development*. The need for trained skilled workers for the transformation to a knowledge- and service-based economy is a leading rationale. A second is the need to prevent brain drain by retaining local and foreign talent in the country. Human resource development can

move beyond the country's borders to supplying the region with a trained talent pool.

The fifth group is harder to label because it involves using the education hub for *status*, *soft power* or geopolitical influence in the region and beyond. The three motives included in this category are to (1) promote or brand the country (jurisdiction) as a regional centre of excellence, (2) use education to increase attractiveness, competitiveness and status within the region and beyond and (3) create international partnerships for education and research.

Three Models of Education Hubs: Student, Talent and Knowledge/Innovation

As discussed, different rationales, actors and activities characterize education hubs. Some countries see hubs as a means to build a critical mass of foreign students and providers to generate income as well as modernize and internationalize their domestic higher. Others want to be a hub in order to train foreign and local students and employees to be part of a skilled labour force. And other countries focus on attracting foreign students and workers, institutions and companies to build a vibrant research, knowledge and innovation sector to lead them towards a knowledge-based economy.

In order to capture the differences among hub approaches and allow for a more nuanced understanding and exploration of education hubs, a typology of three categories of hubs is suggested. The three models of education hubs are student hub, talent or skilled workforce hub and the knowledge/innovation hub (Knight 2011a). The typology is based on the rationales driving hub development as discussed in the previous section not on the location or level of hubs.

Chapter 3 will further develop this typology into an analytical framework which delves deeper into specific objectives, key actors, major policy sectors and relevant strategies for each of the three types of education hubs.

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Chapter 3
An Analytical Framework for Education Hubs

Jane Knight and Jack Lee

Introduction

As a new phenomenon in the landscape of higher education, education hubs are appearing in different locations in the world each with its own individual political, cultural, and economic context. Chapter 2 focused on the development of crossborder higher education during the last three decades in order to situate the development of education hubs in the broader frame of internationalization. In spite of the individual rationales and contexts of education hubs, there appears to be three different, but linked, models of education hubs emerging. The proposed typology of education hubs includes a student hub, a talent hub, and a knowledge/innovation hub.

The purpose of this chapter is to expand on the typology and explain in detail how the models differ or overlap in characteristics and how they relate to one another. A framework is used to guide the exploration and comparison of education hubs along five different lines of analysis: focus, objectives, policy sectors, actors, and strategies. To understand the framework, a brief description of each element or level of analysis follows.

The first element of the framework is *focus* which is the overarching aim and feature of the education hub. It captures the essence of an education hub in succinct terms. The next level of analysis addresses the hub *objectives*, which are the purposes, aims, or goals of the hub expressed in specific terms. Objectives are often understood as the tangible or measurable goals for the purpose of policy implementation. Objectives relate directly to expected outcomes and therefore also inform the subsequent monitoring and evaluation of progress. *Policy sectors* are the third element and represent the major spheres of influence in the development of an education hub given that policymaking in higher education is no longer solely

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the prerogative of the education sector. Sectors outside the education domain, such as trade, foreign affairs, labor, immigration, and science and technology, increasingly affect the developments of higher education systems worldwide. Primary and secondary level policy sectors are identified for each type of hub. *Actors* are the key players with agency and have influence in steering the development of an education hub. The actors are identified as primary and secondary for each type of hub. While the policy sectors may overlap across the three models, the constellation of primary and secondary actors is unique to each type. *Strategies* represent the fifth element of the framework and can be described as the actual instruments and activities being used to develop an education hub. A broad selection of strategies is used to fulfill the different objectives, but only a few examples of strategies are highlighted for each type of education hub.

It is important to note a few caveats when interpreting and applying this framework. First, the three different education hubs are not discrete types; they share some overlapping features. For example, teaching and learning are core activities in both the student hub and talent hub but the objectives and expected outcomes behind the strategies may differ significantly. Similarly, the same policy sector could be involved in two types of education hubs but with varying degrees of influence in policymaking. Second, the typology is not meant to suggest a linear development from student hub to talent hub to knowledge hub. These are not successive stages of development in the annals of education hub, even though some countries perceive and frame their hub evolution in this manner. Third, there is no value judgment on the desirability or appropriateness of each type of education hub. In other words, one hub is not better or more fully developed than another and the knowledge/innovation hub is not seen as the ultimate form of development that all sponsors should aspire to achieve. Each city, country, or region has its own needs; therefore one type of education hub may be more appropriate than another depending on the context. Lastly, an education hub is not a static entity cast in perpetuity. Instead, policy rationales can and do change over time. For example, a talent hub may reduce its scope and become a student hub or decide to expand to become a knowledge hub. It is recognized that the lens used to develop this framework for the study of education hubs is higher education. However, the analysis is sensitive to the perspectives of economists, geographers, urban planners, and political scientists which can only enrich the discourse on education hubs.

Three Types of Education Hubs

As discussed in Chap. 2, education hubs can be differentiated based on the rationales driving their development. The three models of education hubs in this book are based on this assumption. Rationales are the drivers, impetuses, motivations, and underlying reasons behind a policy initiative and subsequent new development. Rationales are usually negotiated by the key policy sectors and actors and then translated into objectives and concrete strategies for the successful implementation

and sustainability of an education hub. The following section provides a detailed description of each type of education hub based on the five elements of the framework.

The Student Hub

The student hub is perhaps the most common type of education hub given its focus on the traditional mandate of higher education: teaching and learning particularly at the undergraduate level. In a student hub, the learners include both domestic and foreign students as well as expatriate students in some cases. Expatriate students are the children of foreign guest workers some of whom have lived in the host country for a considerable amount of time, yet their children remain marginalized without access to the same education opportunities available to local nationals. These expatriate students may be born and raised entirely in the host country, but they are nevertheless identified as nonlocal. Foreign students may come from neighboring countries with limited higher learning opportunities or historical allies sharing a cultural affinity. Alternatively, they can originate from nations outside the region. Therefore, a student hub expands a higher education system with the hope of meeting the needs of students from diverse origins.

More specifically, the objectives of a student hub are to widen access to higher education students, modernize and internationalize domestic HEIs, raise the profile of the country's higher education system, and generate revenue from the influx of foreign students. As the number of fee-paying international students continues to increase worldwide, higher education is viewed more and more as an industry which can generate income for institutions and the country at large. Access to higher education increases when more crossborder provisions become available to students. The influx of international students, programs, and providers is also viewed as meeting the objectives of internationalizing and modernizing the higher education system. The objective of enhancing the profile, branding, and ranking of higher education institutions reveals a desire to compete regionally or internationally. The physical presence of established foreign providers contributes to the profile and branding of the country's higher education system. In short, a student hub seeks to increase the capacity of the higher education system both quantitatively and qualitatively.

To achieve these objectives, a student hub utilizes several strategies to build a critical mass of higher learning involving both local and international actors. A student hub actively recruits foreign education providers to establish collaborative programs and build branch campuses. These collaborative programs include twinning and franchised programs which appeal to students who prefer to remain at home or close to home in pursuing a foreign credential. Furthermore, institutions are also offering more joint, double, and consecutive degree programs which link local and international institutions through collaborative curriculum design and delivery as well as through research partnerships. In several countries,

the government has provided seed capital, subsidized land, and offered tax incentives to entice foreign education providers to establish branch campuses. Likewise, a national recruitment campaign to attract international students is a common strategy for student hubs. These campaigns coordinate the international promotion of one's higher education system and facilitate the processing of student visas or housing arrangements for incoming students. In short, a student hub uses different means to increase three types of mobility: student, program, and provider. In tandem with the strategies to build a critical mass of local and international education students and providers, many jurisdictions are now enacting stricter regulations. A reputation of low-quality education and student dissatisfaction could jeopardize the very foundation of a student hub, and therefore efforts are being made to register, license, accredit, and quality assure incoming academic programs and providers. Chapter 12 discusses the different aspects of quality assurance in more detail.

The policy sectors shaping the development of a student hub include foremost the higher education sector followed by trade, foreign affairs, and in some cases tourism as secondary sectors. This distribution of influence indicates again the core focus of a student hub: teaching and learning. The secondary sectors provide support through international visibility, information distribution, and logistical assistance. At the actor level, the key players are higher education institutions both local and foreign. For foreign institutions, it is primarily in the form of branch campuses while local institutions host international students and participate in international research projects. Ministries dealing with higher education set recruitment targets, provide scholarships, establish codes of good practice, and develop guiding policies and regulations for the establishment of branch campuses and international collaborative programs. Secondary actors include quality assurance agencies, international education bodies, and cultural/heritage organizations.

The Talent Hub

A talent hub also focuses on teaching and training students but with a different purpose in mind. The overall goal is to develop a skilled workforce. Proponents of a talent hub operate on the premise that the nation's overall development demands an adequately prepared workforce which can help the country meet national development goals and compete globally. The focus is also to attract foreign higher education institutions as well as providers of training services to expand the types of learning and professional development opportunities which are at the core of a talent hub.

More specifically, the objectives of a talent hub are to expand the pool of skilled workers, contribute to a service and/or knowledge economy, increase economic competitiveness, and improve the quality and relevance of the labor force. In cultivating a highly developed workforce, a talent hub does not constrain itself to domestic talent but rather aims to become a regional or international magnet of talent. Building a competitive and diversified economy requires both education and training opportunities for students and working professionals to continuously upgrade their skills.

The goal is not only to improve the overall quality of the workforce but to increase its ability to serve local or even regional needs. This fundamental interest in the development of human resources for the sake of national development and economic diversification is a trademark of the talent hub.

To achieve these objectives, a talent hub can implement several different strategies. Some talent hubs adjust student admissions and program offerings to match identified shortages in the labor force. Consequently, a talent hub targets the recruitment of education and training providers based on their specific expertise in a field exhibiting labor shortages. Training is not limited to students but it also includes mid-career professionals who seek executive education, corporate training and general continuing education, and lifelong learning. In terms of incentives for international students, a talent hub may subsidize their tuition in exchange for a fixed period of employment contributing to the local/national economy when the student graduates. This is often referred to as a work bond agreement. To help develop a qualified talent pool, employment and immigration regulations for foreigners are also liberalized. An international student pursuing an advanced degree may receive preferential treatment in the immigration system in terms of gaining a work visa or permanent residency. An education or training program may also offer international credentials to further appeal to mobile individuals.

The main policy sectors leading the development of a talent hub are labor/industry, immigration, and education. Given the confluence of vested interests in a talent hub, the education sector is rarely the only sector involved in shaping its development. In fact, the education sector may not even be the leading sector behind a talent hub. The human resources development, industry, and immigration sectors play pivotal roles in leveraging higher education and training for the purpose of long-term human resource development. A policy sector of secondary importance is foreign affairs, which promotes the talent hub to potential education and training providers as well as students and employers. Local and foreign institutions remain key actors as well as training companies and business councils which closely monitor the economic pulse of the country. Actors of secondary importance include quality assurance bodies and professional licensing bodies that regulate learning programs and the development of a skilled workforce. While both student and talent hubs are interested in recruiting international students, they do so for different reasons, hence the importance of rationales. Unlike a student hub which focuses on educating students and having them return home, a talent hub encourages students and professionals to remain in the host country for employment purposes upon completion of an education or training program.

The Knowledge/Innovation Hub

A knowledge/innovation hub focuses on the production and application of new knowledge which has the potential for commercial use. Research in the knowledge hub is not limited to the domain of higher education; it also includes research

conducted by public and private partnerships and the corporate sector. Therefore, a knowledge hub seeks to attract not only foreign higher education institutions but also independent institutes, research and development firms, and science and technology companies active in applied research and occasionally "blue sky" research as well.

More specifically, a knowledge hub seeks to boost the research culture, capacity, and output for a country, zone, or city to become or to remain a prominent player in the global knowledge economy. In drawing on foreign expertise and financial resources, a knowledge hub recognizes that foreign involvement and investment are essential to its success. Some knowledge/innovation hubs have a notable emphasis on research in the areas of science, technology, engineering, and medicine (STEM). Overall, the objective is to strengthen the competence and competitiveness in strategic areas and attract experts and enterprises involved in the knowledge economy.

To achieve these objectives, a knowledge hub may implement a wide array of strategies. It may significantly increase public funding for research and use publication records or patent applications to gauge success. Another strategy is to attract foreign direct investment to fund costly research and leverage intellectual property for commercial purposes. The construction of science and technology parks with generous funding is also a common initiative to attract a critical mass of researchers. Higher education institutions may expand graduate programs to increase the number of individuals with research training. These institutions may also formalize partnerships with research centers abroad to access expertise not locally available. Moreover, multilateral linkages between higher education institutions and industry become increasingly common as applied research expands. Regulations over intellectual property rights and the processing of patents become more streamlined given the importance of these policies to a knowledge/innovation hub. A knowledge hub may also pursue issues of regional importance to gain influence at a regional level.

The policy sectors leading the development of a knowledge/innovation hub are science and technology, trade, industry, economic development, and education. The synergy from these sectors working together orient the hub toward participation in a knowledge-based economy rather than one based on manufacturing or natural resources. The secondary policy sectors are foreign affairs and immigration, which facilitate the connection between local and foreign actors. The key actors are research grant agencies, local/foreign providers, and research and development firms. Secondary actors are business councils and trade boards which cultivate the commercial dimension of a knowledge hub.

Comparison of the Three Models of Education Hubs: Similarities and Differences

The descriptions of the three different models of education hubs provide an introduction to these new initiatives in the internationalization of higher education. This section will compare and contrast the three models according to the five different elements of the analytical framework to further elucidate the similarities and differences within the typology.

Focus

The focus of an education hub signals its overarching orientation. While all three hubs aim to attract foreign participants in an effort to build a critical mass of actors, their orientation differs at a fundamental level. For a student hub, the focus is on the recruitment and education of students at universities, colleges, and vocational institutes. A talent hub expands this focus to include the training and retention of professionals to support the country's overall economic development. In contrast, a knowledge/innovation hub focuses strategically on the production and application of new knowledge. Despite these differences, all three hubs are noticeably concerned with higher education's connection to the economy and national development. Whether it is leveraging higher education as a tradable service, developing human resources, or producing knowledge with commercial potential, economic interests remain a focal point among the majority of education hubs.

Objectives

Beyond the general focus, the objectives of an education hub reveal its specific aims as a planned project. These objectives diverge widely among the three education hubs. For a student hub, a key objective is to leverage higher education as a growth sector in national development. Although generating revenue for institutions which enroll fee-paying international students may be a part of this objective, it is not necessarily the only or even primary goal of a student hub. A student hub can also contribute to developing a more regional or international outlook of the education sector as well as intercultural understanding and skills of the students and teachers. Other economic benefits come from students' living expenses, family visits, and the activities of small businesses which provide support services for students. Another objective of a student hub is to improve the higher education system in terms of increasing access, diversifying program offerings, establishing joint international initiatives and programs, and enhancing the international profile of the country's higher education system. With the presence of more international students on campus and in the community, many policymakers believe that such an environment provides a more enriching learning experience for local students. Overall, the goals of a student hub remain focused on educating students as the main activity which produces other benefits for the institution and economy at large.

In comparison, a talent hub's objective to develop human resources has a longer-term orientation. The development of human resources includes both domestic and foreign talent. Attracting, educating, and retaining talent require significant time and investment. No longer is an education hub only about educating students, but it now encompasses the training and development of working professionals to continuously upgrade their skills. A talent hub is thus cognizant of the national need for a skilled workforce as well as the global competition for talent which involves creating the conditions required to retain individuals to work and live productively.

A knowledge hub marks yet another shift in objectives. Instead of educating students and training professionals, a knowledge hub is foremost concerned with producing new knowledge and innovations. Supporting postgraduate research and cultivating higher education's linkages with industry leaders are important goals. Increasing the number of patents and knowledge transfers are tangible objectives. Put another way, a student hub and a talent hub seek to generate educated or trained individuals while a knowledge hub seeks to generate innovations with market potential. These objectives need to be linked to measurable outcomes for all three types of education hubs.

Strategies

As highlighted in the definition, an education hub is a critical mass of crossborder education activities. Promoting an international student recruitment plan or building a branch campus by an internationally renowned institution does not necessarily constitute an education hub. An education hub has a variety of local and international actors strategically engaged in a number of complementary and interconnected activities. Strategies are the actions taken to achieve an objective and gain results. What measures, steps, or activities are used to build an education hub? The means to an end can be observed in three different forms: plans, programs, and policies.

A *plan* is a macro concept which may contain several programs. Chapter 11 analyzes the plans of the hub case studies. Many student hubs have a plan to recruit a targeted number of international students by a certain date. Under such a plan, many *programs* exist: specific scholarships to attract students, a facilitated application process for students from recognized secondary schools, or a government funding scheme to help institutions promote themselves at education fairs. A *policy* is an enabling or regulating guideline to support the attainment of an objective. For example, the Ministry of Education may collaborate with investment agencies to provide capital funding or subsidized land to foreign providers to establish branch campuses. A quality assurance body may require all foreign education providers to undergo periodic reviews in order to maintain their rights to operate. In a student hub, these aforementioned plans, programs, and policies are common.

In a talent hub, an example of a plan is to align student admissions with labor needs. Another plan is to selectively recruit foreign institutions and training providers based on their curricular expertise rather than their general reputation as an education/training provider. Some talent hubs have work bond programs to support its talent hub whereby international students become eligible for reduced tuition fees if they agree to work for 3 or more years in the host country upon graduation. Another talent hub program could offer internship opportunities for students to ease the transition from school to work. An example of a talent hub policy is to provide tax incentives for expatriates.

In a knowledge hub, a plan could be to cultivate academic-industry linkages and emphasize regional issues in research. Programs could include the expansion of

graduate schools, partnerships with overseas research centers, and matched funding from government to support research. The construction of science parks is another common program in knowledge hubs. By colocating researchers and sharing common facilities, this setup also encourages collaboration and partnerships among foreign and local companies. In terms of policies, a knowledge hub may reward individuals and institutions based on journal publications and intellectual property claims. Governments may provide generous but competitive research funding to encourage local/foreign partnerships to participate in applied research.

Another strategy that may be evident in all three types of education hubs is the creation of economic free zones to attract mostly foreign entities. These free zones are often called education and academic cities or science and technology parks. They offer incentives such as a minimal tax base, low rent facilities, and ability to repatriate earnings. By colocating these foreign (and sometimes local) education institutions and training companies, they can provide common academic and recreational facilities, thereby gaining some economies of scale. While colocation offers several advantages, it is not a prerequisite. For example, as discussed in Chap. 11, the number of international branch campuses not included in free zones is substantial and not all hubs have economic free zones. For many of the stand-alone branch campuses, there have been local and foreign private or public investors who have taken responsibility for building the physical infrastructure of the campuses.

Table 3.1 provides some examples of the strategies employed by the three different types of education hubs. These strategies are chosen for illustrative purposes rather than for comprehensiveness. By no means are the strategies listed in Table 3.1 a prescription for the development of education hubs.

Policy Sectors

Policy sector represents the sphere of influence in the design, planning, and operation of an education hub. The policy sectors currently involved in education hubs worldwide constitute a fascinating collage. A comparison across the three different education hubs reveals significant differences. While there are many policy sectors engaged, some have more influence than others. Therefore, a distinction of primary and secondary importance is useful to indicate each sector's relative influence. The higher education sector is apparent in all three types of education hubs, but its influence should not be assumed to be of primary importance. For a student hub, the primary policy sector is indeed higher education. Given its focus on education in a normative sense, it is not a surprise that the education sector is the most influential in a student hub. Secondary policy sectors are trade, foreign affairs, and immigration, which contribute to the operation and success of a student hub. For a talent hub, the primary sectors are labor, industry, immigration, and higher education. An important distinction in a talent hub is that the immigration sector views an international student as a potential immigrant capable of contributing to the nation as a skilled worker rather than as a short-term visitor obtaining an academic credential.

Table 3.1 Education Hub Analytical Framework

	Student hub	Talent hub	Knowledge hub
Focus	Recruitment and education of students (domestic, foreign, expatriate)	Recruitment, education, training, and retention of students/workers as skilled labor	Production and application of new knowledge and innovation
	Attraction of foreign HEIs and collaborative programs	Attraction of foreign HEIs and training and professional development providers	Attraction of foreign HEIs, R&D firms, and S&T companies
Objectives	To increase access for local/foreign/expat students and diversify program offer	To strengthen quality and relevance of labor force	To build knowledge- and innovation-based economy
	To internationalize domestic HE system	To expand pool of skilled workers	To attract foreign direct investment
	To generate revenue	To build service and/or knowledge economy	To build research capacity
	To enhance profile, branding, and ranking of HEIs and country	To increase economic competitiveness and influence in region and beyond	To increase status and competitiveness in region and beyond
Policy sectors	*Primary*	*Primary*	*Primary*
	Higher education	Labor	Science and technology
		Industry	Trade
		Immigration	Industry
		Education	Finance and investment
	Secondary	*Secondary*	*Secondary*
	Trade	Foreign affairs	Education
	Foreign affairs		Immigration
	Tourism		
	Culture and Heritage		

Actors	*Primary*	*Primary*	*Primary*
	Local/foreign HEIs	Local/foreign HEIs	Research grant agencies
		Training companies	Local/foreign HEIs
		Business councils	Local/foreign R&D (incubators)
	Secondary	*Secondary*	*Secondary*
	QA bodies	Professional regulatory and licensing bodies	Business councils Trade boards
	Culture/heritage organizations	Credential assessment agencies	Patent offices
Strategies	Setting targets for international students and foreign providers recruitment	Aligning admissions and program development with labor needs	Addressing key regional interests via research
	Facilitating application process and visas for international students	Recruiting specific foreign HEIs and training providers	Cultivating academic-industry linkages Expanding graduate programs
	Funding HEIs to promote themselves at education fairs	Offering reduced tuition fees in exchange for work (bond)	Formalizing partnerships with research centers overseas
	Expanding twinning and franchised programs	Provide internships for all students	
	Offering capital funding and subsidized land to branch campuses	Removing employment restrictions for international students	Matching funds from government to support research
	Requiring all foreign education providers to undergo periodic quality assurance reviews	Facilitating work visas or permanent residency permits for foreign workers	Constructing science parks Monitoring performance based on intellectual property claims and journal publications

Source: Knight and Lee (2014)

Labor and industry policymakers contribute by identifying talent shortages in the workforce and building scenarios and setting targets for human resource development. Higher education may even be a secondary policy sector in some talent hubs when viewed by stakeholders as a supporting sector rather than a leader.

In a knowledge hub, sectors outside the domain of education assume even greater prominence: science and technology, finance/investment, trade, and industry. The combination of these sectors in emphasizing research is unprecedented in crossborder higher education given the field's traditional emphasis on teaching and learning. International research partnerships have existed for many decades but these are often based on individual or institutional initiatives rather than large-scale efforts at transforming an entire jurisdiction into a research-intensive area. Policymakers together with trade and industry leaders strategize to support innovations which are marketable. Higher education may only act as a secondary policy sector since universities and colleges do not monopolize research.

Actors

While policy sectors are broad communities providing leadership, actors are the main participants who are offering, regulating, or monitoring the activities of an education hub to ensure its success. In this sense, actors are more narrowly defined as participants with *agency* compared to stakeholders, which include all types of participants ranging from those who provide activities to those who benefit from the activities (students, parents, society, etc.). In other words, who is actually executing the plan for an education hub? A distinction between primary and secondary importance is again useful for identifying the actors. Across all three education hubs, government bodies play a critical role given the public governance of education hubs. In a student hub, local and foreign HEIs are also primary actors while quality assurance bodies and cultural/heritage organizations are of secondary importance. In a talent hub, local and foreign higher education institutions continue to play active roles but with the addition of training companies and business councils which are more sensitive to the human capital needs of an economy. Quality assurance bodies and professional regulatory and licensing bodies are secondary actors which regulate and monitor the production of skilled labor. In a knowledge hub, the actors are noticeably oriented toward research activities: research grant agencies, multinational companies, and local/foreign HEIs. Business councils, trade boards, and patent agencies provide secondary support in turning knowledge into commercial applications.

For Further Consideration

Using this analytical framework to study education hubs raises several issues, questions, and challenges. One of the main issues is the apparent economic orientation of all three hubs despite the pursuit of different objectives. Economic diversification

and development remain a priority for many education hub planners, regardless of hub type. More specifically, the view that higher education can and should contribute to local and in some instances regional economic welfare is well documented among policy statements on education hubs as well as the larger body of literature on higher education. However, what does economic diversification and development mean in the context of these three different education hubs?

While a student hub may be concerned with financial revenues from the higher education market, a talent hub is keen to create and safeguard a pool of talent necessary for economic diversification and competitiveness. On the other hand, a knowledge/innovation hub specifically aims for a knowledge-based economy using foreign and domestic investments for the production and application of new knowledge, thus decreasing the dependence on manufacturing or natural resources. A knowledge-based economy relies on forward thinking individuals to innovate and informed professionals to disseminate intellectual capital. In this sense, a talent hub and a knowledge/innovation hub can be mutually interdependent in some respect. This echoes the earlier observation that the three models of education hubs have close ties and are not mutually exclusive.

A second issue raised by this analysis is that higher education works in concert with several other policy sectors. The design, implementation, and impact of each type of education hub can involve trade, labor, industry, and science and technology sectors. The key is an integrated approach with the core sectors and actors collaborating, not competing, to make the education hub successful and sustainable. In some cases, it is not the higher education sector which is actually taking the lead role. The leadership and involvement of policymakers from noneducation sectors in the development of an education hub is a fascinating area which demands further research.

The analytical framework may raise the issue of whether the classification of education hubs should be based on the strategies being employed rather than their stated rationales and objectives. Plans, programs, and policies are often more visible and comprehensible as policy instruments compared to driving rationales and ambitious objectives. However, defining or classifying an education hub based on strategies can be misleading. As demonstrated in this chapter and elaborated on in Chap. 11, there are several strategies that are common to more than one type of education hub. Furthermore, some crossborder education strategies are not unique to the phenomenon of education hubs. Therefore, strategies do not provide strong comparative or robust distinctions. To reiterate, the typology is based on the different rationales underpinning education hubs. Some of these hubs may share similar strategies, but they are motivated by different rationales.

The analytical framework also raises some implications which provide useful points for discussion. The typology may suggest that education hubs are static entities with prescribed objectives. In reality, education hubs, like any other large-scale initiative, may change in purpose and certainly in strategies while retaining its namesake. It is important to be aware that these hubs are evolving rapidly. They must respond to a changing landscape in higher education, labor mobility, and innovation systems. Taking new directions or responding to fresh opportunities may

result in fundamental changes within an education hub. This implication raises a serious question about education hubs. What is the development trajectory of education hubs? Can a student hub transform into a knowledge hub? Can one establish a knowledge and innovation hub from the outset without first building a student or talent hub? Although the typology is not meant to suggest a linear development of education hubs, catapulting from a student hub to a knowledge hub would require tremendous resources and extensive re-strategizing. Whether it is more likely for a student hub to transform into a talent hub or a talent hub to transform into a knowledge hub remains to be seen and is explored more deeply in Chap. 11.

A looming question about the evolution of education hubs is the feasibility of developing indicators to allow another form of comparison. Is it possible to create an objective set of indicators or measures to assess and categorize education hubs? What exactly would these indicators measure? Assessment could focus on readiness, potential, international engagement, size, output, or sustainability. Indicators may not necessarily be quantitative either. Clearly the purpose should not be to rank education hubs given the diverse rationales, strategies, and actors involved. On a more fundamental level, would indicators be useful for comparing education hubs? Chapter 12 discusses the feasibility and desirability of developing indicators for each of the three hub models and puts forth a trial set of indicators to illustrate the possibilities and potential pitfalls.

The following case study chapters shed light on some of these questions. Chapter 11 provides a comparative analysis of the education hub case studies and discusses some of these issues more deeply to further understand the phenomenon of education hubs.

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Chapter 4
The Evolution of Qatar as an Education Hub: Moving to a Knowledge-Based Economy

Arwa Ibnouf, Lois Dou, and Jane Knight

National Context

Qatar is a small country, both from geographical and population perspectives. It is located in the middle of the Arabian Gulf and covers an area of 11,437 km^2. Qatar has been a monarchial nation state after formerly being a tribal community and then a British protectorate. In 1972, a provisional constitution took effect and endowed the head of state with full legislative and executive powers. A permanent constitution ratified in 2003 is an important milestone that marked the efforts of the nation to move toward a modern state that is democratic in nature. Arabic is the official language and major language spoken, while English is widely used in trade and education.

Oil and gas are the chief exports of Qatar, accounting for more than half of the country's gross domestic product (Donn and Manthri 2010). While the oil reserves in this country are not as enormous as they are in other Arab Gulf countries, its natural gas reserves represent as much as 14 % of the world's reserve. Qatar has become the largest gas and liquefied natural gas producer and exporter across the world to date. As of 2011, it has been acknowledged as one of the richest countries in the world with an estimated average of $102,700 per capita (CIA 2012).

To reduce the economic dependence on oil and gas, the Qatari leadership has been making efforts to diversify the domestic economy through providing the infrastructure for small- and medium-sized enterprises. Agriculture and fisheries are also important sectors of the economy that contribute to the sustainable development.

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As of 2010, the census data shows a total population of 1,696,563, indicating a growth of 128 % in population since 2004 (Qatar Statistics Authority 2010). An important feature of the Qatar population is that 220,000 are nationals, whereas 1.46 million are expatriates. In terms of the labor market, the non-Qatari workforce accounts for up to 94.3 % of local labor market and the Qatari counterparts only comprise 5.7 % (Forstenlechner and Rutledge 2011). The high ratio of nonnational labor force presents a striking overdependence on the expatriate workforce in terms of local economy.

The government views education as a key instrument for modernizing the country, reducing the dependence on oil and gas and reinforcing the international competitiveness of Qatari citizens. In this vein, the educational sector has been undergoing a rapid development and reform by a top-down approach. In 2001, the government began to implement a western style K-12 education system. Later on, an Independent Schools initiative was introduced to encourage the autonomy and creativity of local schools. By the end of the first decade of the twenty-first century, Qatar is generally acknowledged as the best-performing country in the Arab Gulf states region, in terms of its high literacy rate and high enrolments of males and females in secondary and tertiary education (Donn and Manthri 2010). This is an impressive accomplishment by all standards. However, it remains to be seen if a set of educational reformation is an effective tool for the intended goal of social as well as economic development.

Overview of Higher Education

Higher education is viewed as essential to become a knowledge-based society and plays a central role in establishing and developing Qatar as an education hub. The major higher education system in Qatar comprises the following four important components: the Supreme Education Council (SEC), the Higher Education Institute (HEI), Qatar University, and the Qatar Foundation for Education, Science and Community Development (QF). The SEC was established by Amiri decree #37 in November 2002, and it is the highest governmental entity responsible for education polices in Qatar. This government agency plays an integral role in the development and implementation of the higher education reform by directing the nation's higher education policies and working closely with external think tanks such as RAND Education to conduct consultations for higher education reforms (Stasz et al. 2007). In 2003, SEC established three agencies, one of which is the Higher Education Institute. The mandate of this organization is to advise individuals about career options and opportunities for higher education in Qatar and abroad and to administer scholarships and grants.

Until 2001, Qatar University was the only higher education institute in the country. It was established in 1976 as a college of education. During the period of 1973–2006,

Table 4.1 Profile of HEIs in Qatar

Institution	Year of establishment
Qatar University	1976
Virginia Commonwealth University in Qatar – Education City	1997
Weill Cornell Medical College in Qatar – Education City	2001
College of North Atlantic Qatar	2002
Texas A&M University in Qatar – Education City	2003
Carnegie Mellon University in Qatar – Education City	2004
Georgetown University in Qatar – Education City	2005
Qatar Faculty of Islamic Studies in Education City	2007
Northwestern University in Qatar – Education City	2007
University of Calgary – Qatar	2007
Stenden University Qatar	2009
Community College of Qatar	2010
University College of London in Qatar – Education City	2010
HEC Paris – Education City	2011

Source: Hukoomi (2012)

Qatar University has evolved into a full-fledged university covering most disciplines, with the exception of medicine. Qatar University is modeled on the North American higher education system, and the majority of Qatar University professors and researchers are expatriates. Qatar University started as a bilingual institution (Arabic and English) and moved into English language as medium of instruction in 2003. In the same year, it undertook major reforms to improve the quality of education, implement international academic practices, and move toward being a research-oriented university. Several fundamental changes have been implemented as part of the reform, such as designing a core curriculum, standardized testing requirements for admission, merger of colleges, and creation of a Faculty Senate.

Of particular significance is the dramatic change in the configuration of national and nonnational students at Qatar University in the past decade. The number of national students declined from 7,364 in 1998 to 5,763 in 2008, whereas the counterparts of nonnational students soared as much as three times of that in 1998 (Qatar Statistics Authority 2010).

Foreign universities are also establishing branches in Qatar, thereby giving local students more choices for higher education. Table 4.1 provides a brief profile of all the existing higher education institutions in Qatar. Worth noting is that among these institutions are eight renowned foreign branch campuses located in Education City.

The education hub project is not only confined to establishing international branch campuses. It is a strategic combination of (1) academic programs, which features Education City; (2) research initiatives sponsored by the Qatar National Research Fund; and (3) science and research institutions, such as QF's Qatar Science and Technology Park and the Sidra Medical and Research Center.

Sponsor, Drivers, and Rationales of Education Hub

The major sponsor and operator of the education hub is Qatar Foundation for Education, Science and Community Development (QF). It was created in 1995 as a private nonprofit institution entrusted with the task of developing the country's educational system and positioning Qatar as an educational hub. It was also established as part of the Amir's vision to support the country's transformation from a carbon economy to a knowledge-based economy. It is chaired and led by Her Highness Sheikha Moza bint Nasser. The Amir had established a sizable endowment to support health care and education, and the Qatar Foundation is one of the beneficiaries of the fund. This allows Qatar Foundation to carry on its work independently and free from financial difficulties that may occur due to fluctuations in the oil/gas prices and the resulting changes in the governmental budget allocations. Thus, financial autonomy is a key element in the operation of the Qatar Foundation.

Qatar Foundation provides funding, commitment, and leadership to ensure progress for each component of the education hub initiative. Especially, it oversees the design and implementation of the three major components of the education hub: (1) academic programs, (2) research initiatives, and (3) science and research institutions.

In terms of academic programs, Education City is one of the flagship projects of Qatar Foundation. This is the collection of education initiatives such as the branch campuses, K-12 schools, special education programs, and preparation programs. As of 2012, Education City is home to eight branch campuses, including six from the United States and one each from France and the United Kingdom. The foreign institutions represented in Education City are as follows: Weill Cornell Medical College in Qatar (WCMCQ), Texas A&M University at Qatar (TAMUQ), Carnegie Mellon University in Qatar (CMUQ), Georgetown University School of Foreign Service in Qatar (GUSFSQ), Northwestern University in Qatar (NUQ), Virginia Commonwealth University in Qatar (VCUQatar), HEC Paris in Qatar, and University College of London in Qatar. The activities of these institutions will be explored in more detail later in the chapter.

As far as research initiatives are concerned, it is important to note that one of Qatar Foundation's goals is to create a research culture and capacity in the country to support the knowledge-based economy. This is done through collaborating and partnering with various institutions. Programs under this area include Qatar Science Leadership Program, University Research Programs, QF Research Programs, and Q-science.

Regarding the third component, Qatar Foundation ensures that scientific knowledge is exchanged within the country and with the rest of the world through the work of its own science and research institutions as well as through a series of international collaborations. There are various science and research institutions housed within Qatar Foundation that have a national vision and goal of establishing Qatar as an education hub thereby helping its transition to a knowledge-based economy. They are Qatar National Research Fund, RAND-Qatar Policy Institute (RQPI), Qatar Research Institutes, Sidra Medical and Research Center, and Qatar Science

and Technology Park. Qatar as an education hub aims to stand out in the region for its ability to bring research projects created in Qatar to successful commercial utilization.

Rationales

The dynamics that drive Qatar to become an education hub involve aspirations at the national, regional, and international levels. At the national level, the major rationales are to train and add value to "human capital" and to establish a "knowledge-based economy." Qatar's labor market has long experienced a strong dependency on expatriates. To transform the labor market and encourage more national workforce in the private sector, the education hub aspires to develop highly qualified educated citizens capable of participating in the national development. It is believed that fostering human talent can play a decisive role in overcoming the disadvantages and constraints of economic development caused by overdependence on natural resources. As Khodr (2011) suggests, the long tradition in the Gulf region of importing "best practice" can be a catalyst factor to help develop Qatar as an education hub. This philosophy has been particularly evident in the planning of the Education City by inviting and paying for foreign universities to establish specific academic programs for which they are well known. Based on the generous investment from the Qatar Foundation, "best practice" has been purchased from around the world. The multi-university approach to Education City ultimately has been based on the idea of "having the best in each field" (Khodr 2011). The strong aspiration for importing "the best" to a large extent determines the creation and operation of the education hub.

The Middle East region has suffered for a long time from lack of quality education. The education hub idea, from the conceptual plan to implementation, has also been driven by the goal to provide the region with high-quality education and research and to develop a large pool of human talent. At the same time, Qatar is not the only country in the region with the desire to be perceived as the regional leader in policy innovations, especially related to higher education and research. Thus, while Qatar wants to contribute to regional development, it also wants to gain competitive advantage as a leader in the region. The emergence of Qatar as a dynamic force in the Arab World is certainly evident (Khodr 2011).

At the international level, Her Highness Sheikha Moza bint Nasser, the Chairperson of Qatar Foundation, believes that education and research are the best medium for cross-cultural dialogue and understanding. Qatar's education hub operates more or less in a multicultural, multireligious, and multiethnic environment. As of 2012, the students and faculty come from 89 different nationalities with diverse backgrounds, cultures, religions, financial status, and citizenship. Furthermore, with the creation of Al Jazeera network, Qatar is on a mission to gain stronger profile on the international scene and to increase its public diplomacy. Some would argue that Qatar is using its status as an education hub not only to gain a powerful competitive advantage in the region but also as a way to gain increased global attention and admiration (Khodr 2011).

Priorities, Plans, and Policies

The plans and policies for the education hub can be categorized into two streams: the ones at the macro level and those at the operational level.

At the macro level, "The Qatar National Vision 2030" is the most significant and relevant guiding line (GSDP 2008). It was in 2008 that the vision was adopted. It has emerged from intensive consultation across society and is based on the guiding principles of the country's permanent Constitution. It outlines how the nation will use its vast revenues from hydrocarbon resources to transform itself into a modern knowledge-based economy. In this regard, Qatar Foundation is entrusted with the important mandate to be the "engine" driving the development of Qatar, with the headline aim of "Unlocking Human Potential" (Qatar Foundation 2012a). The National Vision provides details regarding how Qatar would utilize its resources over the next two decades. It proclaimed the commitment to establish advanced education and health systems, as well as increasing the effective participation of Qataris in the labor force. It placed the development of human capital at the heart of everything that Qatar does. The National Vision rests on four pillars: human, social, economic, and environmental development. It is widely believed that being an education hub might help the country to move the agenda and vision forward.

At an operational level, the policies that affect and determine the functioning of the academic program component of the education hub have been primarily the responsibility of the Qatar Foundation, while government agencies are responsible for free zone status as well as research endowments.

The development of an effective admission policy is a key step for the education programs. In order to guarantee the attraction of qualified students locally and regionally, irrespective of their financial status, Qatar Foundation has instituted a need-blind admission policy. It means that students who have gained admission to any program through academic merit and are unable to pay tuition fees due to financial reasons will be granted either an interest-free loan or a scholarship. Scholarships are based on a merit assessment of students. Students are required to pay back the loan upon graduation through a service-paid option. In effect, they contribute to the country's development, which is part of the strategic goal of Education City and Qatar Foundation, through working in Qatar after graduation or through a repayment plan that will not exceed 15 % of their net income. The main objective of this policy is to attract and retain highly qualified students in the country and to enhance the human capital required for economic development and a knowledge-based society. Furthermore, excellent students with GPA 3.6 and above can complete for full scholarships covering their tuition and living expenses.

An international student exchange policy encourages students to go abroad to continue their studies and foreign students to come to study at Qatar's higher education institutions. To be exposed to different teaching methods and cultures is certainly a very enriching experience for the native students. Likewise, bringing students from other international universities to study for a semester or two and conduct research in Education City provides great opportunity for cross-cultural dialogue, interactions, and exposure to different world views among students.

The student recruitment policy is another important element in the education hub development. In accordance with the goal of developing Qatar as an education hub, it is deemed that there should be a greater demographic balance in the local labor market. Therefore, the Qatar Foundation has encouraged targets for the group of Qataris enrolled in each international branch campus located in Education City. To that end, the purpose of the Academic Bridge Program launched by Qatar Foundation in 2001 is to narrow the gap between the capability of prospective students in Education City and qualification expected by the existing branch campuses. The program provides up to 2 years of preparation for students hoping to qualify for admission to Education City programs (Witte 2010b).

In order to guarantee sustainability and not depend on the availability of government funding, a sizable endowment was allocated to the Qatar Foundation to guarantee revenue that is capable of covering education and research funding components of the education hub. Furthermore, Qatar Science and Technology Park's Proof of Concept Fund provides grants for Qatari researchers to ensure the technical and commercial viability of their innovations. The Qatar National Research Fund (QNRF) encourages collaboration with external researchers and institutions. Any research proposal that includes an international partner receives extra points in the evaluation process. In addition, as part of the funding mechanism, the QNRF allows around 40 % of the budget of any proposal to be used outside of Qatar. The Qatar Foundation owns all intellectual property (IP) generated by agreements with partners. Nevertheless, the revenue gained from any commercialized IP is shared based on the principle of one-third to inventor, one-third to the department or college, and one-third to the Qatar Foundation.

In September 2005, the Government of Qatar passed a law making the Qatar Science and Technology Park a free zone, allowing foreign companies to set up a 100 % owned entity free from tax and duties. This is an attractive feature to international companies and results in advancing the status of Qatar as an education hub.

Establishment and Operation Issues

Three major developments toward becoming an education hub merit further elaboration. They are the establishment of the multibranch campus model in the Education City, the establishment of the Qatar Science and Technology Park, and the launch of major research projects and modern facilities. These initiatives complement one another and set the foundation for Qatar becoming a reputed center for higher education and research in the region and beyond.

Education City

During the planning stages of Education City, three different models were considered: an affiliation model with an international institution, a comprehensive single

university model, and the branch campus model. The greatest challenge associated with the affiliation model was the long-term quality assurance of the education programs. Secondly, finding a single foreign university that met the diverse needs of Qatar in terms of program requirements made the single institution model not feasible. Finally, the branch campus model was selected because the Qatar Foundation could more easily identify and invite universities with quality programs in specific disciplines to offer their program and qualification in Education City. This model allowed different universities, originally all from the United States, but now including France and the UK, to be colocated in Education City each with their specific building but sharing common facilities and services. The Education City is built on attracting a program/college of a university to offer its own degree in accordance with its own standard and admission requirements. Each branch campus has a full operational autonomy and runs their own academic programs and awards degrees/diplomas equal in all aspects to the one they offer at their home campus. Education City started mainly with undergraduate programs but as of 2007 started offering graduate programs.

After the branch campus model was selected, the next step was to identify the selection criteria for each academic program offered by an international university. An important requirement was that the selected university had to rank in the top 10 or 15 institutions in the world in the particular field of study. It had to be a research-based education with the faculty fully involved in major research and development activities. Any additional professors that need to be hired are evaluated with the exact same criteria and process of the main home campus. Flying in faculty for short-term intensive teaching is not considered as appropriate for the model.

The selection of programs to be offered is based on the labor market needs of Qatar and the region. Medicine, Engineering, Business, and Computer Science were identified as priorities for developing international branch campuses in Education City due to obvious reasons such as scarcity, requirement, and potentiality of the concerned fields.

Qatar Science and Technology Park

Qatar Science and Technology Park (QSTP) was established in 2004 as a home for technology-based companies from around the world and as an incubator for start-up enterprises. Its objectives are (1) to be an engine for accelerating research and development in Qatar by promoting and delivering applied research, technology development, and commercialization in Qatar; (2) to support corporate R&D that is in line with the national goals as set out in Vision 2030; (3) to attract international research-led organizations to establish technology development activities in Qatar; (4) to accelerate the formation and growth of start-up technology companies and lead the creation of platform technologies to support universities and industry; (5) to be a venue for innovation and creating new knowledge-based industries to grow Qatar's economy through application of technology; and (6) to integrate its

activities across Education City and create high-value employment and development opportunities, in particular for Qatar's university graduates.

Research Initiatives

Competitive research funding is a key element to attract the best faculty for quality education and for teaching students critical thinking, teamwork, and innovation. Bearing this in mind, in 2006, the Qatar National Research Fund (QNRF) was inaugurated. It was created to foster collaboration between Qatar and internationally recognized researchers. It provides opportunities to researchers at all levels, from students to professionals in the public, private, and academic sectors. Its primary focus is to fund research in areas of national interest and importance such as health care, the environment, and security. The QNRF is modeled on the National Science Foundation in the USA and is responsible for managing and distributing funding for a wide spectrum of research areas.

Research is an essential part of quality education development, economic diversification, and building the knowledge-based economy. Therefore, it plays an indispensable role in establishing the education hub. The Strategic Research Board (SRB) was set up in November 2009 to oversee Qatar Foundation's overall research strategy. It reviews and monitors all Qatar Foundation research programs that may contribute to the development of Qatar as an education hub, setting clear targets and ensuring coordination and integration. The first phase of the SRB's work was to set up a series of academic research programs with priority given to undergraduate studies. The second phase is to establish centers of excellence in Qatar for basic, applied, and technological research (Qatar Foundation 2010).

Current Activities

The current activities are categorized by the three major components of the education hub. They include academic programs offered by the branch campuses in the Education City, the recent establishment of two major science and research institutions—the Qatar Science and Technology Park and the Sidra Medical and Research Center—and the diversity of research activities supported by the various funding programs.

Branch Campuses in Education City

As of 2012, there are eight international branch campuses located in the Education City. Table 4.2 provides a brief profile of the main programs and degrees granted by these branch campuses.

Table 4.2 Programs and degrees granted in Education City

Institutions	Year	Subjects	Degree
Virginia Commonwealth University in Qatar	1997	Fine Arts, Fashion Design, Graphic Design, Interior Design or Painting and Printmaking, Fine Arts degree in Design Studies	Bachelor and Master
Weill Cornell Medical College in Qatar	2001	Medical curriculum	Nondegree, M.D. degree
Texas A&M University in Qatar	2003	Electrical, Mechanical, Chemical, and Petroleum Engineering	Bachelor and Master
Carnegie Mellon University in Qatar	2004	Biological sciences Business Management	Bachelor
Georgetown University in Qatar	2005	Foreign Services Science	Bachelor
Qatar Faculty of Islamic Studies	2007	Islamic Studies, Islamic Finance, Public Policy Islam, Urban Design and Architecture in Muslim Societies, Contemporary Muslim Societies	Master and Diploma
Northwestern University in Qatar	2007	Journalism and Communication	Bachelor
University College of London in Qatar (UCLQ)	2010	Museology, archaeology, cultural heritage studies	Master
HEC Paris	2011	Business management	Master

Source: Qatar Foundation, Doha, Qatar (2012)

Weill Cornell Medical College (WCMC)

WCMC offers medical programs in two parts: a 2-year nondegree premedical program designed to provide students with course requirements and knowledge to apply for medical school and a 4-year graduate medical program leading to a Doctor of Medicine Degree from Cornell University.

As part of the medical curriculum, students are exposed to patients and clinical training starting from day one and continue until graduation. WCMCQ established academic operations in Qatar in 2002 and since then enrollment has grown rapidly. Student numbers have increased from 25 first year premedical students in the fall of 2002 to over 270 students from more than 36 countries in the fall of 2010.

In the clinical arena, WCMCQ is already making a contribution to the community in Qatar. Several medical faculty members are licensed to see patients as part of their teaching assignments in the Hamad Medical Corporation (HMC). There are exchanges with faculty-physicians from New York Presbyterian/Weill Cornell Medical Center, particularly during the planning and design phase of the Sidra Medical and Research Center.

Faculty and staff of Weill Cornell in New York City and in Doha are building the research capacity of Qatar in partnership with Qatar Foundation, HMC, the Supreme

Council of Health, and other organizations. Together they are conducting high-quality research in genetic and molecular medicine, women and children's health, gene therapy, and vaccine development.

Texas A&M University at Qatar (TAMUQ)

TAMUQ offers Bachelor of Science degrees in Electrical, Mechanical, Chemical, and Petroleum Engineering. It also offers Master of Science and Master of Engineering degrees in Chemical Engineering.

TAMUQ is committed to educating students with the technical expertise, the leadership skills, and the broad world view necessary for them to serve as leaders in industry, government, and academia. TAMUQ, along with Qatar Foundation and its Education City partners, is building a community of learners, a community of scholarly researchers, and a community of leaders who thrive in a culturally diverse and rich environment.

Carnegie Mellon University in Qatar (CMUQ)

CMUQ offers Bachelor of Science degrees in Business Administration, Computer Science, Information System, Biology, and Computational Biology. The CMUQ's unique curriculum focuses on teaching problem-solving skills that are easily adaptable to ever-changing technologies and demands. A small student-to-faculty ratio provides an opportunity for close interaction between students and teachers.

Georgetown University School of Foreign Service in Qatar (GUSFSQ)

GUSFSQ offers Bachelor of Science degrees in Foreign Services programs and aims to educate students for leadership roles in the international arena. With a rigorous interdisciplinary approach to learning, Georgetown students are prepared for diverse career paths: from the energy sector, media and public relations, government relations, economic analysis to legal affairs, research, policy development, and strategic business analysis.

Northwestern University in Qatar (NUQ)

NUQ offers Bachelor of Science degrees in Journalism and Communication. The curricula are modeled on the innovative undergraduate programs of the School of Communication and Medill School of Journalism. The University's world-renowned faculty use state-of-the-art technology to create and maintain integrated academic curricula that support top-ranked programs of communication and journalism. Its focus on hands-on experience leads to the creation of unique cocurricular opportunities in broadcast and print media, advertising, and public relations activities.

The field of communication and journalism is of enormous social importance, rapidly evolving and offering new career opportunities. The vision and ambition of NUQ is that its graduates will help bring the story of the Middle East to the wider world and will influence the political, cultural, and social life of the countries in which they practice their professions.

Virginia Commonwealth University in Qatar (VCUQ)

VCUQ offers students the opportunity to earn a VCU Bachelor of Fine Arts degree in Fashion Design, Graphic Design, Interior Design, Painting and Printmaking, and a Master of Fine Arts degree in Design Studies. VCUQ is a branch campus of the prestigious VCU School of the Arts in Richmond, Virginia.

HEC Paris in Qatar

HEC Paris in Qatar was established as the first Management Education and Research Centre (MERC) and Graduate School of Management. Qatar's first international EMBA was launched by HEC Paris in February 2011. HEC is also working with other Education City partners to offer new programs such as Engineering Management and Islamic Finance. MERC's mission is to offer research, education, and knowledge dissemination in the field of management.

University College of London in Qatar (UCLQ)

University College of London in Qatar focuses on graduate studies in musicology, conservation, archaeology, and cultural heritage studies in the Middle East. It offers postgraduate qualifications in the aforementioned programs. Meanwhile it is in partnership with Qatar Museums Authority (QMA) by offering professional training courses for its staff. The goal of QMA is to help Qatar become a regional center of excellence in museum practices at all levels.

As of the academic year 2011–2012, Education City had eight international branch campuses and has enjoyed a steady increase in the number of students enrolled. Table 4.3 provides the enrolment trend and growth during the period of 2004–2011.

Qatar Science and Technology Park (QSTP) and Sidra Medical and Research Center (SMRC)

QSTP functions by providing office and lab space to tenant companies in a complex of multiuser and single-user buildings and by providing professional services and support programs to those companies. It offers a range of support, services, assistance, and accommodation for private and public technology-based organizations. It helps

Table 4.3 Student enrolment in Education City branch campus (2004–2011)

	2004	2005	2006	2007	2008	2009	2010	2011
VCUQ	158	182	194	192	210	223	231	244
WCMCQ	90	132	150	203	239	262	274	269
TAMUQ	87	140	185	271	336	390	446	489
CMUQ	41	88	125	163	191	241	278	335
GUSFSQ		25	60	107	145	160	177	189
NUQ					39	71	102	144
QFIS					59	110	143	222
HEC Paris								31
Totals	376	567	714	936	1,219	1,457	1,651	1,923

Source: Qatar Foundation's Office of Faculty and Student Services, Doha, Qatar (2012)

companies to establish their activities in an environment that is highly conducive to the development and commercial utilization of new technologies, products, processes, and services.

QSTP's core areas of interest are those that align with the national strategy and vision for Qatar. Specifically, QSTP's focus is on establishing technology development activities in Qatar based on (1) energy (e.g., solar power, hydrocarbons, and their derivatives), (2) environment (e.g., desalination, alternative fuels, built environment), (3) health sciences (e.g.. diagnostics, proteomics, robotics, stem cells), and (4) ICT (e.g., novel infrastructure, wireless applications, cross-sector ICT platforms).

It was created in 2004 and, as of 2012, hosts 36 member groups. It is an internationally recognized center for applied research, innovation, and entrepreneurship. Its members include small companies, international corporations, and research institutions. The QSTP provides funds to new ventures to create intellectual property, enhance technology management skills, and develop innovative new products in line with the Qatar National Vision 2030. Tenants at QSTP include Total, Rolls-Royce, Williams Formula One, and Microsoft. Cisco and iHorizons are developing new information technology applications. The European Aeronautic Defence and Space Company and General Electric are at the forefront of industrial technologies. Virgin Health Bank QSTP is establishing the region's first cord blood-banking facility (Qatar Foundation 2012a).

Sidra Medical and Research Center is a teaching medical center focusing on patient care, medical education, and biomedical research. The hospital is operational as of the end of 2012 and is the first academic medical center in the Middle East. It will be a training ground for Weill Cornell Medical College in Qatar.

Qatar Foundation committed $7.9 billion for Sidra's 412-bed Medical and Research Center. As of 2012, this has been the largest cash endowment to a medical center worldwide. Medical staff work with the Hamad Medical Corporation and Weill Cornell Medical College in Qatar to develop best practice and state-of-the-art research facilities. Research at SMRC will focus on conditions and issues that afflict the Arab World, including diabetes, cancer research, clinical research, epidemiology, and fetal-maternal health (Qatar Foundation 2012b).

Research Initiatives

Qatar National Research Fund (QNRF) provides opportunities to researchers in the public, private, and academic sectors. Its primary focus is to fund research in areas of national interest and importance such as health care, environment, and security. Collaboration between local and international institutions is encouraged by the QNRF.

QNRF runs three important research funding programs. The first is the Undergraduate Research Program (UREP) which promotes the development of research culture, innovation, and critical thinking in the undergraduate student body. The second is the National Priority Research Program (NPRP) which provides funds for research over a 3-year period with up to one million US$ per project. The program promotes research in areas of high priority to the country and provides a mechanism for international research funding with collaborating institutions and individuals. The third is the Young Scientist Research Program (YSRP) which is targeting postdoctoral PhD holders and encourages research activities to build a research society and culture in Qatar. The program will fund up to US$ 100,000 per project per year for up to 3 years and runs two cycles of applications per year.

Issues and Challenges

The development of such a major initiative like the education hub faces challenges both for start-up and for long-term operation and sustainability.

Financial Sustainability

The cost for operating Qatar's Education City through a branch campus model is relatively high as all expenses are covered by the Qatar Foundation. The foreign institutions have no financial obligation toward the operating costs. As of 2012, all expenses including staff salaries, housing, schooling, program budget, travel, and relocation expenses as well as expenses related to the construction of all buildings are the responsibility of the Qatar Foundation.

The Qatar Foundation recognizes the high expenditures, but Education City is one of the country's key elements of the strategic vision for educating the citizens and being recognized as an education hub. Tuition fees generate only a portion of the operating expenses for the universities. The government offers full scholarships to Qatari students attending Education City institutions through the Supreme Education Council. In addition, a large percentage of students in the Education City are funded by sponsorship agreements, according to which they are sponsored financially by local companies operating in sectors like oil and gas,

banking, or health care. The sponsorship covers the tuition expenses as well as a monthly salary for the students. Under such an arrangement, the sponsored students are expected to work at the sponsoring institution after their graduation.

Accreditation

Establishing an overseas branch campus poses several critical questions about the accreditation and quality of the degree offered. Is the degree the same as the one offered by the home institution? Is a different type of accreditation required? Who is the accrediting body of the branch campus, and under what jurisdiction would it fall? In Education City all programs are considered true branches of their main institutions, and therefore they maintain their home campus accreditation. They are fully recognized by the accrediting bodies in the USA, the UK, and France.

Initially there were many challenges for students coming from the Middle East because authorities in these neighboring countries were not familiar with the affiliation and branch campus models. It required the management team at Qatar Foundation to work closely with the various Ministries of Education to provide assurances that the degrees are valid and the same as the degrees offered at the home institution of each branch campus.

Faculty

As Education City developed, it proved challenging to recruit tenured faculty from the main campuses of the foreign universities. Qatar Foundation provided attractive packages that included staff salaries, relocation expenses, housing, and schooling for children to help facilitate the transition of faculty members to the Qatar campus. Hence, Education City has become an attractive option because of generous research funding to faculty and access to major technology companies hosted in QSTP. A concern remains that over time it will become more difficult to attract faculty to branch campuses.

Gender

Traditionally education in Qatar has been gender segregated at all levels of K-12 through to university. It was in Education City that the first coeducational institution in Qatar was introduced. At first, it was rather difficult for traditional parents to allow their daughters to attend the programs. Universities also faced difficulties as group assignments had to be reconsidered in light of the male/female possible interactions. To deal with the issue, special staff and counselors engage with

Qatari and other Middle Eastern students to discuss their hesitations about working in mixed groups. This initiative has been successful and students are able to work in a collaborative environment that is respectful of cultural differences.

Role of Family

In a conservative Arab society, the family plays a major role in children's life until they get married. Thus, parents have significant influence in the decisions children take about their education and future careers. Children are also expected to maintain strong family relationships with immediate and extended family members. They have various social obligations and family commitments beyond their studies and the classes. This prevents some students from fully engaging in the university experience.

Many parents believe that they have the right to know about their children's education and expect to be kept informed about their academic performance. Initially it was challenging for the universities to deal with such issues while following the formal policies and regulations about confidentiality and individual rights as is practiced in the home campuses. As they are not exposed to the Western educational norms and practices, the parents found themselves in a difficult position to comprehend the norms and rules of the universities.

Therefore, it is mandatory for university staff to understand the role of the family in a student's life in a very different light than what it means on their home countries. This has been accepted and such a realization has generated a better understanding and involvement of the parents. For instance, through customized programs, the universities are now trying to create a dialogue with the parents. In the recruitment process, designed programs geared directly at parents are in use. Some branch campuses have begun to provide opportunities for parents to directly interact with the universities.

Cultural Identity

Education is considered to be one of a nation's greatest assets. It is not only about preparing citizens for the workplace but also a reflection of a nation's culture and heritage. When a country turns to foreign universities for higher education, a larger number of students have access to international education. One of the major challenges is that university-level education no longer teaches values of citizenship and belonging. The concern here is that curriculum imported from home campuses would not reflect the local identity and any adaptation to the curriculum would risk a change to the standard of education offered. Qatar Foundation is working with the universities to address this point by offering additional courses.

Policy Challenges

To make a project like the education hub successful at the national and international levels, Qatar has to change its policies to allow the establishment of foreign universities. It also works with industry to provide financial support in the form of student sponsorship.

Language policy is central for the sustainability of positioning Qatar as an education hub. Traditionally, K-12 schooling was conducted in Arabic. Yet, the reform of Qatar University programs featured the introduction of English as the main language for instruction. This also applies to all programs in Education City. A large number of students are disadvantaged as they are not able to gain admission to the domestic Qatar University or the foreign institutions located in Education City due to their lack of English proficiency. The creation of the new Community College of Qatar (CCQ) is aimed at providing a solution for a large group of these students who were unable to gain admission to these existing higher education institutions. Of late, CCQ and QU signed an articulation agreement which would facilitate CCQ students' admission into Qatar University (CCQ 2012).

Demographic and gender imbalance are two other policy challenges. While a great deal of effort has been made to nurture highly qualified national personnel, the persistence and growing disparity between the Qatari and the expatriate labor still exists. A great amount of expatriates are carrying out different types of modernization projects. It takes time to determine whether the ambitious effort of the education hub will ultimately equip nationals with high-quality education, thereby allowing for the nationals to replace expatriates. Meanwhile, the incentive structures that make it easier for male nationals to get a job in public sectors lead to a relatively severe gender imbalance (more females than males) in Qatar's higher education system including Education City. This will be an ongoing challenge if the long-standing male-favored public employment policy is retained (Witte 2010a).

The task of creating a research culture for the knowledge economy needs dedicated human capital. Research as a career field is not very common in Qatar and the region. To date, huge investments to attract researchers from the region and around the world to Qatar have been made, but Qatar has to build its own capacity by developing local leadership and graduate programs to groom a new generation of researchers and knowledge workers.

Reflection on Qatar as an Education Hub

Since its inception, Qatar has positioned itself as a talent (skilled workforce) hub. An overarching philosophy for the establishment of the education hub is to support the country's transformation to a knowledge-based economy by training highly educated workforce. In fact, given the statistics that 55 % of those studying at Education City are Qataris and the other 45 % represent over 80 nationalities

(Donn and Manthri 2010), the education hub has a potential role to improve the attainment of higher education among the Qataris as well as to supply the needed professionals for the workforce.

Qatar's development as an education hub over the past two decades has made it home to over ten foreign academic institutions, top science and research organizations, and over 4,000 students and researchers from the region and around the world. With the development of different research and industrial institutions, such as the QSTP and the SMRC, and the effort to integrate higher education, research, and commercial activities, Qatar as an education hub has many accomplishments to be proud of and shows great promise for the future.

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Chapter 5
United Arab Emirates' Education Hub: A Decade of Development

Warren Halsey Fox and Sabha Al Shamisi

National History and Context

The UAE was formed on December 2, 1971, as a federation of six emirates – Abu Dhabi, Dubai, Sharjah, Ajman, Fujairah, and Umm al-Quwain – that had been ruled by individual monarchies. Shortly after, the seventh emirate, Ras al-Khaimah, joined the federation as well. These emirates were rooted in Islamic belief system and traditional tribal culture, and this culture still prevails. The federation was formally accomplished after Britain announced that they would withdraw their military presence to the Suez Canal. There had been apprehensions regarding the prospects of the new federation, because of the long history of tribal conflicts among the emirates (Krane 2009) and because much of the politics revolved around the individual emirate monarchs and their advisors.

In spite of such doubts, Sheikh Zayed bin Sultan Al Nahyan of Abu Dhabi succeeded in convincing the emirates to remain together as a federation for security purposes and economic benefits. He was chosen to serve as the nation's first president and served in that capacity for 33 years until his death in 2004. His leadership proved fortuitous for the rest of the emirates as Abu Dhabi emerged as the main income generator from oil over time. It is the main source of revenue for federal initiatives in defense, transportation, health, and education, including higher

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education. Abu Dhabi extracts 2.8 million barrels of oil a day from its onshore and offshore drilling platforms and has one of the largest sovereign wealth funds in the world, administered by the Abu Dhabi Investment Authority (Davidson 2005). Its reserves should last for decades as it is estimated that it has seven percent of the world's proven crude oil reserves.

The enormous wealth has given the UAE options not available to many other countries for development and modernization. As a result, the UAE has transformed its people from rural Bedouin desert dwellers to citizens of a modern state. The pace of change has been startling, for both the local population and the large number of expatriates.

The UAE National Bureau of Statistics notes that the population of the UAE has doubled from 4.1 million people in 2005 to 8.26 million in 2010. The population surge has put pressure on planning, public services, the environment, and education. Another matter of serious concern is the presence of a very large number of expatriates, about seven million, compared to 947,000 Emiratis who are citizens of the country.

In the spring of 2011, the Arab world found itself erupting with demonstrations demanding for political and economic changes and greater citizens' participation in public affairs. Followed by demonstrations and protests in Tunisia which forced out the government, Egypt experienced public outcries in March 2011 and President Mubarak was forced out of office. Closer to the UAE, Yemen experienced unprecedented unrest and violence; Bahrain sought the intervention of Gulf Cooperation Council troops to end the disruption. It is a critical time for the Middle East and North Africa (MENA), especially for the youth of the Arab states, and for democratic progress in the region. However, the UAE has not faced any such turmoil or challenges which is an indication of the relative political stability that the country enjoys.

Trade has always been central to the UAE because of its geographic location on the Arabian Gulf offering pathways to India, Iran, Iraq, Oman, Africa, and the Middle East. Shipping, import, and re-export of gold, cloth, spices, and silk commodities had been the heart and soul of its economic activity. Now oil is the high octane fuel propelling the federation to the future, along with trade, tourism, and retail sales. All these trade sectors are part of the UAE plan to expand as an economic hub. But the increasing importance of the knowledge economy is forcing the UAE to shift its focus more and more to the knowledge and service sectors.

Overview of Higher Education

In 1976, not long after the formation of the federation, the United Arab Emirates University (UAEU) was founded in Al Ain and opened with around 500 students (MOHESR 2010). Though the medium of instruction was in Arabic, English was also used. An important feature of UAE's human capital development is that Emiratis are able to attend school and university at no cost.

From a historical point of view, four pillars of policy were adopted in the early years and serve as the foundation of collegiate structure. They are as follows: (1) The UAE would build and operate its own public higher education institutions for nationals, (2) instruction would be in English as the international language of business and commerce, (3) qualified English-speaking faculty would be recruited, and (4) females would be included and afforded separate facilities as religion and customs call for.

Total enrollment of students in the UAE has grown from 79,800 students in 2006–2007 to about 117,000 students in 2010–2011. The total enrolment in the federal institutions is estimated at 36,500 which represents about 32 % of the total UAE enrolments. These federal institutions serve the whole country from different locations. UAE University (UAEU) operates in Al Ain, Zayed University operates in Abu Dhabi and Dubai, and the Higher Colleges of Technology (HCT) operate 16 campuses in six cities across the country. Emirati students form the majority of students enrolled in these federal universities and colleges (MOHESR 2012). The nonfederal institutions are emirate level private institutions and enroll approximately 65,000 students. In addition, there are international branch campuses located in the two free zones in Dubai and a third in Ras al-Khaimah, and most of the students enrolled in these institutions are long-term expatriate students and international students from neighboring countries and beyond. The higher education landscape in the UAE is complex and changing. Obtaining up-to-date enrolment data is complicated given that enrolments are disaggregated by federal and nonfederal institutions (private and free trade zone based) and those who have been accredited by the Commission for Academic Accreditation causing some overlap and another layer of complexity.

The enrolment data fast approaching 120,000 students represent robust activity in higher education in the UAE and diverse activities by the emirates. Many of the institutions are approximately a thousand or fewer students because several are specialty programs, in business or management, for example. Yet the numbers are impressive for a country just 40 years old. Providing access to higher education for Emirati citizens has been achieved through the growth in federally sponsored institutions and private universities. The international branch campuses have provided much needed access to expatriate students who normally do not have access to federal institutions. Worth noting is that quality is maintained through the federal Commission for Academic Accreditation which applies to all federal and private, non-free zone-based institutions. Dubai which houses large numbers of international branch campuses in its free zones has established its own quality monitoring process through the University Quality Assurance International Board (UQAIB) which is discussed later in the chapter.

The varied landscape of higher education in the UAE has not been the result of a master plan, only a common desire by the emirates for growth and prosperity. Conversely, it is the outcome of separate decisions by different ministries and decrees issued by local rulers. Some shared goals seem to be evident, such as maintaining quality and providing access, especially for increasing enrollment and expansion of campus facilities. As UAE's international reputation as a successful

educational hub is growing, the country is also expanding the scope and complexity of its higher education hub initiatives.

Rationales and Drivers to Become an Education Hub

The development of human talent is arguably the strongest rationale driving the development of the UAE as an education hub. From 2000 onward, the UAE has deliberately increased the number of universities and programs to develop a skilled workforce in a concentrated effort to diversify the economy from oil to trade, tourism, re-export, finance, and shipping. The UAE as an education hub has a positive economic impact in three ways: firstly, improving the educational credentials and skills of the workforce; secondly, attracting, training, and retaining students as the talent pool necessary to fuel the economy; and thirdly, investing in building the campuses and recruiting international students, faculty, and institutions, which is an economic initiative in itself. Furthermore, creating economic free zones which cater to international branch campuses strengthens the capacity of the education hub and the potential for increased numbers of graduates for the UAE workforce.

Expatriate make up over 85 % of the UAE population and therefore their children need schooling and access to postsecondary education. Secondly, many UAE-employed professionals from India, Pakistan, Australia, Europe, and nearby countries seek degrees, professional certificates, and diplomas to further their careers. The need to become an education hub with international branch campuses and special zones dedicated to education and training is one consequence of this reality.

Another factor favoring the positioning of the UAE as an education hub is its location and quality of life. For centuries, the lower Arabian Gulf and the larger territory of Oman have been at the crossroads of trade between Asia and Europe and the African East Coast. This strategic location is even more important now, with close to one billion people living within a 5-h plane flight of Dubai. Such a strategic location serves the UAE well to attract institutions and firms, tourists, investors, and professionals that contribute to a planned economic diversification and growth of the country. Over seven million expatriates live and work in the country and earn a decent income. Compared to the other countries in the Middle East and North Africa, the UAE is more modern, attractive, stable, and desirable due to the quality of life.

In addition, many options for study and training have been developed to further the hub capacity of the UAE. For instance, Dubai has over 37 institutions in the free zones and the largest number of international branch universities (IBU) in the world (OBHE 2012). As a result, students have the choice of an institution, local or international, small or large, and they can look for a program of study at a price that fits their pockets. Further, almost all of these university options are in English and therefore open to students from all over the world who have English proficiency.

The UAE is creating a major international cultural center with the construction of three museums: the Louvre, the Zayed, and the Guggenheim. This along with the

preservation of UAE heritage sites are part of the 2030 Abu Dhabi strategic plan for establishing the emirates and the UAE as a cultural destination. Al Ain City has been registered by UNESCO as the first emirate site on the World Heritage List. Of late, the UAE has established itself as a regional hub for supporting and promoting the film industry with two international film festivals. It is expected that along with literary festivals, film festivals, and book fairs, these cultural institutions will enhance the prospect of higher education in the UAE.

Education Hub Development and Accomplishments

There is no national plan or coordinated strategy as such to develop the UAE as an education hub. Each emirate has taken its own initiative and established incentives to attract foreign higher education institutions. Dubai has created economic free zones, two of which are dedicated to education and training. These zones are intended to reduce federal level regulatory control. Abu Dhabi does not have a free zone dedicated to higher education but has signed specific agreements with a number of foreign well-known universities such as New York University and the Sorbonne University. These agreements include the development of custom-built facilities and generous financial inducements. The following sections provide information on each emirate's accomplishments in attracting branch campuses and collaborating with foreign universities for education and research purposes. Individually they illustrate innovative new developments, but collectively they provide a holistic view of UAE's efforts and accomplishments to be a regional education hub.

Dubai

The Dubai Strategic Plan 2015, adopted in 2005, identified a number of priority areas for development like trade, construction, finance and insurance, logistics, transportation, and tourism. Accordingly various purpose-built zones were established like Health Care City, Media City, Internet City, Silicon Oasis, Jebel Ali, Dubai Airport, Dubai International Finance Center (DIFC), Knowledge Village, and Dubai International Academic City (DIAC).

These free zones have made a significant difference in allowing Dubai to attract the large number of international branch campuses and training organizations. One of the barriers to establishing a new branch campus is the required capital development costs. To minimize this, the free zones through TECOM the governing body have developed the necessary physical infrastructure to attract universities to rent space and avoid high setup costs and investment in facilities. Appropriate space can be leased and expanded and new campuses can be built as in the case of Heriot-Watt University and Manipal University, both of whom have built their own facilities in DIAC.

Federal restrictions and regulations such as the licensing of the Commission for Academic Accreditation (CAA) do not apply in the free zones although any higher education institution housed in a free zone can voluntarily apply to be reviewed and accredited by CAA. Indeed, the lack of intrusive regulations, taxes, and bureaucratic interventions is what makes the zones attractive and has led to a new level of emirate-federal government relations and procedures.

Based on the data provided by OBHE (2012), Dubai is home to 25 branch campuses. Table 5.1 provides the name of the higher education institution, the sending country, date of establishment, and the primary programs for each branch campus operating in Dubai according to the Observatory on Borderless Higher Education. It illustrates the diversity of countries operating in Dubai's free zones and the fact that several have been operating for over a decade.

Table 5.1 presents OBHE data only. The Knowledge and Human Development Authority (KHDA) uses different definitions for branch campuses, and therefore their total number of branch campuses in Dubai totals 29 not 25. For example, the JSS Education Foundation from India is not included by KHDA in its data as it is not considered to be a campus only a recruiting center for online programs. Other existing campuses in Dubai have been omitted. These include two from Australia, Cambridge College International and SAE Institute, as well as three from the United Kingdom, Exeter University, the University of Bradford, and the University of Strathclyde Business School (KHDA 2011a). This vividly demonstrates the challenge of obtaining accurate and timely data for international branch campuses in the world, because of definition problems, reporting differences and a rapidly changing crossborder higher education landscape.

Abu Dhabi

Abu Dhabi has heavily invested in a number of federal (public), private (emirate level), and international institutions. It has invited and generously supported New York University (NYU), the Sorbonne University Abu Dhabi, and INSEAD among others to establish a branch campus in Abu Dhabi. For instance, New York University is one of the more recent foreign universities invited to locate a campus in Abu Dhabi and has significant financial support from the emirate level government including a custom-built island to house its campus.

The graduate Masdar Institute that started with a partnership with the Massachusetts Institute of Technology (MIT) is located in the multibillion dollar development area named Masdar City. It is funded by the emirate level government of Abu Dhabi including its operations and facilities, but it is not considered a branch campus as it provides its own qualification not one from a foreign institution.

Abu Dhabi is directly contributing to the success of the UAE as an educational hub and assuring longevity and quality in both research and education. It has planned the creation of technology-driven enterprises and the development of federal and private universities in the alignment with the vision of the UAE as an

Table 5.1 Branch campuses in Dubai

Name of institution	Sending country	Year of establishment	Subjects offered
Murdoch University	Australia	2008	Multiple disciplines
University of Wollongong	Australia	1993	Accounting, Bus, Comp Science, Finances, IT, Mgt.
University of Waterloo	Canada	2009	Engineering, Finance and Risk Mgt., IT Mgt.
ESMOD	France	2006	Fashion
Amity University	India	2011	Multiple disciplines
Birla Institute of Tech and Science	India	2000	Engineering, Computer Science
Institute of Management Tech	India	2006	Business
JSS Education Foundation	India	2006	Multiple disciplines
Manipal University	India	2000	Multiple disciplines
SP Jain Center of Management	India	2004	Bus Admin
Islamic Azad University	Iran	2004	Multiple disciplines
Royal College of Surgeons	Ireland	2005	Health Management
Université Saint-Joseph	Lebanon	2008	Law
Shaheed Zulfikar Ali Bhutto Institute of Science and Tech	Pakistan	2003	Management, Science, IT, Media
Saint Petersburg State University of Engineering and Economics	Russia	2007	Multiple disciplines (mainly Tourism)
Heriot-Watt University	UK	2005	Multiple disciplines
London Business School	UK	2009	Business Admin
Manchester Business School	UK	2006	Business Admin
Middlesex University	UK	2005	Multiple disciplines
Cass Business School, City University of London	UK	2007	Bus, Air Maintenance
Boston University School of Dental Medicine	USA	2008	Dentistry
Fuqua School of Business, Duke University	USA	2009	Bus Admin, Finance
Hult International Business School	USA	2008	Bus Admin
Michigan State University	USA	2009	HR, Labor Rel, Public Health
Rochester Institute of Tech	USA	2008	Bus, IT, Engineering, Management

Source: OBHE (2012)

educational hub. Abu Dhabi has adopted a very different approach to branch campus development than Dubai and RAK. Abu Dhabi considers international institutions as important investment and has chosen not to locate foreign institutions in a free trade zone or depend on them as a source of revenue. Table 5.2 provides detailed information on each of the five international branch campuses located in Abu Dhabi.

Table 5.2 Branch campuses in Abu Dhabi

Name of institution	Sending country	Year of establishment	Subjects offered
New York Film Academy	USA	2008	Film
New York Institute of Tech	USA	2005	Bus Admin, Computer Graphics,
Paris-Sorbonne University	France	2006	Interior Design, Management
INSEAD	France	2007	
New York University	USA	2010	Multiple disciplines (mainly Humanities and Liberal Arts)

Source: OBHE (2012)

Sharjah

The Emirate of Sharjah also developed an important strategy for a higher education zone to host (1) a federal campus of the Higher Colleges of Technology, (2) the American University of Sharjah (AUS established in partnership with the American University of Beirut) with all instruction in English and a mixed gender campus, and (3) the University of Sharjah with programs in Arabic and policies compatible with the local culture. These are built in a most impressive University City constructed by the emirate. As a purpose-built University City, but not a free trade zone, it has made advancements in ensuring international and local student enrollment.

Another interesting development in Sharjah has been the establishment of a community college to better prepare more Emiratis for the workplace. As community colleges are not part of the national plan, it indicates the innovation and independence of the emirate level government. These developments have improved the image of Sharjah as a place to invest, to do business, and to receive quality education. It has already achieved a reputation as the cultural center of the northern emirates with its University City, museums, as well as art and literary programs. All of these initiatives contribute to the positioning of the UAE as an education hub without attracting foreign branch campuses.

Ras al-Khaimah

In the past few years, a smaller emirate, Ras al-Khaimah (RAK) at the northern tip of the country on the Gulf, has been building a higher education zone, with a fairly open strategy to attract universities, technical and health organizations, and research centers (*The National* 2011). Research contracts have been established with the Swiss Centre *Suisse d'Eletronique et de Microtechnique* involving the construction of rotating solar islands to provide energy for cooling and water desalination. *Ecole Polytechnique Federale de Lausanne* (EPFL) is also engaged in developing joint research programs and graduate programming available on a twinning basis.

Table 5.3 Branch campuses in RAK

Name of institution	Sending country	Year of establishment	Subjects offered
Vatel International Business School	France	2009	Hotel Management
Bharati Vidyapeeth Deemed University	India	2009	Management, Science and Engineering
Madurai Kamaraj University	India	2010	Business
Mahatma Gandhi University (moved from Dubai in 2010)	India	2002	Multiple disciplines
University of Pune	India	2009	Bus Admin, Fin, Management
École Polytechnique Fédérale de Lausanne	Switzerland	2009	Energy
University of Bolton	UK	2008	Multiple disciplines

Source: OBHE (2012)

Several branch campuses have been established in RAK. Though the George Mason University from the USA opened its branch in 2006, it was closed a few years later due to differences with the government and low enrollment. But others like the University of Bolton from the UK and the University of Pune from India have been successfully operating for several years. The Tufts University from the USA has started a medical program with the support from the government, and it has developed a nutritional program as well. These international institutions are regulated by the RAK free zone authority, but to date there is no specific quality assurance mechanism or process in place.

RAK is also planning a new hospitality free trade zone which is designed to include several well-known hospitality and tourism training institutions. All in all, RAK is attempting to diversify the economy by building a critical mass of higher education institutions and training organizations to heighten the prestige of the emirate and to attract paying students. Of late, RAK hopes to place itself in competition with Dubai and Sharjah for business growth and now in the higher education sector as well. Table 5.3 summarizes the information for the seven branch campuses hosted in RAK.

Guiding Policies: Quality Assurance, Accreditation, and Labor

Quality assurance of the international branch campuses and their programs is a major issue for the UAE given that they have the largest number of branch campuses in the world. Given that the national Commission on Academic Accreditation (CAA) is not responsible for higher education institutions located in economic free zones, each emirate is responsible for developing and managing its own quality

assurance processes for universities located in these free zones. A significant legal development in the Emirate of Dubai occurred in June 2011 with the passage of Law 21 by the government which specifically awards attestation by the Knowledge and Human Development Authority (KHDA). This ensures the awarding of quality-assured degrees attested by the KHDA in the special economic zones in Dubai. This benefits hundreds of Emiratis and thousands of expatriates studying in these branch campuses as they seek employment or pursue further studies. It also helps to improve linkages with employers and stimulate other foreign universities to open branches in Dubai.

A significant federal agency and policy supporting quality assurance is the Commission on Academic Accreditation (CAA) of the Ministry of Higher Education and Scientific Research. It accredits all nonfederal institutions, local or international in the UAE. However, it is important to note that the federal institutions are exempt from this policy as are all the international branch campuses located in the free zones of Dubai and RAK. The accreditation system of CAA has contributed to sustaining quality and contributing to the capabilities of the UAE to serve as an educational hub. The CAA uses a standards-based accreditation process that involves first licensing the institution and then accrediting programs at a candidate campus. The process is accomplished through site visits by international experts to UAE locations. Over 70 institutions have been accredited through this procedure. This has contributed greatly to the reputation of the UAE as a hub in higher education.

A national qualification framework is in the process of being developed and will be implemented as per a federal decree. This will help develop a process to increase the recognition and validity of training at all levels for the benefit of students. The development of the framework involved cooperation among the emirates and the federal government and is seen as a significant step forward to solidifying UAE's position as an education hub.

Attracting, as well as retaining, high-quality international students is key to UAE's goal of developing a skilled workforce through the activities of the education hub. To that end, the federal government has amended labor policy to allow students to work part time, a benefit for students who need the income to pay for living and meet tuition costs while in the UAE. In addition, resident visa policies have also been created to allow the free zones to assist universities in the awarding of student visas to students recruited from outside the country.

University Quality Assurance International Board (UQAIB)

The Knowledge and Human Development Authority (KHDA) is an agency of the Government of Dubai. It is responsible for basic education development and standards as well as the oversight of higher education in the free zones. It soon became apparent with the growth of international branch campuses in other free zones including Dubai International Academic City, that the preservation of

quality in collegiate programs was necessary for the sustainability of the model and the protection of the students. Hence, the University Quality Assurance International Board (UQAIB) was established in 2008 to oversee the quality issues of international branch campuses in Dubai. It uses experts from countries around the globe, including Australia, Saudi Arabia, the USA, the United Kingdom, India, South Africa, and Hong Kong. After the approval and establishment of the international branch campus, KHDA conducts a monitoring process to assure that the standard of academic programs offered by the home campus in a country is the same as in the branch campus in Dubai, and that the home accreditation applies to the branch campus. This innovative model is called the "Equivalency Model."

The KHDA was the first in the world to implement this model for economic free trade zones. The quality valuation is based on four main principals. First, the home higher education provider must be approved by the official system of the home country; second, the standards used at the home campus for quality assurance must be acceptable to UQAIB and the international standards community; third, evidence must exist to demonstrate the branch programs are equivalent with the home campus; and fourth, UQAIB-approved programs are entered into a KHDA registry. The Equivalency Model is a progressive new process for ensuring quality in crossborder higher education.

The UQAIB is a member of the International Network Quality Assurance Association for Higher Education (INQAAHE) and is expanding its network with other organizations to improve the implementation of the validation model and the use of previously awarded accreditation by international branch campuses.

Lessons from UAE's Experience with Branch Campuses

It is clear that branch campuses are central to UAE's position and reputation as an education hub. Given that as of 2012, the UAE is home to the largest number of international branch campuses in the world, there are valuable lessons learned and insights gained from this experience, and they include the following: (1) support and commitment from home campus, (2) knowledge of local market, (3) financing, (4) faculty, (5) leadership, (6) quality assurance, and (7) program selection.

Support and Commitment of Home Campus

Many higher education institutions have been drawn to the UAE to open a college or university. Many have been very successful, a few have not. The first requirement to establishing a successful and sustainable branch campus housed in a free trade zone is the ongoing support and commitment of the home

campus; the branch in the UAE needs to be planned and supported as a part of the mission of the home campus and a part of its global strategy to meet student needs. This can be seen in the New York University in Abu Dhabi, in Heriot-Watt University from Scotland, and in Manipal University in Dubai from India. The administration and academic faculty display commitment to the branch and plan over time to achieve desired student outcomes and institutional outcomes. This includes financial commitment and organizational commitment. Another critical requirement is the dedication to high-quality instruction and quality assurance. The accreditor of the home campus should make it a point to monitor the branch campus and issue reports on campus progress from time to time, including site visits.

Knowledge of Local Market

Most successful campuses seem to start small and grow over time. They select a program that matches perceived local needs, as a poor match yields low enrollment. Due diligence calls for knowing the local market and that is the key to success. A campus cannot assume that its star program at home will flourish in the new location – they must learn the territory and its idiosyncrasies. This has been successfully done by Middlesex University and Heriot-Watt University in Dubai and INSEAD in Abu Dhabi.

Financing

One of the financial models practiced in the UAE is the "investor model" where a university has a local legal partner who financially invests to support the academic administration and degree programs of the campus. Successful agreements with the investor ensure that there is no interference in the academic administration and quality of the campus. In cases where the financial partner has attempted to make routine administrative decisions or control admissions and standards, university control evaporates and quality suffers. External quality assurance review of the institution can identify such a situation and either get it corrected or implement punitive measures. Where such a model exists, quality assurance is mandatory for consumer protection and for quality. This model has proven successful in several UAE universities.

Government support is also a model for success in the UAE. Ras al-Khaimah has supported the creation of a free zone and dedicated support resources to institutions such as the American University of Ras Al Khaimah. Academic City in the Emirate of Sharjah is another prime example in addition to the American University of Sharjah. Dubai has developed millions of dirhams worth of infrastructure in International Academic City and Knowledge Village and supported universities

such as online HBM e-University, St. Joseph's School of Law, and the British University in Dubai (BUiD).

Faculty

Successful campuses also ensure that a significant number of faculty come from the home campus and are on site at the branch campus. Many campuses use local hires, but these must fit into the faculty plan requiring home campus approval of all faculty and an appropriate blend of faculty that meets accreditation and quality standards. It also affects student recruitment, as students seek faculty with the quality and pedigree of the home campus, if they are to enroll in the branch campus. In some programs the faculties are flown into the UAE from the home campus such as the Sorbonne Abu Dhabi, the London Business School, and St. Joseph's School of Law from Beirut in Dubai.

Leadership

Campus leadership is not to be overlooked, as many key decisions are made in the first years of a new campus and financial survival is at stake. A campus is fortunate if they can install an experienced leader that has knowledge of the local environment – either one who lives in the UAE or one assigned from the home campus. To extend and protect the reputation of the home campus, a senior faculty member may be selected to serve as local director, dean, or president. The replication of decisions made in another country may not recognize some of the cultural and economic differences between the two countries. The ability to be flexible, culturally aware, and global in outlook is vital for the new leadership. Balancing the inherited quality of the home campus and the need for local market growth is the skill most needed in campus leadership.

Quality Assurance

Educational hubs are dependent for success on the transparency and robustness of the institutional quality assurance processes. The process supports campus vitality and reputation. It is an essential ingredient for internationally recognized campuses and student graduates. The UAE through the Commission on Academic Accreditation of the Ministry of Higher Education and Scientific Research has approved over 70 institutions, and the University Quality Assurance International Board in Dubai has approved 20 institutions which undergo external quality review on a regular. Important to remember is that maintaining high-quality programs and institutions is the bedrock of hub success.

Program Selection

Establishing different programs for different countries is another key strategy for international universities as they study the needs and opportunities in the host country. For example, the highly regarded Swiss university Ecole Polytechnique Federale de Lausanne (EPFL) has begun research projects on the environment, such as architecture in an arid environment and water issues in the Gulf in the Emirate of Ras al-Khaimah. New programs responding to local or regional needs are also required and appreciated. An example of this approach is the Dubai School of Communication which aims to educate and train bilingual journalists in Arabic and English for the region. The Dubai School of Government, started with a partnership with Harvard University and offering MPA degrees for government officials from the Arab world, is another example of developing specific programs in response to local need.

Issues and Challenges

Any new development as large and complex as establishing the UAE as a respected education hub faces various kinds of challenges along the way. Important issues that the UAE continues to address as it enlarges the scope and scale of its education hub endeavor include research, increased access for students, quality, alignment with work force needs, culture, and cultural identity.

Any educational hub requires the presence, over the long term, of recognized research in addition to education and training. In Abu Dhabi, the multibillion dollar Masdar City alternative energy project focuses on research, with a limited number of graduate students enrolled in an institute which generates new knowledge and looks for commercial application and innovation. In the future, more attention needs to be given to the research dimension in UAE's evolution as an education hub.

In the long run, sustaining quality is the primary task and challenge for all the institutions in the hub. To maintain quality and reputation, it is necessary that the legitimacy of the degrees and the quality assurance offered must be transparent and in the public domain. This applies to all domestic and foreign institutions. It is essential that all institutions and programs are accredited, that all qualifications are recognized by competent authorities, and satisfactory information must be made available to students, parents, and employers to maintain and improve the quality of education.

A major feature of educational hubs and one of the justifications for their existence is alignment of programs with local or regional employment needs. There is often a lag in the ability of campuses to offer the appropriate programs and courses, due to unexpected changes in the local economy and a lack of data on the emerging demands in the employment areas. Attention needs to continually be given to aligning education and training programs with local needs, especially regarding the future employment requirements.

A key issue is the ability of international branch campuses to contribute to the cultural and intellectual life of the host country or region. Providing access may meet certification and labor needs, but real involvement and connection to the local population and its culture is another matter. As an astute observer in the Kingdom of Saudi Arabia has noted, "There is no doubt that opening branches of foreign universities in a number of GCC states…has had its positive aspects, (but) the experiment faces challenges relating to the interaction of the cultural identity of these universities with the local cultural identity and the meeting of societal needs" (Al Eisa 2010). There is much to be done in the recognition of and contribution to local cultural needs and interests. For example, none of the universities in the UAE offer a degree in Islamic art history. Attention to local culture and national identity is critical for the development of the UAE as an education hub and is an issue worthy of greater attention and effort.

Additionally, there is a concern about the national language of Arabic and its use among students. The national students are not graduating from high schools with high Arabic language skills. As the medium of instruction in most of the universities is English, such students are not getting opportunity to develop their mastery over Arabic language. This has a deleterious impact on the development of native language skills among new generation. The traditional Arab language teachers should be exposed to modern teaching methods, in order to generate quality training in Arabic teaching. Authorities are concerned about it, and innovative programs are now being designed and sponsored to address this issue.

What Next? Emerging Scenarios

Educational hubs are now in transition and growth, but the future may offer different options, especially for branch campuses. Accreditation will become mobile. Now built on multiple local approvals, an accredited institution will transfer this authority to the branch campus and in turn to the students, known as "mobile accreditation." It is fair to say that local accreditors and quality assurance organizations will look much different in 10 years. On the other hand, consumer protection will increase as an important goal of governments, to assure quality of instruction and of graduates. Documented assessment of learning outcomes will increase; the same with campus information available on the web. Thus, consumers will have more information and options to make decisions.

Higher education providers will plan for more flexibility in their branch programs to better meet the cultural and contextual needs of the community in which it is located. Curriculum will be adapted to provide cultural relevance and meet local needs and workforce requirements. Education tourism will become more of an identified economic activity that may involve governmental planning. Governments and the private sectors will capitalize on the ability of universities to attract students from outside the area.

In light of these projected changes, competence and coordination at the national level is needed to smooth the transfer of students among institutions within and between countries, to bring rigor and stability to funded scientific research and to foster cooperation among the universities that will build into partnerships. This is a real challenge that deserves immediate attention and will yield important results. State-federal relations in all countries, including the UAE, will need to harness competition, continue to assure quality, and provide policy for collaboration.

Education hubs do not automatically offer the right mix of programs. For instance, in UAE business programs are close to 50 % of the offerings, and education, engineering, the sciences, and health sciences are very low in number. A better steer from employers and government policy can improve the situation. Universities should find creative ways to contribute to the local culture, to sustain cultural heritage and the Arabic language. Currently there are few required courses or programs that prepare students for jobs in the cultural industry. Cultural institutions depend on expatriates with technical skills to manage and plan for future mega cultural projects. However, many are not familiar with the local or regional culture and do not speak Arabic.

Education technology and especially the new massive open online programs (MOOCs) are part of the international landscape, and their role needs to be better defined in the UAE. Quality assurance in the UAE oversees local classroom instruction but does not have the capability or role over foreign content delivered over the Internet. Costs, flexibility, and ease of access should be explored further as part of the full complement of hub offerings.

The UAE should develop a national strategy in consultation and cooperation with the emirates to sustain and improve hub instructional, research, and commercial development. “Universities build bridges,” and in this part of the world, these “bridges” are a great contribution to potential peace and prosperity in the Middle East and to cultural understanding.

The economic and demographic challenges of countries and regions of the world will take different paths in the development of educational hubs, and any plan must be cognizant of the volatility of student enrollment, university planning, government policies, and assumptions about hub benefits. But the roles of hubs in workforce development, individual education, and research and development will remain and evolve over time. Thus, the admonition to choose policies for “fitness of purpose” holds promise.

Concluding Remarks

A critical issue for the UAE is the lack of a national plan for education hub development. As the structure of government is a loose federal one, the rulers of emirates enjoy the authority to formulate independent policies. The Emirate of Dubai, for example, established economic free zones to spur economic diversification as it has minimal oil reserves. Sharjah, by royal decree, established

University City and the University of Sharjah, as well as funding the creation of the American University of Sharjah. Abu Dhabi has funded a number of new international branch campuses, including New York University Abu Dhabi, which received a grant of approximately 50 million US dollars, and Masdar, a multibillion dollar project for a new carbon-neutral city near the airport which includes a graduate institute.

Other emirates, which do not have the economic resources or petroleum reserves to draw on, opted for other independent ways to foster higher education and be part of the UAE educational hub. Dubai is the most critical case in point, creating free zones independent of federal oversight and planning, with the investment of land and infrastructure through a state-owned profit-making arm of government, the TECOM Investments. As the state-owned TECOM Investments built facilities and instructional space, high upfront capital investment was avoided by the international branch campuses. Knowledge Village and Dubai International Academic City are the two outcomes of such a policy design. It has promoted the creation of two dozen universities and scores of consulting and human relations and training businesses. This design has been unique to Dubai and built to "fitness for purpose," designed to fit the realities of the emirate.

This has necessitated and resulted in the necessary establishment of new state-level policy on quality assurance. The federal government, through the Commission on Academic Accreditation (CAA), gives licenses and accredits universities; but it is not mandatory in the free zones which operate with only local requirements. The innovative development of the University Quality Assurance International Board (UQAIB) in Dubai meets the need for institutional quality assurance in the emirate and provides consumer protection and assurance of quality for student and employers. The first quality assurance model to implement the validation model, the Board, has been very successful in its operation by not renewing permits for low-quality institutions and raising standards for higher education. As one might expect, this leads to the need for state policies and federal policies to be better aligned, and this is a major issue now in discussion in the UAE.

Another critical issue in the UAE is the lack of student preparation for college, as English language test scores are low, especially for the Emiratis. Educational hubs are meant not only to recruit students from other countries but also to better meet the needs of local students for independent growth and skill development for employment. Every new international branch campus that opens in the Middle East or the UAE should ask the question – where will the qualified students that meet entrance standards come from? Too often universities, without data, assume that their name will attract the best students filling the sufficient quota, but greater access to education does not meet the country's need if qualified students are still not available to meet the labor market needs.

Another issue involves the field of study, as there is less interest in mathematics and science subjects among the UAE students (KHDA 2011b). To overcome this, the higher education and secondary education sectors need to work together to attract qualified teachers, develop curriculum, and increase enrollment. For economic development, emerging economies over the world concentrate on "SME," science,

mathematics, and engineering majors, and the UAE is no exception. This poses a real challenge.

Research is another area worthy of close scrutiny. Research, mainly social science research, at several universities is underway, for example, at UAEU, BUiD, Wollongong, Heriot-Watt, Middlesex, Zayed, Masdar Institute, and AUS. However, large well-funded scientific projects are few in number, and the federal National Research Fund which was established by the Ministry of Higher Education in 2010 has yet to receive significant funds for allocation. UAEU has had to reallocate funds from internal resources for research in medical and engineering projects. Emirates Foundation for Philanthropy has funded research more than all other sources in the fields of social, education, science, and technology. In the long run, research is needed to fulfill the promise of *the UAE as an educational hub and to create links to government and industry* (*Gulf News* 2011).

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Chapter 6
Hong Kong: The Quest for Regional Education Hub Status

Ka Ho Mok and Peter Bodycott

National Context

The Hong Kong Special Administrative Region (HKSAR), a city of about 1,104 km^2 in area comprising more than 700 million residents, is located at the southern part of China. Although it has always been seen as an international city– the meeting point between east and west, Hong Kong is in reality a Chinese society with over 90 % of its population being Chinese. Hong Kong is a middle-aged and ageing society. In 2009 the median age of its population was 40.7. The ratio of children has steadily dropped from 17.5 % in 1999 to 12.5 % in 2009, heavily affecting the educational demand for primary and secondary education (Census and Statistics Department (CSD) 2010). Higher education has always been limited in provision and always regarded as a necessary qualification to enter the employment market. The demand for higher has continued to grow especially when more high school graduates have heightened expectation for university education without further increase in government-funded university places.

The typical story of Hong Kong is that it successfully transformed itself from a fishing village more than hundred years ago to an industrial city in the 1960s and 1970s and to a service economy in the 1980s. After entering into a service economy, Hong Kong's economy has been sustained by four pillar industries, namely financial services, trading and logistics, tourism, and professional services. As of 2009, the

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percentage share of the four industries to the GDP amounted to 55.6 % (CSD 2011b). The percentage share of total employment was 47.3 % (CSD 2011a). Obviously, these industries would require a knowledgeable and educated workforce. In fact, with limited natural resources, Hong Kong's success has traditionally relied on human resources. The development of human resources largely takes two forms, by attracting immigrants and by nurturing local people. Hong Kong has always been an immigrant society. It has become a shelter for many mainland Chinese since the late 1940s when the communist party took control of the Chinese government. The knowledge, skills, and money brought by the entrepreneurs and ordinary people from the mainland have served the Hong Kong's economy very well particularly in the industrialization stage. Of late, the Hong Kong Special Administrative Region (HKSAR) government has attempted to develop the city-state into a regional education hub, while the positioning as an international city in Asia has driven Hong Kong to bring in more talents and professionals from the mainland or overseas to enhance its competitiveness in the knowledge-based economy (Mok and Yu 2011).

The development of local people, education, and especially higher education has long been the key to development. Being a former British colony prior to the return of sovereignty to China in 1997, Hong Kong's higher education system was largely modeled after its colonial master. The public higher education sector in Hong Kong is overseen by the University Grants Committee (UGC), which is a non-statutory body established by the colonial government in 1965. The UGC comprises members of different backgrounds, such as businessmen, university academics, secondary school educators, and other well-respected persons in the community. The government is the major funding provider for the public higher education institutions through the resource allocation mechanisms of the UGC. As of the 2010/2011 academic year, the grants for UGC-funded institutions were more than HK$ 14 billion, which constituted about 23.0 % of total government expenditure on education and about 4.7 % of total government expenditure (UGC 2011a). The higher education sector in Hong Kong has long been dominated by eight UGC-funded higher education institutions. However, as a later development, private higher education in Hong Kong has thrived. In 2011, there are six private (self-financing) universities making up a total of 15 degree-awarding institutions, including the publicly funded Hong Kong Academy for Performing Arts (see Table 6.1). From 2000 onward, the size of public higher education students has been expanding. For example, in the academic year 2004/2005, the number of full-time undergraduate students enrolling in the eight major UGC-funded institutions was 47,489; in 2010/2011, the number rose to 56,059. In the same period, the number of full-time research graduates in those institutions has increased from 4,555 to 6,200 (UGC 2011c). To a certain extent, the ever-increasing number of university seats illustrates an optimistic prospect of the development of Hong Kong's higher education sector.

Since the mid-1990s, the pressure of globalization and the pressing demands of a knowledge economy have led to a series of educational reforms to match the demands. From the outset, the focus of these reforms was on the promotion of quality education (Chan 2008) and the massification of its higher education, rather than on the aspiration of becoming an exporter of higher education services. After being

Table 6.1 Enrollments for 15 degree-awarding higher education institutions in Hong Kong

Nature	Institutions (and their total student enrolment [Full-time equivalent] in academic year 2010/2011[a])
Publicly funded	City University of Hong Kong (10,126)
	Hong Kong Baptist University (5,166)
	Lingnan University (2,290)
	The Chinese University of Hong Kong (13,510)
	The Hong Kong Institute of Education (5,090)
	The Hong Kong Polytechnic University (13,987)
	The Hong Kong University of Science and Technology (7,197)
	The University of Hong Kong (13,302)
	Hong Kong Academy for Performing Arts[b] (NA)
Self-financing	The Open University of Hong Kong (NA)
	Hong Kong Shue Yan University (NA)
	Chu Hai College of Higher Education (NA)
	Hang Seng Management College (NA)
	Tung Wah College (NA)
	Caritas Institute of Higher Education (NA)

Source: Mok and Bodycott (2014)
Note: [a]It includes students enrolled in sub-degree, undergraduate degree, taught postgraduate, research postgraduate programs
[b]It is not funded through the University Grants Committee; therefore, it is not considered as a higher education institution

hit by the Asian financial crisis in 1997, the government of the newly established Hong Kong Special Administration Region conducted a comprehensive education review. The subsequent *Review of Education System Reform Proposal* highlighted education as a key factor to the global competitiveness of Hong Kong in its future development (Education Commission 2000). To upgrade the workforce, the government intended to provide 60 % of the secondary school graduates the opportunity of receiving tertiary education within the first decade of the twenty-first century (Tung 2000). Such reforms laid a foundation for the idea and an ongoing regional education hub discourse. Following, the global financial crisis in 2008 and taking note of other hub developments around the world, Hong Kong's regional education hub aspirations gained in prominence. In 2010–2011 it became a top agenda item, the government envisaging that with the establishment of an education industry (along with other new industries), Hong Kong's economy can be jumpstarted, diversified, and sustained over the long run (Mok and Cheung 2011).

Drivers and Rationales

The key drivers for the quest of the regional education hub status are closely related to the changing socioeconomic context of the city-state in the wider context of the rise of major cities in China. Being a special administrative region, Hong Kong has

to reposition itself as a highly competitive city in China. Differentiating the city-state as the most outstanding and unique gate-city to the mainland, the Hong Kong government has tried to diversify the economic activities by advocating new economic pillars in recent years. One of these pillars is to promote education as a service through the quest for becoming a regional education hub (Mok and Ong 2011). Hong Kong generally aims to become a regional student hub and in time a skilled workforce/talent hub by attracting nonlocal students (from mainland China or abroad) to pursue their studies and retaining them to work in Hong Kong after graduation (Lai and Maclean 2011). The HKSAR government headed by the Chief Executive is the major actor in developing policy and determining direction of hub policy and is also the main provider of funding and labor resources to create and support the education hub vision.

In the *2004/2005 Policy Address*, the government proclaimed that it was keen to promote Hong Kong as Asia's world city, on par with the role that New York plays in North America and London in Europe, and developing an education industry is part of these efforts (Tung 2004). It says:

> As Asia's world city, Hong Kong should be where talents from around the world congregate…We will continue to improve our living conditions in such areas as environmental protection, education, recreation and culture, and promote high-quality services to attract those who meet the criteria to settle here. Hong Kong's education, medical and health care services enjoy high professional standards. Apart from catering for local needs, they can be further developed into industries to serve people in the Mainland and elsewhere in Asia (Tung 2004: 11).

The government expects that the education hub project will serve to stimulate the economic development of Hong Kong. The education hub project aims to establish an education industry to generate money profits for Hong Kong. It is expected in the long run that the education industry will become one of the prominent economic pillars of Hong Kong, and in doing so attempt to dispel criticisms of the government for concentrating too heavily on the real estate and financial industries. The government envisages not only direct economic gains from the education hub project but also some indirect benefits by bringing in more nonlocal students. Local students will also be benefited through their exchange with nonlocal students (Mok and Ong 2011).

The education hub project has become more urgent after the 2008 global financial crisis, when the government realized the necessity of education services for Hong Kong's long-term success. Therefore, in the *2009–2010 Policy Address*, the government made its education hub ambition very explicit by stating: "On the development of education services, our objective is to enhance Hong Kong's status as a regional education hub, boosting Hong Kong's competitiveness and complementing the future development of the Mainland" (Tsang 2009: 11).

It was also clearly identified in the *Policy Address* that the continuing internationalization and diversification (e.g., developing private higher education) of the higher education sector, as well as perfecting the quality assurance mechanism and increasing research support, are areas that Hong Kong has to work on in order to achieve the regional education hub ambition (Tsang 2009: 11–12). It is important to

note that, because the Hong Kong government believes that the basic infrastructures of higher education is good, hub building is mainly about improving the existing facilities rather than starting everything from scratch. There are some measures and accomplishments that seem more directly linked to the education hub project, such as change of immigration practice and the development of private higher education. There are others which appear to be less directly linked, such as internationalization and quality assurance, which may cause doubt as to whether these are just generic higher education reforms which might have happened even if there was no plan for bringing up the education hub. However, the fact is that all these are recognized by the government as essential to and indicative of the hub project.

The education hub project has far-reaching political and policy implications for Hong Kong. As such, stakeholder agents and actors include those from various fields including education, immigration, trade and development, and public finance. In the absence of a coherent and cohesive policy, the diverse expectations and outcomes of the hub plus the involvement of different actors, often results in different policy understandings, aims, and tensions. A relevant example of this is the tension is between the export of higher education services for profit-making approach as opposed to attracting talent to Hong Kong (Lai and Maclean 2011; Cheng et al. 2009).

Major Actors and Stakeholders

The Hong Kong government is the initiator and the authority of the education hub project, whereas other related agencies or bodies are mainly advisory and advocacy in nature. In 2004, the Chief Executive and the Secretary for Education and Manpower declared the aspiration to develop Hong Kong as the education hub of the region. In 2006, repeating the mantra "creating an education hub can help Hong Kong attract talent, enhance its competitiveness, and help broaden the horizons of local students," the Secretary for Education and Manpower announced the setting up of an education hub steering committee headed by the Chief Secretary for Administration, with government bureau chiefs as members. Its purpose was to study and offer advice on how the government could develop policies in such areas as immigration and employment.

However, building an education hub usually needs to involve a diversity of actors and activities (Knight 2011). Besides the government, the University Grants Committee (UGC) is the most important stakeholder. The UGC is a non-statutory advisory committee responsible for advising the government on the development and funding needs of higher education institutions. With this status, the UGC is seen largely in the wider education community as the main party responsible for serving and driving the hub vision as an advisor and coordinator. The UGC works directly with higher education stakeholders and various government departments such as immigration and Trade and Development Council (TDC). The immigration department is responsible for issuing and managing student visa and entry permits

for nonlocal students. TDC is responsible for marketing Hong Kong's educational services overseas and assessing the commercial value and export potential of Hong Kong's educational services.

Without a special taskforce dedicated to the hub project, many of the responsibilities for implementation rest with the higher education institutions themselves. Universities in Hong Kong enjoy high degrees of autonomy and academic freedom, so they have a major say in initiatives like building an education hub. The Heads of Universities Committee (HUCOM) is a forum for the principals of the eight higher education institutions in Hong Kong to discuss the development and direction of the higher education sector. In 2005, it established a Standing Committee on Internationalization. The membership of this committee consists of directors, managers, and chief administrators responsible for internationalization and marketing in their respective institutions. Membership also includes representatives from the Hong Kong Trade and Development Council who assist in coordinating joint promotional and recruitment activities. Working collaboratively, members develop joint strategies and activities to foster a deeper understanding of the Hong Kong higher education sector internationally, promote an image of Hong Kong as a higher education hub in Asia-Pacific Region, and coordinate international student recruitment efforts. The relationship between members is collegial and supportive as each institution has a differentiated role based on its identified areas of strength. While the promotion of Hong Kong as an education hub remains a central facet of all joint activity, there is friendly internal competition in regard to international student recruitment.

The working relationship among the major hub stakeholders is collegial and supportive, but it suffers from a lack of cohesion and explicit strategy. This is no way represents a criticism of the individual units or their ability to complete the tasks efficiently, effectively, and to the highest standards. But, the absence of cohesion ultimately impacts the effectiveness and productivity as it lacks a clear organizational framework. Without a sense of direction and a framework, the stakeholders, while welcoming autonomy, feel they are left to make decisions which are more instinctive, interpretative, and reactive as opposed to unified, focused, and proactive. The ideal situation, which is yet to be achieved, is for the government to set up an inter-bureau steering committee to not just provide advice but to develop a long-term strategy and lead the implementation of the education hub policies (Cheng et al. 2011; Shive 2010).

Policies and Regulations

Despite the ongoing discussion of the proposed education hub, the government has yet to offer a comprehensive education hub policy or related master plan that outlines very clearly the basic rationales, goals, and development framework of the project. The plans and programs it has launched are piecemeal in nature. As of 2011, the most obvious efforts to assert the education hub status of Hong Kong are

establishing closer relationship with the mainland, continuous improvement of quality assurance, and relaxing immigrant control for nonlocal students.

Forming Closer Relationship with Mainland China

As mentioned in the *2009–2010 Policy Address*, the development of Hong Kong's education hub is not only for the good of Hong Kong but also for the whole country. Concomitant to closer economic integration between Hong Kong and mainland China at large, Hong Kong's higher education is also establishing stronger ties with the counterparts in mainland China. Such a relationship can be beneficial for both sides. For China, bringing in more resources from Hong Kong is helpful given its well-established international outlook and close political relationship. For Hong Kong, by tapping into the large educational market of China, it will enjoy a unique education hub status.

In December 2008, the National Development and Reform Commission of the Chinese government promulgated *The Outline of the Plan for the Reform and Development of the Pearl River Delta* (*2008–2020*), proposing the cross-border higher education collaboration with the region. It is stated in section 9 of the Plan:

> the prestigious universities of Hong Kong and Macao will be encouraged to establish cooperative institutions of higher education in the Pearl River Delta, the authority for undertaking cooperative education with overseas organizations will be expanded, and the all-sided, multidisciplinary and multiform cooperation on intellect introduction and talent cultivation will be encouraged, so as to optimize the structure of talent development (Civic Exchange 2009: 65).

The Plan expects that by 2020, the cities of Guangzhou, Shenzhen, and Zhuhai in the Guangdong Province will establish joint higher education institutions with three to five famous foreign universities. Against this broad policy context, and in order to harness the academic and research potentials of China, many universities in Hong Kong have been expanding their activities in mainland China since 2008. The University of Hong Kong and the Chinese University of Hong Kong are planning to establish a new campus in Hong Kong's neighboring city, Shenzhen, aiming to tap into the educational demand and research opportunities of China. Having established the Shenzhen Institute in 2002, the Hong Kong University of Science and Technology is building a graduate school in Nansha city. The Hong Kong Baptist University has founded a jointly run United International College (UIC) in Zhuhai with the Beijing Normal University. These examples demonstrate the nascent mode of a Hong Kong education hub, based on an inflow of students and an outflow of educational services, mostly to the neighboring mainland China. In fact, this Hong Kong-China relationship does not differ from other commercial and professional service collaborations in which Hong Kong aims to bring in talents and capital from China and export its own services to China for mutual benefits.

Competitiveness, Research, and Quality Assurance

Academic excellence marked by a high academic and research quality is an important trademark for Hong Kong's education hub and world city status. For example, the UGC states clearly in its review report of 2002:

> The ambition to be Asia's world city is a worthy one, but there is no doubt that realization of that vision is only possible if it is based upon the platform of a very strong education and higher education sector. There are very good reasons for that which have to do with what universities are and what makes them excellent (UGC 2002: 1).

Since the 1990s, long before the announcement of the education hub project, Hong Kong had already embarked on a series of quality assurance reforms on public higher education in order to enhance the teaching and learning and research quality. As of 2011, four major quality assurance exercises have been completed which have a direct bearing on hub policy. The introduction of the Research Assessment Exercises (RAE) in 1993 was a landmark quality assurance reform measure and aimed to enhance the amount and quality of internationally recognized research produced by university staff. Subsequent quality assurance measures included the Teaching and Learning Quality Process Review (from 1995 to 1997 and from 2001 to 2003), the Management Review (1998–1999), and the establishment of the Quality Assurance Council (QAC) in 2007 under the aegis of the UGC. Apart from putting in place a sound quality assurance mechanism, adequate funding is also important, especially for research. Thus, in 2008, the government set up an HK$ 18 billion endowment fund for supporting the research activities of UGC-funded institutions.

Due to these measures and the excellence of the domestic universities, Hong Kong's public higher education has achieved international and regional recognitions. In 2010, Hong Kong had four universities being ranked among the top 200 universities in the Times Higher Education University Ranking. And from 2009 to 2011, Hong Kong had three universities being ranked within the top five in Asia in the QS Top 200 Asian University Ranking. It is believed that this world-class status will provide a strong foundation for the education hub project. In response to such achievements, the Secretary for Education said:

> Hong Kong institutions continue to enjoy a good reputation internationally. This signifies the achievement of our tertiary education and will also help strengthen our position as the regional education hub (Education Bureau 2009).

Of course, the game of rankings has also drawn doubts and criticisms. Doubts are posed about the objectivity of the rankings, which have always favored institutions adopting English as the medium of instruction, which explains why even the top universities in mainland China and Japan are trailing behind Hong Kong universities. It is alleged that questing for higher international ranking, universities in Hong Kong, like many other universities around the world, have emphasized research over teaching and learning. For instance, many universities have given more generous salaries and benefits to teaching staff with research capacity and performance. Similarly,

teaching staff with the functional titles of "lecturer" and "instructor" are not normally categorized as "teaching staff" in the university system but for the sake of boosting the ratio of teaching staff with research capacity they now have titles of "Assistant Professor" and above.

Relaxing Entry Requirements for Nonlocal Students

With the aim of developing an education hub attractive to nonlocal students, the government has also taken several measures to facilitate nonlocal students to come to Hong Kong and remain after graduation. The most notable change was increasing the number of nonlocal student quota from 2 to 4 % from 2002 to 2005. The ratio was then increased to 10 % in 2005–2006 and to 20 % in 2008 (Cheng et al. 2011: 488). Further changes involved relaxing immigration and employment restrictions and enhancing the attractiveness of Hong Kong as a desirable workplace. A 2008 survey showed that from among the more than 500,000 mainland students studying in Hong Kong during 2001–2007, only about 18 % remained in Hong Kong for work after graduation. A major reason cited was that many companies in Hong Kong were unfamiliar with the procedures for hiring nonlocal graduates (*Takungpao* 2008). Recognizing this problem, the government relaxed the immigration laws to allow nonlocal students to have part-time jobs, internships, and an unconditional stay for 12 months after graduation. The postgraduation period of residence can provide more time and flexibility to settle employment matters, such as applying for a work visa. From 2008 to 2010, about 9,800 nonlocal graduates have been approved to stay or work in Hong Kong under the new arrangements.

Accomplishments

The status of the Hong Kong government's hub ambition has been the subject of much discussion since it was first muted in the early 2004. Policy addresses and subsequent developments have moved forward, at a cautionary pace compared to the more robust approaches that have made Hong Kong a leading international financial, trading, and logistics hub. Education hub aspirations, according to the Permanent Secretary for Education, will be realized "through internationalization and diversification" (Tse 2011). It is believed that by diversifying the local student base and by attracting and retaining talented nonlocal students to live and work in Hong Kong, it will be able to address the immediate and future manpower needs of Hong Kong and enhance the overall competitiveness of the economy in the long run (Legislative Council 2007). Related to diversification is proliferation of private higher education service providers, parallel to public higher education. The following section will discuss some major accomplishments of internationalization and diversification of Hong Kong's higher education.

Attracting Nonlocal Students

In the academic year 2010/2011, there were 10,106 nonlocal students (sub-degree level or above) enrolled in UGC-funded programs. It was a dramatic increase from the number of 3,728 students in the academic year 2004/2005 (UGC 2011b). Despite the increased number, the fact remains that over 90 % of these students were from mainland China. It reveals the difficulties involved in creating and sustaining a truly diversified international student base. While the government recognizes the imbalance, it has not taken any decision to reverse the trend. In the *2009/2010 Policy Address*, the government decided to enlarge the talent pool coming from mainland China. The target is no longer just undergraduate students but even secondary school students. It suggested exploring the possibility of allowing nonlocal senior secondary students to study in Hong Kong, and allowing those students to take short-term courses offered by Hong Kong's degree-awarding tertiary institutions, or pursuing senior secondary education at non-public schools in Hong Kong (Tsang 2009: 11).

Targeting Outstanding Talents

To attract more outstanding students, the usual method of the government is to increase material rewards. In 2008 a steering committee and investment committee of the HKSAR Government Scholarship Fund was established under the education hub policy. The steering committee advised the trustee of the fund on the policies and operation of the fund. The fund, with a capital of HK$ 1 billion, was established in February 2008 to support the award of government scholarships to local and nonlocal students in full-time, publicly funded programs at degree level or above. The aims of the fund are to ensure qualified local students advance their studies at home and to attract high-quality nonlocal students to pursue higher education in Hong Kong. The scholarships range from HK$ 40,000 (US$ 5,128) a year for each local student to HK$ 80,000 (US$ 10,256) for each nonlocal student. From the academic year 2008/2009 to 2010/2011, an amount of HK$ 65 million has been awarded to 1,185 students. In 2011, the government further provided HK$ 250 million to extend the benefits to the students of publicly funded sub-degree programs of five institutions. The scholarship for both local and nonlocal students is from HK$ 20,000 to HK$ 30,000 per year (Education Bureau 2011a).

Furthermore, in September 2009, the Research Grants Council under the UGC launched the Hong Kong PhD Fellowship Scheme to attract high-quality research students from around the world to pursue their PhD studies in Hong Kong. Awardees are provided with a monthly stipend of HK$ 20,000 and research-related allowance of HK$ 10,000 each year. However, most of the awardees belonged to mainland China. In the academic year 2011/2012, out of 125 awardees, 82 were mainland students (65.6 %) and 12 were the local students (9.6 %). Other Asian students comprised only 11.2 %. And students from Europe and Americas constituted 8.8 and 4.8 %, respectively (Research Grants Council 2011).

Increasing Diversity on University Campuses

Besides attracting full-time students, Hong Kong also aims for short-term student exchange, which is increasingly viewed as the best and the lowest cost option to build diversity on university campuses. The results are rewarding. In the academic year 2005/2006, there were 2,500 nonlocal exchange students; the number rose to 3,600 in the 2009/2010 academic year. Moreover, some government-funded institutions have increased the number of seats short-term courses to nonlocal students from the mainland, Taiwan, and Macau. The cumulative duration of short-term studies taken up by any student, however, is restricted to not exceed 180 days within any 12-month period. Despite that, the increasing number of opportunities available for academic exchange between local and nonlocal students is a good sign of developing Hong Kong into an education hub.

Developing Private Higher Education

From Hong Kong's perspective, an education hub is planned to be a magnet for attracting a large volume of students from domestic and foreign regions. Nonetheless, seats in public higher education institutions are always limited, as a dramatic change of government budget allocation is not expected. Therefore, to accommodate more students worldwide, the development of private higher education is essential. First, there has been a blossoming of self-financing community colleges run by UGC-funded higher education institutions, which offers many self-financing sub-degree programs to local and nonlocal students alike. Second, there has been an emergence of private universities, which could offer more capacity to accommodate nonlocal students.

The Hong Kong Shue Yan University (HKSYU) became the first private university in Hong Kong in December 2006. Over the years, like many public education counterparts, it has also actively sought academic exchange and cooperation with mainland universities. It has collaborated with Beijing University and the Renmin University on joint master programs. And in 2011, it offered 56 undergraduate seats to mainland students. More such kinds of exchange and cooperation will surely follow with more potential private university candidates like the Chu Hai College of Higher Education (CHCHE) and the Hang Seng School of Commerce (HSSC) are attempting to follow the footsteps of HKSYU to become private universities. The CHCHE was given approval by the government to confer bachelor degree. In 2009, it was allowed by the Education Bureau to build a new campus, paving the way to become Hong Kong's second private university. Similarly, in early 2010, HSSC established Hang Seng Management College (HSMC) to offer bachelor degree programs to gain the private university status.

Recognizing the growing importance of private higher education, in 2010, the government proposed to set up a $HK 2.5 billion endowment fund to support the

development of Hong Kong's private education sector. The fund aims to offer scholarships to students and enhance teaching and learning quality (Tsang 2010). In addition, a HK$ 2 billion start-up loan scheme was set up to provide assistance to self-financing postsecondary institutions to build new premises or reprovision existing premises (Tsang 2009). In fact, Hong Kong's promotion of private higher education is in line with the international trends. For instance, in other Asian countries like Japan and South Korea, the share of private higher education has reached a high level of over 80 %. In this regard, Hong Kong has a long way to go for catching up with other potential regional hub competitors.

Cross-Border Higher Education

Cross-border higher education is significant to an education hub for a meeting point of talents, knowledge, and academic exchange. Cross-border higher education courses run by foreign higher education institutions in Hong Kong, such as joint programs, distance learning, and twinning programs is an indicator of how well Hong Kong's higher education is connected to the world. As of September 2011, there were 1,140 nonlocal higher education courses in Hong Kong. The major host countries of the programs are the United States, the United Kingdom, Australia, Canada, and mainland China (Education Bureau 2011c). However, these courses, though legally and formally registered in Hong Kong, only aim for professional training and lifelong education but not for world-class academic excellence. The flourishing of such kinds of courses would help satisfy educational demand, which undoubtedly contributes to the development of education hub in the form of education industry, but it has no significant impact on raising the academic level of Hong Kong's higher education. So far, the most celebrated cross-border higher education programs are those conducted by the government-funded universities themselves. Of late, the Education Bureau has signed several memoranda of understanding on educational cooperation with a number of countries – the United Kingdom (2006), Vietnam (2009), and Korea (2010) – yet, result and progress remain to be seen (Education Bureau 2011b).

Issues and Challenges

The Urgency of Hub Policy and Plan

As noted above, Hong Kong has a variety of facilitating factors for developing into an education hub – proximity to mainland China, well-recognized universities, and sound quality assurance – but what has hindered Hong Kong from becoming one yet is the lack of government vision and concrete plan. An education hub cuts across the areas of education, research and development, economy, immigration,

city branding, and positioning and thus requires a capable steering agency to take responsibility of planning, coordination, and implementation. And that agency should be the government. In Hong Kong, there is a high degree of consensus among numerous academic studies, official reports, and commentaries that the most serious problem confronting the education hub project is that the hub policy is unclear, unplanned and has not been thought through (Crippin 2011; Mooney 2008; Sharma 2011; UGC 2010). As in the words of a local higher education stakeholder: "our policy may be rhetoric rather than reality" (Sharma 2011). Those who believe that the government does have the political strength to achieve the goal also admit that the government lacks a cohesive strategy (Mooney 2008).

So far, the government has not made it very clear what type of education hub it mainly aspires to. There are signs that Hong Kong is now moving to the direction of a student hub, and to a certain degree a skilled workforce hub, rather than a research and innovation hub. But, what is the best kind of education hub mode for Hong Kong? In fact, many stakeholders, academics, and administrators have been demanding more details and specifics from the government, but to no avail yet. For policy discussion, there is a saying that the devil is in the detail, in this case though, the devil is in the lack of detail.

A cohesive coherent governance policy framework needs to be in place to provide stakeholders with high-level direction and guidance, clearly established key principles and responsibilities, well-articulated fundamental goals, requirements, and limits, and an allocation of responsibilities – in short a master plan. Having said that, there is no doubt that the government has the ambition to make Hong Kong an education hub and that the necessary facilitating factors have been identified. What is needed, however, is a comprehensive blueprint that can reassure all the stakeholders and the public that the goals can be attained and sustained.

Coordinated Promotion and Recruitment

The government needs to develop well thought-out marketing and recruitment policies and strategies designed to present the world with a comprehensive image of educational and research excellence. Ideally, such policy and strategy should be coordinated and implemented through a central agency. As Cheng et al. (2011: 490–491) suggest that, this proposed agency

> could be supported by all interested parties such as the Hong Kong Trade Development Council, the Hong Kong Tourism Board, the Hong Kong higher education sector, the Hong Kong Education Bureau, and other related industries.

The responsibilities for this agency could include:

> undertaking generic promotion abroad, collaborating with other institutions and organizations, establishing a quality database, engaging in research and strategic development, and developing a formal performance management framework in the work of exporting education services and developing Hong Kong as a regional education hub. (Cheng et al. 2011: 491)

Without such an agency, different major stakeholders have already taken action to recruit students. For instance, since 2005, the HUCOM Standing Committee have partnered with the Hong Kong Trade and Development Council to promote overseas Hong Kong's aspiration to become an education hub. Representatives have participated major international promotion and recruitment activities in different countries including India, Indonesia, Korea, Malaysia, Switzerland, and the United States. They have also joined major international exhibitions such as the annual conferences of professional organizations like the National Association of Foreign Student Advisers (NAFSA) and the European Association for International Education (EAIE). The aim of these visits and exhibitions is to showcase Hong Kong as a favorable education destination. From the part of the government, senior education officials have led delegations consisting of high-level representatives from higher education institutions for visits to many Asian countries, such as Malaysia and Indonesia (in May 2010), Korea and Japan (in July 2010), and India (in November 2010). These visits aimed to establish ties with the education sector of the targeted countries and update them on Hong Kong's latest initiatives in the development of education services, including hub aspirations. Notwithstanding such efforts, promotion activities can be more efficient and more strategic if they were led by a central agency with clear and coherent promotion goals, strategies, and plans.

Reconsidering Hong Kong's Attractiveness for Students

Given that other countries in the region, such as Singapore and Malaysia, are also aspiring to become an education hub, Hong Kong does face significant challenges to compete for international students. Even for the mainland students, the attractiveness of Hong Kong is being questioned. The higher education sector of mainland China is rapidly developing, and students are now enjoying better education than before. Though Hong Kong still holds the edge, the gap is undoubtedly shrinking. Besides, as the Chinese economy is thriving, more middle class families are able to send their children to Western developed countries for studies should they want to study abroad. Among those students coming to Hong Kong from the mainland, quite a number of them regard Hong Kong only as a stepping stone for them to further pursue higher studies in Western countries. Having studied in Hong Kong, the mainland students can apply for top-ranking universities in the west more easily, because the Hong Kong education brand is more recognized by the Western academic communities than many of the provincial or municipal Chinese institutions. In this situation, is paying scholarships to mainland students still a viable tactic in the long run? Apart from material benefits, emphasis needs to be given to the uniqueness of Hong Kong and what makes it different from mainland China and hence attractive to students who are willing to study and work in Hong Kong after graduation. A well-thought hub policy and successful promotion of Hong Kong education services, if any, should provide convincing answers to such questions.

Curriculum Design

Curriculum reform in line with international experience is also critical to the education hub project. The latest higher education curriculum reform, known as the 3-3-4 academic structure (3 years of junior secondary schooling, 3 years of senior secondary schooling, and 4 years of university study), aims to change the higher education system from a 3-year British model to a 4-year American model that mostly dominates international university league tables.

While striving for internationalization, Hong Kong can also have the responsibility to develop among the local and nonlocal students alike an enhanced acceptance of diversity and a mindset of intercultural sensitivity and acceptance. Universities embracing internationalization also need to make sustained efforts to promote not only student integration but a curriculum that reflects both Asian and Western perspectives, sources, and cultural roots. To do so, it requires a comprehensive rethinking of the content, values, outcomes, and delivery of higher education courses. As the UGC (2010: 60) states:

> The Hong Kong environment offers an ideal context for the development of curricula that would combine Western and Asian problems and responses, experience, sources and cultural roots. Sensibly handled, such an additional focus would provide a distinctive character to part of Hong Kong higher education and enhance the learning horizons of local and nonlocal students alike. This would be in tune with what Hong Kong's historic function as commercial and cultural intermediary suggests about its contemporary opportunity.

Besides curriculum, in order to create an international learning environment and to accommodate students from different localities, the language of instruction is also crucial. To achieve that, English, the world-accepted lingua franca, has to be made the major medium of instruction. But there is criticism and opposition from certain corners. For example, between 2005 and 2007, there was a heated debate regarding the teaching language policy in the Chinese University of Hong Kong, which has a well-established tradition of safeguarding and promoting Chinese culture. While the university officials attempted to lay emphasis over the use of English, many staff and students were worried that the university was not willing to preserve traditional Chinese language and culture. Finally, a bilingual policy was adopted as a compromise. Despite such incidents, using English as one major medium of instruction in higher education is more or less accepted.

Accommodation

Besides creating and providing a favorable learning environment for nonlocal students, accommodation is also a very practical concern that should not be ignored. With limited land resources and increasing rental prices, accommodation for non-students in Hong Kong is always a problem, posing a major barrier to education hub development. This problem has become increasingly acute as the size of nonlocal students is expanding. Under the existing policy, nonlocal

students of UGC-funded programs are provided with publicly funded boarding facilities throughout their studies in Hong Kong. At the same time, nonlocal students pursuing self-financing programs have to make their own accommodation arrangements, mostly with the assistance of the institutions. In view of this, UGC (2010) acknowledges and admits that accommodation is possibly the most significant deterrent to the choice by nonlocal students of Hong Kong as a study destination. As such, all institutions were encouraged to review their accommodation requirements leading up to and beyond 2012–2013 with a view to taking advantage of revised government hostel building support. In fact, many stakeholders have suggested that the government should consider enlisting Hong Kong property tycoons in the building of a university dormitory city for local and nonlocal students. This would not only help to solve accommodation problems but would also facilitate cultural exchange among local and nonlocal students (Cheng et al. 2009).

Attracting Foreign Partners

An education hub is a platform for academic collaboration and networking. As noted, Hong Kong has achieved some modest accomplishments in attracting nonlocal students and developing cross-border programs. But it has failed in what other regional hub competitors like Singapore and Malaysia have already done; that is, bringing in foreign partners. Even though there is no comprehensive stand-alone foreign university's branch campus in Hong Kong, there are encouraging developments.

The government has proposed to grant six land sites at nominal premium to self-financing non-profit-making postsecondary institutions for campus construction. The latest and the biggest land site in Fanling, New Territories East was proposed in December 2010. The proposed 16-ha site can provide over 100,000 m^2 for building premises. It is expected that the new private university on this site can offer about 8,000 university seats and 4,000 hostel accommodation placements for students (*Sing Tao Daily* 2010). Along with some local private colleges, foreign institutions such as the Jesuit religious order and several Scottish universities have expressed interest to establish a presence in Hong Kong. While this is a good start, concerns remain as to how Hong Kong is committed to bringing in foreign partners. First, foreign universities are not given preferential treatment as they have to compete with local institutions. In this regard, the aim of the land site initiative seems to only focus on expanding educational provisions, either from local or foreign providers, instead of emphasizing the international dimension of the education hub project. Second, the government's move of granting the land site and waiting for foreign institutions to apply seems too passive as other education hub competitors have been very active in inviting strategically targeted, reputable world-class universities to come and providing very attractive incentives.

All in all, this short-sightedness is again attributed to the lack of a comprehensive hub policy and perhaps political will.

Concluding Remarks

The education reforms in Hong Kong from the early 2000s onward have laid the foundation for ongoing regional education hub discourse. During 2010–2011, it became a top policy agenda. The government envisages that a new education industry (along with other new industries) will contribute to Hong Kong's human capital enhancement and hence to long-term economic development.

According to the official rhetoric, Hong Kong's education hub aspirations are to be realized "through internationalization and diversification" (Tse 2011). By internationalization, it means attracting and retaining academically and professionally talented nonlocal students to study, live, and work in Hong Kong. It also means increasing the international recognition of the higher education sector. By diversification, it refers to the expansion and introduction of a variety of students, educational service provisions and providers, both local and foreign. With regard to student recruitment, however, Hong Kong's education hub status is called into question, as mainland students have long dominated the nonlocal student population, while students coming from other countries have been very few. Not only has this imbalance challenged the hub development, it may also weaken Hong Kong's positioning as "Asia's world city," something that Hong Kong, which is in the process of "nationalization," should bear in mind seriously.

Achieving success in the highly competitive international education market always demands an appropriate marketing strategy, adequately supported and financed in a sustained manner. However, it has almost been a decade since the government has declared the aspiration of developing Hong Kong into an education hub, and yet the blueprint to do so has not been forthcoming. The goals and concrete strategies of the hub project have not yet been made clear and explicit. For the question of what kind of education hub is best for Hong Kong, the government has no answer yet. With many favorable conditions already in place, what is missing in Hong Kong's quest for the regional education hub status is the lack of the political will. The government confines itself to the role of a facilitator only, as is evident in the launching of new funding and loan schemes, but it is reluctant to take up a more strategic leading role in steering and directing the development of the education hub project.

Despite such odds, the prospect of Hong Kong's education hub project remains promising and an achievable reality. But, the required policy measures, actions, and steps must be taken, and this requires political will and making the education hub a priority. It is true, that the way forward for the government is to be both cautious and bold. Being cautious in the sense that it has to take a step backward to formulate a sound policy and rethink its role, and being bold in the sense that it cannot shrink from its responsibility to direct and lead.

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Chapter 7
Malaysia: Becoming an Education Hub to Serve National Development

Mohd Ismail Abd Aziz and Doria Abdullah

National Context

Malaysia is a federation of 13 states and 3 federal territories. The South China Sea splits the country into two distinctive regions, i.e., Peninsular Malaysia and East Malaysia (Sabah and Sarawak), with Thailand and Singapore bordering Peninsular Malaysia and Indonesia and Brunei bordering East Malaysia. As of 2010, it has a population of 28.3 million, consisting of more than 62 % Malay and indigenous population, 24.6 % Chinese, 7.3 % Indians, and others 6.1 % (Department of Statistics 2010). The presence of foreign forces, namely, Portugal (1511), Dutch (1641), British (1786 and 1946), and Japanese (1941) enriched the country's historical landscape and diversity, making Malaysia a melting pot of ethnicity, cultures, languages, and traditions.

The country models its governance following the Westminster parliamentary system, dividing its legislative powers at federal and state levels, with the King or Yang Dipertuan Agong elected as the head of the country and the Prime Minister leading the executive wing and government of Malaysia. The parliamentary election of the country is held every 5 years, with the last electoral cycle in March 2008.

Malaysia recorded a Gross Domestic Product (GDP) of 7.2 % in 2010 and is forecasted to grow by 5–5.5 % in 2011 and 5–6 % in 2012. The service sector is the key driver to Malaysia's economic growth which is expected to contribute 58.4 % to the forecasted GDP. The wholesale and retail trade, finance and insurance, as well as tourism are the three major contributors of the Malaysian economy (Ministry of Finance 2011).

In 1991, the fourth Prime Minister of Malaysia, Tun Dr. Mahathir Mohamad, introduced Vision 2020, an ambitious and visionary plan to push Malaysia toward a

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fully developed nation by 2020. Under the Vision 2020, nine goals were highlighted, encompassing social, psychological, political, cultural, scientific, and economical dimensions required to attain a developed nation status. The plan was further enhanced and highlighted 20 years later, with a targeted Gross National Product (GNP) of USD 17,700 per capita by 2020 (National Economic Advisory Council (NEAC) 2010). This target is seen as critical to elevate the quality of life of Malaysians and to ensure that the nation's wealth is accessible and sustainable to all communities in the country. In order to reach its targeted GNP, it is crucial for the country to increase its social cohesion and unity, competitiveness, productivity, and economic development through creativity, innovative thinking, and value-creation activities. Such opportunity presents itself through crossborder education, with the much-needed flow of knowledge, technology, and talents strengthening Malaysia's capacity and capability in nation building.

The plan to be a regional center for excellence in tertiary education is embedded in the Malaysian higher education sector's transformation blueprint, the National Higher Education Strategic Plan 2020. The country is looking to be a high-income developed nation by 2020 and plans to expand the opportunities for international collaboration thereby increasing the crossborder flow of knowledge and talent. Malaysia is optimistic about its prospects as an education hub due to the country's offering of affordable and quality tertiary education in the Asian region during the past 10 years.

Overview of Malaysian Higher Education System

It is necessary to review the evolving role and value of the Malaysian higher education sector to fully comprehend the direction and objectives of Malaysia's education hub development.

In the 1960s, Malaysia relied heavily on agriculture and natural resource commodities as major exports of the country. The country is known as the world's largest producer of rubber and tin, with both commodities accounting for 55 % of the country's export and about 34 % GNP. The shift to industrial- and manufacturing-based development occurred after the introduction of the New Economic Policy in 1970, which aimed at creating harmony and unity by eradicating absolute poverty irrespective of ethnic identities and restructuring the society to eliminate ethnic-based identification based on economic functions. An increased access to higher education is seen as a means to increase social and economic equity. As such, the government implemented a 55:45 *Bumiputera* (indigenous population) to non-Bumiputera ethnic-based admission criteria for postsecondary cohorts seeking tertiary education opportunities in public higher education institutions.

By the 1990s, there were five public higher education institutions serving a swelling demand for tertiary education in Malaysia. This has caused students to either seek their education overseas or enroll in private higher education institutions offering twinning programs or locally established programs of public universities. The Asian financial crisis in 1997 made overseas education an expensive affair to

Table 7.1 Higher education institutions in Malaysia (as of December 2011)

No.	Category	Number
1	Public higher education institutions	20
2	Private universities	25
3	Private university colleges	22
4	Foreign university branches	5
5	Private colleges	408

Source: Education Malaysia Online: Education System of Malaysia (2011)

Table 7.2 Domestic student enrolment in Malaysian HEIS 2002–2010

	Higher education institutions		
Year	Public	Private	Total
2002	281,839 (48.89 %)	294,600 (51.11 %)	576,439
2003	294,359 (48.35 %)	314,344 (51.65 %)	608,703
2004	293,978 (47.66 %)	322,891 (52.34 %)	616,869
2005	307,121 (54.27 %)	258,825 (45.73 %)	565,946
2006	331,025 (50.25 %)	327,787 (49.75 %)	658,812
2007	382,997 (51.15 %)	365,800 (48.85 %)	748,797
2008	419,334 (51.19 %)	399,852 (48.81 %)	819,186
2009	437,420 (47.45 %)	484,377 (52.55 %)	921,797
2010	462,780 (46.08 %)	541,629 (53.92 %)	1,004,409

Source: Laman Web Rasmi Kementerian Pengajian Tinggi Malaysia (2011a)

students and parents; the higher exchange rate for Malaysian ringgit against the US dollar forced local students to pursue their higher education in the country (Ziguras 2003; Wilkinson and Yussof 2005). In fulfilling the market demand, the government increased the number of public higher education institutions and allowed private operators to establish higher education institutions.

The Malaysian higher education sector consists of two major components: government-funded higher education institutions such as public universities, polytechnics, community colleges, and teacher training institutions and privately funded higher education institutions such as private universities, private university colleges, foreign branch campuses, and private colleges. There are also hybrid models where the government provides partial funding to institutions which operate as private entity, such as the Tunku Abdul Rahman College (KTAR). Table 7.1 presents the breakdown of higher education institutions in Malaysia, and Table 7.2 provides enrolment rates of domestic postsecondary cohorts in both public and private higher education institutions from 2002 to 2010.

With a wide range of tertiary education options available at both public and private higher education institutions, there is a widened access not only for postsecondary cohorts but also to international students (Tham 2010). Malaysia was dubbed as "the emerging contender" in the mid-2000s by the Observatory of Borderless Higher Education (OBHE), with its affordable tuition fees, low living costs, the use of English as medium of instruction, and adaptable demographic,

sociocultural, and linguistic traits capturing approximately 2 % of the global international student market in 2006 (Verbik and Lasanowski 2007).

The massification and democratization of Malaysian higher education is driven by internal demand for tertiary education and external pressures from global financial crisis and growing international student mobility. These factors set the pace for Malaysia to be an education hub through the increase in both international student recruitment and provision of tertiary education by public and private operators in the country.

Rationales, Actors, and Drivers

Rationales

Higher education is a lucrative export sector for the strongholds of international education such as the USA, the UK, Germany, France, and Australia. With an estimated seven million students pursuing higher education outside of the home countries by 2020, countries are placing strategic initiatives in maximizing the returns from full fee-paying international students as a means in maintaining their economic competitiveness (Altbach et al. 2009).

The education sector contributed approximately RM 27 billion or 4 % of Malaysia's Gross National Income (GNI) in 2009 and has been identified as one of the service subsectors for further growth and development in the Industrial Master Plan 3 (IMP3) 2006–2020, with an estimated RM 33.6 billion in GNI and 535,000 additional jobs by 2020 (Performance Management and Delivery Unit (PEMANDU) 2010). From the government's perspective, the possibility of RM 7.5 billion savings in foreign currency exchange and an income generation of approximately RM 30,000 per international student is a big motivation for the country to benefit economically from the inflow of international students to Malaysia. It is envisioned that for the next 10 years, the education system in Malaysia will be a major education center of choice and a pivotal hub in the global education network. A shift is expected from a market primarily serving domestic consumption to one where education exports, in particular attracting high-quality international institutions and students, are major drivers of GNI and a critical part of the economy.

The education sector will also serve as a platform to develop talent base for an innovation-based economy. In the words of the Minister of Higher Education, Dato' Seri Mohamed Khaled Nordin:

> The education sector is critical, not just as a means in cultivating first-class human capital and creating social mobility, but also as an engine of growth in its own right. In higher education, our vision is nothing less than to develop Malaysia into a regional centre for excellence in tertiary education. We aspire to produce more researchers and scientists, more engineers and professionals, more specialists and skilled technical talent who can succeed in an increasingly competitive global market. Both private and public higher education institutions in Malaysia must rise up to this challenge…. (PEMANDU 2010: 476)

Table 7.3 Khazanah Nasional investment in education

Direct investment	Indirect investment
International Medical University (IMU)	Iskandar Investment Berhad (IIB): EduCity @ Iskandar
	Marlborough College Malaysia
	Newcastle University Medicine Malaysia (NUMed)
	Tenaga Nasional Berhad (TNB): Universiti Tenaga Nasional (UNITEN)
	Telekom Malaysia Berhad (TM): Multimedia University
	Pantai Holdings Berhad: Pantai Education

Source: Khazanah Nasional (2010)

Malaysia needs to step beyond the current commodity and manufacturing-based economic model in order to achieve its US$17,700 per capita GNP target by 2020. The present export structure, especially that of electrical and electronics and primary commodities such as petroleum and palm oil, requires innovative solutions in increasing the value of products and services offered at the end of the production line. Malaysia also needs to break away from the dependency in low value-added production and services by creating more high-skilled jobs for the population. The crossborder flow of knowledge, technology, and talent is expected to accelerate the country's talent development as well as knowledge creation and application. In positioning itself as an education hub, Malaysia hopes to increase its research and development capacity, circulating and attracting the best talents to develop the country's economy.

Influential and Involved Actors

The array of factors accelerating Malaysia's education hub development has brought together several major stakeholders into the picture, each serving different roles in supporting the nation's aspirations. Khazanah Nasional is the largest investor in education due to its role as the government's investment-holding arm. It has direct and indirect stakes on several educational ventures and higher education institutions in the country, as summarized in Table 7.3.

The government acknowledges the role of the private sector in its education hub agenda. Malaysia's private education sector is a force to be reckoned with in the region for its progressive growth and is responsible for elevating the country's status as the 11th destination of choice for international students, not to mention crossborder education innovation distinctive to the Malaysian higher education sector globally, such as crossborder degree programs (Marimuthu 2008). In 2010, it was forecasted that the private education sector will contribute 94 % of investment funding over a

10-year period, which will champion Malaysia's aim in becoming a regional center of excellence for education by 2020.

The emphasis on the education hub development has also been driven down by the Ministry of Higher Education (MOHE) as the central governing agency for both public and private higher education institutions. Prior to 2004, the overall responsibility of higher education lies under the jurisdiction of the Ministry of Education. Realizing the importance of higher education in the sociopolitical and economic aspects of the nation's development, the government established MOHE with the full responsibility of overseeing the development of both public and private higher education institutions in the country. The move was also attributed to the landslide victory of the ruling coalition in the 2004 general election, where the win is interpreted as a positive sign from the people to be more involved in the sociopolitical and economic aspects of national development. The centralized governance shifted the sector's policies in a direction that is in the "national interest" of the ruling coalition, which mainly focus on ensuring equity and redressing the economic disparity among its diverse population (Lee 2006; Morshidi 2010; Mok 2010).

International Trade Advisory, Promotion, and Linkages

The Malaysia External Trade Development Corporation (MATRADE) was set up under the Malaysia External Trade Development Corporation Act 1992 to assist Malaysian companies in establishing themselves in foreign markets through promotional drives such as trade missions, specialized marketing missions, and international trade fairs. The body also matches potential investors to suitable Malaysian companies through business-matching programs and provides market intelligence and information on trends and opportunities that local companies should capitalize on. MATRADE has assisted educational agents and Malaysian higher education institutions in positioning the Malaysian international education brand overseas through international fairs and its offices in Africa, Middle East, Europe, North America, Australia, and Asian countries (PEMANDU 2010).

Innovative and Skilled Workforce

The Ministry of Science, Technology and Innovation (MOSTI) launched a blueprint entitled "Agenda on Innovative Malaysian" (AIM) in 2009 which acknowledged the dire need of the country to develop and sustain an innovation-charged workforce toward a globally competitive, high-income nation (Ministry of Higher Education (MOHE) 2011a). The harmonization of AIM with national direction was done through implementation plans presented by all relevant agencies and ministries. Of relevance to the MOHE is the seamless

continuum of creative, innovative, collaborative, and entrepreneurial education from preschool to tertiary level which would produce individuals high on knowledge and technical skills on research, development, and commercialization, filling in the gap of 50 researchers, scientists, and engineers (RSE) per 10,000 workforce by 2020.

Quality Assurance

The Malaysian Qualifications Agency (MQA) was set up under the Malaysian Qualifications Act 2007 in ensuring academic performance and institutional effectiveness of Malaysian higher education institutions. Each institution adheres to two codes of practices, the Code of Practice for Program Audit (COPPA) and Code of Practice for Institutional Audit (COPIA). COPIA is a periodical external auditing exercise for all higher education institutions, with the last exercise conducted in 2009, while COPPA is concerned with audits for each academic program introduced by higher education institutions for nonengineering programs. Both Codes (MQA 2008) outline nine areas of evaluation for quality assurance following two levels of standards, i.e., benchmarked and enhanced standards. For engineering programs, all external audits will be conducted under the Engineering Accreditation Council (EAC).

Country Admission Procedures

The Visa, Pass and Permit Division of the Malaysian Immigration Department manages the applications of international students for tertiary education. International students are required to possess approval letter from the Immigration Department prior to entering the country. The hosting institutions, upon receiving confirmation of international students' admission, will assist in the students' pass/visa application.

The role of the state governments in the education hub development should not be overlooked as they make a substantial contribution in terms of financial and physical resources required in setting up specialized education zones in the country. The Sarawak state government fully backs the establishment of two out of five foreign branch campuses in the country, namely, Swinburne University of Technology, Sarawak, and Curtin University of Technology, Sarawak. The Johor state government and the Johor royal family are in full support of Iskandar Malaysia's development, which has successfully attracted domestic and foreign investment into the state. Included in the Iskandar region is EduCity @ Iskandar, a "multi-varsity education center" encompassing 305 acres of state-owned land in Nusajaya. EduCity @ Iskandar complements the country's goal of developing a skilled workforce, highlighting the role of education and training in developing a crucial economic corridor at the southern tip of the Peninsular Malaysia.

Policy Initiatives and Regulations

National Higher Education Strategic Plan 2020

The National Higher Education Strategic Plan 2020 (NHESP) was launched in August 2007 by the MOHE in pushing for higher education reforms in the country (MOHE 2007). The plan embodies the essence of Malaysia's higher education transformation in a 4-phase implementation (Phase 1, 2007–2010; Phase 2, 2010–2015; Phase 3, 2016–2020; Phase 4, 2020 and beyond). The second phase of the NHESP (2011–2015) was launched in June 2011. NHESP envisions excellence not only in the central governance of the country's higher education sector but also in the delivery of higher education in the country. This is driven by seven key thrusts, as summarized below (Ministry of Higher Education 2007):

1. Widening access and increasing equity
2. Improving quality of teaching and learning
3. Enhancing research and innovation
4. Strengthening higher education institutions
5. Intensifying internationalization
6. Enculturation of lifelong learning
7. Reinforcing the delivery system of the Ministry of Higher Education

Of particular interest in Malaysia's education hub development is the fifth thrust – intensifying internationalization. The aspiration to be an education hub is outlined under this thrust and involves having a total enrolment of 200,000 international students and becoming one of the top six destinations of choice for international students globally by 2020. The Phase 1 of NHESP focused on building the foundation required for the transformation, and with regard to the education hub development, the sector has succeeded in intensifying both inflow and outflow of international student mobility, with over 80,000 international students enrolled in the country at the end of 2010.

The second phase of the blueprint, from 2011 to 2015, focuses on strengthening the foundation built from the previous phase and enhancing the delivery of higher education system. As internationalization of higher education cuts across all dimensions of higher education, particularly in innovation and skilled human capital development, a specific implementation plan is needed to create cohesion, influence, and sustainability at all levels of the higher education system. Hence, NHESP Phase 2 is complemented by an additional "anchor" aptly titled *Malaysia's Global Reach: A New Dimension* (MOHE 2011b). It utilizes the soft power approach to develop the confidence and trust of partner countries toward Malaysia's higher education capability through existing internationalization activities such as international mobility programs, international service learning, and international cooperation in education and training. The underlying principle of this diplomatic tool is to propel Malaysia's current standing from being a hub focusing on international student recruitment to a hub of skills, knowledge, and innovation that is relevant

not only to the country's survival in a competitive global environment but also to the region's sociopolitical and economic development.

Development of Innovative and Skilled Graduates

The MOHE faces a key challenge in nurturing a highly skilled, innovative Malaysian human capital alongside a significant outflow of the country's talent. The MOHE Implementation Plan on Development of Innovative Human Capital was launched in early 2011 to complement the MOSTI's "Agenda on Innovative Malaysian" (MOHE 2011a). The core of this implementation plan is mobilizing all levels of the higher education sector to incorporate innovation into their core business of teaching, learning, and research and strengthening existing local and global academic-industry linkages through intelligence sharing and research, development, and commercialization (RD&C) activities that are market-driven and relevant to the industry. "Brain gain" is high on the ministry's implementation plan; all "brain circulation" programs and networking, such as the Returning Expert Program, Brain Gain Malaysia Program, and Expatriate Program, are to be reviewed for effectiveness and revamped to recover talented Malaysians and attract the best brains into the country. Higher education institutions are also encouraged to collaborate with local and foreign experts to stimulate RD&C activities, besides capitalizing on their collaborative agreements with local and foreign partners in student and staff training, industrial internships, and research attachments. The movement, training, and retention of students for RD&C purposes, as well as the involvement of industries in RD&C activities, is hoped to set a foundation for Malaysia to be a knowledge-driven hub in the region.

Legislative Initiatives

In 1996, the Parliament tabled five bills pertaining to higher education sector, namely, the Private Higher Education Institutions Act 1996, the National Council on Higher Education Act 1996, the University and University Colleges Act 1971 (amended 1996), the National Accreditation Board Act 1996, and the National Higher Education Funding Act 1997 (Marimuthu 2008; Mok 2010). These bills redefined the scope of operation, roles, and responsibilities of both public and private higher education providers in the country, in view of the shrinking public funding and the increasing demand for higher education in the country.

The most significant bill with regard to the education hub development is the Private Higher Education Institutions Act 1996. This bill enables interested parties in the establishment of higher education institutions to submit a proposal to the MOHE, detailing the capacity, capability, and impact of the establishment to the Malaysian higher education sector. The proposal is then subject to evaluation before a recommendation is put

forward to the Minister of MOHE in issuing a formal invitation to set up the proposed establishment. The establishment should also seek accreditation on all academic programs offered from the MQA and apply for permit to recruit international students from the Ministry of Home Affairs (MOHA). This bill marks a milestone on the liberalization of higher education in Malaysia as there is an increase in individuals, companies, government corporations, not-for-profit philanthropic organizations, and political parties entering the higher education market for either economic reasons or to increase higher education opportunities for the masses. The Asian Institute of Medicine, Science and Technology (AIMST), for example, is a venture by the Malaysian Indian Congress (MIC) to increase higher education access to the Indian community. Similar objectives are also envisioned by leaders of the Malaysian Chinese Association (MCA) in setting up Universiti Tunku Abdul Rahman (UTAR).

Changes are also observed in the public higher education sector due to the amendment of the University and University Colleges Act 1971. Public institutions are corporatized to reduce their dependency on public funding. Universiti Malaya (UM), being the oldest university in Malaysia, is the first university to be corporatized on January 1, 1998, before four other public higher education institutions, i.e., Universiti Sains Malaysia, Universiti Putra Malaysia, Universiti Kebangsaan Malaysia, and Universiti Teknologi Malaysia, followed suit 3 months later (Lee 2004). The provision of international education is seen as an additional source of revenue for public higher education institutions. Therefore, the institutions have set forth allocation for international marketing initiatives in recruiting international students. Due to their capacity in research and development, the public institutions focus greatly on recruiting international postgraduate students. Accordingly, these universities, which have been granted the Research University status, are responsible for enrolling a large number of international postgraduate students into the country. These moves, to a certain extent, strengthen Malaysia's direction in its education hub development; the knowledge and technology generated by the international postgraduate community is hoped to fill the gap of value-creation initiatives much required by the country.

Foreign Equity in Higher Education

Ownership of foreign equity at private higher education institutions are currently capped at 51 %. The percentage is increased gradually over a 5-year period: by 2012, foreign ownership is allowed at 70 % before full foreign ownership is granted in 2015. While it is unclear how the increased foreign equity would affect the local private operators, the move is seen as "encouraging" within its time limit toward becoming an education hub by 2020. By 2015, foreign higher education institutions aspiring to expand their reach could consider Malaysia as a platform to set up a branch campus in the country. It signifies a market-driven Malaysian private higher education sector, which might have its own impact on the higher education landscape of the country in the future.

Table 7.4 International student enrolment in Malaysian HEIs (2003–2010)

Year	Higher education institutions		Total
	Public	Private	
2003	5,239 (17.24 %)	25,158 (82.76 %)	30,397
2004	5,735 (18.11 %)	25,939 (81.89 %)	31,674
2005	6,622 (16.34 %)	33,903 (83.66 %)	40,525
2006	7,941 (17.89 %)	39,449 (82.11 %)	44,390
2007	14,324 (29.89 %)	33,604 (70.11 %)	47,928
2008	18,495 (26.74 %)	50,679 (73.26 %)	69,174
2009	22,456 (27.81 %)	58,294 (72.19 %)	80,750
2010	24,214 (27.86 %)	62,705 (72.14 %)	86,919

Source: Laman Web Rasmi Kementerian Pengajian Tinggi Malaysia (2011b)

Current Status and Development of Hub Initiatives

Number of International Students in Malaysia

Malaysia has a solid foundation with regard to international student enrolment from the first stage of education hub development itself. There is an increase in international student enrolment in the country for the past 8 years, based on empirical data obtained from the Ministry of Higher Education (Table 7.4).

Based on the above table, there is a 65 % increase in total international student enrolment in Malaysia for the past 8 years, with private higher education institutions as the lead recruiter in international students. Table 7.5 illustrates top 10 sending countries to Malaysia in a 3-year period.

Malaysia appears to be attractive to students from the Middle East in the post 9/11 period, as it enrolled 8,712 students from the Middle East countries in 2009, a 20.1 % increase from 6,957 students in 2008. The top three Middle East countries with the highest student enrolment are Iran, Yemen, and Iraq. The promotion campaigns, scholarships offered, and good bilateral relations between Malaysia and the Arab world increase student enrolment from the region. On the other hand, the difficulties for the students in applying for postsecondary education in the United States, with the rising tension between both regions after 9/11, motivate students to seek safer and more affordable options closer to home, preferably like Malaysia (Morshidi 2008).

Foreign Branch Campuses

Foreign institutions collaborate with local alliance partners in obtaining licensing rights for branch campus opening in Malaysia. The arrangement requires local alliance partners to provide land, facilities, and cash investments to develop physical infrastructure for the branch campuses, while the foreign institutions provide its

Table 7.5 Top 10 countries with the highest international student enrolment (2008–2010)

2008		2009		2010	
Country	Total	Country	Total	Country	Total
Indonesia	9,358	Iran	10,932	Iran	11,823
China	7,966	Indonesia	9,812	China	10,214
Iran	6,604	China	9,177	Indonesia	9,889
Nigeria	5,424	Nigeria	5,969	Yemen	5,866
Yemen	4,282	Yemen	4,931	Nigeria	5,817
Saudi Arabia	2,752	Libya	4,021	Libya	3,930
Botswana	2,350	Sudan	2,443	Sudan	2,837
Sudan	2,307	Bangladesh	1,957	Saudi Arabia	2,252
Bangladesh	2,021	Botswana	1,939	Bangladesh	2,041
Libya	1,788	Iraq	1,712	Botswana	1,911
Total (top 10)	44,852	Total (top 10)	52,893	Total (top 10)	56,580
Total (all countries)	69,174	Total (all countries)	80,750	Total (all countries)	86,919
% (Top 10/all countries)	64.84 %	% (Top 10/all countries)	65.50 %	% (Top 10/all countries)	65.10 %

Source: Laman Web Rasmi Kementerian Pengajian Tinggi Malaysia (2011c)

Table 7.6 Foreign branch campuses in Malaysia

Year	Institution	Local partnership	Location
July 1998	Monash University Sunway Campus Malaysia	Sunway Corporation	Petaling Jaya, Kuala Lumpur
Feb 1999	Curtin University of Technology	Sarawak state government	Miri, Sarawak
Sept 2000	University of Nottingham Malaysia Campus	Boustead Holdings Berhad, YTL Corporation	Semenyih, Kuala Lumpur
June 2001	Swinburne University of Technology	Yayasan Sarawak, Sarawak Higher Education Foundation	Kuching, Sarawak
Nov 2011	Newcastle University Medicine Malaysia	Iskandar Investment Berhad	EduCity @ Iskandar

Source: Modified from Morshidi (2006)

intellectual property, brand presence, and human capital. So far, five foreign institutions have successfully set up their branch campuses in Malaysia. Table 7.6 illustrates the chronological establishment of the five foreign branch campuses in Malaysia**.**

Crossborder Arrangement of Degree Programs

Local and international students are drawn to Malaysian private higher education institutions' arrangement of crossborder programs with foreign institutions. The crossborder courses have high market demand such as management, business, ICT,

Table 7.7 International crossborder initiatives – 2011

Partner countries	Twinning degree	Advanced standing, credit transfer	3+0 foreign degree
Indonesia	1	1	
USA	3	15	9
UK	8	10	143
Jordan	1		
Portland	1		
Australia	1	16	23
India	1		
New Zealand		8	
China		1	
Canada		1	1
Czech Rep.		1	
Switzerland			2
France			4

Source: Ministry of Higher Education Malaysia (2011c)

engineering, tourism, and hospitality, to name a few. There are three types of crossborder arrangements: twinning degree programs, advanced standing or credit transfers for bachelor degree programs, and 3+0 foreign bachelor degree programs. Table 7.7 gives an overview of the crossborder arrangements available in the country. The twinning modes vary from 1+2 and 2+1 to 3+0, where students spend a number of years in private institutions following partner institution's syllabus locally, before completing the degree overseas. The 3+0 mode, for example, enables students to obtain a foreign institution's degree in Malaysia without going to partner institution overseas, reducing the cost of education substantially. In terms of quality regulation, the government controls the number of institutions offering twinning arrangements with foreign institutions, and partner institutions abroad are responsible in managing the content delivery of twinning programs. The crossborder collaboration is affordable to both local and international students; as a result, the country is able to reduce the outflow of funds for overseas education and promote Malaysia as a prime destination for affordable and quality tertiary education. Table 7.7 provides the number of crossborder arrangement between Malaysian private higher education institutions with foreign institutions as of 2011.

Strategic Alliances with Foreign Institutions

Malaysia also leverages strategic alliances with foreign institutions to position the country's specialties in academic and research programs. Universiti Kebangsaan Malaysia has a longstanding relationship with Universitat Duisburg-Essen in Germany. Since 2003, through double degree collaboration in engineering-based programs between these two institutions, 73 students have benefited. In March

2011, Universiti Teknologi Mara has signed a partnership agreement between Massachusetts Institute of Technology to form Malaysian Institute for Supply Chain Innovation at the university's Shah Alam campus. The focus of the center will be postgraduate supply chain education and research and will be linked with MIT's Global SCALE (Supply Chain and Logistics Excellence) Network alongside Spain and Colombia. It should be noted that the list is illustrative, not comprehensive, of the strategic alliances formed. These collaborations have direct implication on the country's education hub development. It is important for the higher education institutions to feature their collaboration with foreign counterparts so as to highlight the Malaysian higher education sector's quality internationally.

EduCity @ Iskandar

Iskandar Malaysia (IM) has attracted local and foreign investors to the region, turning the southern tip of the Peninsular into one of the most developed economic regions of the country. Under the IM's Comprehensive Development Plan 2006–2025, five flagship zones are identified within the 2,216.3 km^2 economic region: (1) Johor Bahru City, the region's service and business district; (2) Nusajaya, inclusive of the Johor state government's administrative center as well as specialized education, health, lifestyle, and residential zones; (3) Western Gate development, a zone of wetlands within close proximity to Port Tanjung Pelepas, one of the world's major container port and the Tuas Second Link (Singapore-Malaysia connecting bridge route); (4) Eastern Gate development, a zone with complementing container ports to Western Gate development and industrial areas; and (5) Senai-Skudai, the logistics hub of IM (Iskandar Malaysia 2010).

A point of interest with regard to the role of IM in education hub development is EduCity @ Iskandar, a 305 acre fully integrated best-in-class education zone comprising universities and institutes of higher education, academia-industry action and R&D center, accommodation and recreational facilities, and sports facilities. The education zone is managed by Iskandar Investment Berhad (IIB), a subsidiary under Khazanah Nasional.

It is perceived that EduCity @ Iskandar might act as a feeder of talent to support the various economic activities of IM; the human capital of IM is expected to be nurtured through the foreign branch campuses set up in this education zone. Based on IM's Comprehensive Development Plan, the education zone will stimulate R&D-based activities in the areas of biomedical engineering technology, medical tourism, education, and creative multimedia, to name a few. The distinct feature of EduCity @ Iskandar is the topography of the education area itself; all foreign branch campuses, each specializes in a particular discipline, are located in a commonly shared area with the industrial establishments, a concept known as "multi-varsity education center," complete with in-house facilities that is hoped to foster greater academic-industry linkages. Table 7.8 describes the developmental milestones of EduCity @ Iskandar for an 8-year period.

Table 7.8 EduCity @ Iskandar: developmental milestones

Institution	2007–2008	2009–2010	2011–2012	2013–2014
Newcastle University Medicine (NUMed)	• (2008)		✓ (2011)	
Netherlands Maritime Institute of Technology (NMIT)		▲ (2010)	✓ (2011)	
Marlborough College			✓ (2012)	
Multi-varsity enterprise building			✓ (2012)	
International Student Village			✓ (2012)	
Stadium and sports complex			✓ (2012)	
Raffles University Iskandar			• (2012)	✓ (2013)
University of Southampton Malaysia Campus (USMC)			• (2012)	
Management and Development Institute of Singapore (MDIS)			• (2012)	

Source: Iskandar Investment Berhad (2010)
Note: • Signed, ▲ Groundbreaking, ✓ Completion

The opening of foreign branch campuses in EduCity @ Iskandar will be a key factor in drawing students to Malaysia as a destination which gives value for money for internationally recognized degrees. Newcastle University Medicine (NUMed) is the first foreign institution launched in EduCity @ Iskandar in November 2011. The medical degree obtained at the branch campus will be recognized by the British Medical Council. Next in line would be the Netherlands Maritime Institute of Technology (NMIT) as well as other institutions illustrated in Table 7.8. Another interesting development for EduCity @ Iskandar is the launch of international schools in the region, such as the Marlborough College, an international secondary school for students between the ages of 13 and 18. This would feed the demand for international school placements among the expatriates in IM, as well as attracting students from neighboring Singapore and Indonesia to the country.

Issues and Challenges

From the plans and implementations, it appears that Malaysia's education hub development has been a sustained and calculated move. The development is, by and large, regulated at the central level with strategic stakeholders managing different facets of the implementation. The discussions so far have also been international student-centric; as such, the current education hub model of Malaysia, following Knight's (2011) proposed typology, would be a student hub, where the higher education institutions in the country, particularly the private higher education institutions, are actively recruiting international students into respective institutions (Knight and Morshidi 2011). However, there are still several critical issues that need to be addressed for Malaysia to stand firm on its status as an education hub. The following are key issues that should be addressed

by Malaysia in advancing from a student-focused education hub to knowledge/innovation hub.

Diversifying Current International Student Demography

As it has been shown in Table 7.6, on an average 65 % of the international students enrolled in the Malaysian education institutions are from the Asian, African, and Middle Eastern countries. During 2008–2010, around 10,000 students from Indonesia, Iran, and China enrolled per year. It is encouraging to note that Malaysia is a destination of choice for tertiary education from students of the top 10 sending countries. Still, it is required that Malaysia attract more students from outside these countries. If the present trend persists, Malaysia can only be proud of a regional education hub rather than a global education hub.

Graduate Unemployment

The MOHE Implementation Plan on Development of Innovative Human Capital observes:

> Although enrolment in higher education rose from 649,000 in 2005 to 949,000 in 2009 in institutions of higher learning and 1.5 % per annum in technical and vocational institutes, the country is still a long way off from having a highly qualified workforce to drive the innovation-led economy. (MOHE 2011a)

Malaysia's attempt at the massification of its higher education sector provides vast opportunities for postsecondary cohorts to obtain tertiary education, as illustrated in Table 7.2. However, the massification of higher education brings forward a question: Is there enough supply of employment opportunities for the graduates? During a Parliamentary seating in July 2011, the Deputy Human Resources Minister informed that out of the 387,900 unemployed Malaysians in 2010, 65,500 or 16.9 % were graduates. While the number of unemployed Malaysians reduced to 381,300 in the first quarter of 2011, the number of unemployed graduates rose to 71,600. The question requires one to look at two sides of the spectrum: the current demand in the Malaysian job market and the factors affecting graduate employability. If the demand in the current Malaysian job market requires more low-skilled, low-paying personnel, the cohort of graduates may not be able to fill the demand of Malaysian employers. The Malaysian employers might also not want to invest higher capita on upgrading and adding value to their existing services and products. On the other hand, one should not overlook the quality of current graduates and how they measure up to employers' expectations. Do the graduates have the competencies and attributes required by the job market, particularly in innovation? How should graduates from higher education institutions help in raising the bar on Malaysia's knowledge economy?

Employers' Role in Training Existing Workforce

The Malaysian job market cannot solely depend on the higher education sector in producing high-skilled workforce. The Department of Statistics reported that 80 % of Malaysia's workforce received education of up to Malaysian High School Certificate, or *Sijil Pelajaran Malaysia* (NEAC 2010). This serves as an opportunity for higher education institutions to work with the employers in providing professional development opportunities for their employees. Has there been any needs analysis done to identify the gap in skills and technical knowledge among employees? How should higher education institutions, as established institutions in knowledge creation and application, fill the gap created by the job market in the existing workforce development? More importantly, how should technical and vocational education and training (TVET) institutions play their role in Malaysia's skilled workforce development? On the other hand, are Malaysian higher education institutions capitalizing on providing professional development opportunities to fellow countries in the South East Asia, especially countries in the CLMV (Cambodia, Laos, Myanmar, and Vietnam) region? The maxim "In helping others, we shall help ourselves" holds true as the professional development opportunities offered to these countries not only strengthen Malaysia's development as a talent hub but also forge closer geopolitical relations between Malaysia and these countries.

Brain Drain

The World Bank has issued an economic report addressing Malaysia's brain drain as it "touches the core of Malaysia's aspiration to become a high-income nation" (The World Bank 2011). Malaysia is a receiver for increasing number of immigrants from the low-skilled group but have yet to see an increase in either attracting high-skilled expatriates into the country or bringing back Malaysian talents who are going out of the country at an alarming rate, particularly to Singapore, with a rate of 6 % per annum. Although brain drain does not affect the number of graduates available domestically, it has, to a certain extent, reduced the quality of the human capital stock of the country. Productivity and inclusiveness are at the core of addressing the phenomenon comprehensively, with initiatives from the Talent Corporation complementing policy changes and strong political will to attract the return of the Malaysian diaspora to the country or utilizing the diaspora's expertise in spearheading the country's innovation.

Reflections on Current Hub Development

An education hub is a nation-led initiative in building its capacity through crossborder education, specifically in training, knowledge production, and innovation initiatives. Is education hub a fad, a brand, or an innovation (Knight 2011)? In Malaysia's

case, the move to be an education hub has been officially documented in its higher education transformation plan since 2007. The education hub status is a means for the country in accelerating its development. Furthermore, Malaysia has earned its right to position itself as an education hub based on the availability of tertiary education opportunities, the commitment set by both the government and its stakeholders in enabling the development of the higher education sector, and strategic initiatives spearheaded by investors, a good case practice being EduCity @ Iskandar.

The key question that should be considered is "how far can Malaysia go?" The central focus in the education hub development should be the country's need to move toward a knowledge-driven economy; as such, the resources, political will, and capacity of Malaysian higher education institutions and supporting agencies in innovating Malaysia should be reevaluated to achieve its aims. Malaysia is already on the map in terms of international student mobility, crossborder arrangement of degree programs, and international collaboration. What remains to be seen is whether these various strategies are integrated to ensure that the "whole (hub) is greater than the sum of its parts" and whether Malaysia's current status as an student type education hub will change over time and move toward a talent or knowledge/innovation type education hub.

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Chapter 8
Singapore: Building a Knowledge and Education Hub

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National Context

From the 1980s onwards, Singapore's development blueprint has progressively focused on moving up the value chain of production by building up a series of knowledge-based industrial clusters. Since the Asian Financial Crisis of 1997, the government, through its Industry 21 platform, has intensified its efforts towards diversifying the city-state's economic base by moving away from lower-end manufacturing to value-added production. At the same time, and nesting within the broader policy platform to establish Singapore as a knowledge-based economy, a number of measures have been introduced to promote the island-state as a globally connected, multicultural, and cosmopolitan city with world-class infrastructure. Perhaps unique to Singapore is a "constructionist disposition" – virtually every aspect of urban, educational, sociocultural, and political life is subject to constant reevaluation and reconstruction, often by various groupings of foreign experts (Barr and Skrbis 2008). For the governing party, this is a critical strategy to distinguish Singapore from other sites around the world vying for the attention of investment capital.

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Singapore's project to remake itself into a knowledge and education hub involves supporting industry-relevant research and attracting a highly educated workforce of students, academics, and researchers (Ho and Ge 2011). It is a project in a state of continuous flux, subject to sophisticated branding, deploying an ever-changing collection of ideas, images, and metaphors. Thus, the tagline Global Schoolhouse describing the policy platform to make Singapore into an education hub was very much in vogue soon after its introduction in 2002, although it is now less frequently used in official documents and ministerial pronouncements. Other branding metaphors which have emerged and disappeared include "Renaissance City," deployed to create an image of Singapore as a creative arts center, and "Intelligent Island" which sought to capture its state-of-the-art information technology infrastructure. This circulation of new images and promotional mantras is a feature of Singapore's culture of governance and aims to create an image of a dynamic government which is constantly engaged in projects of improvement and modernization.

From the 1980s, the term "Singapore Inc" has been used by journalists, politicians, and business analysts to capture a model of state capitalism and a broader rationality where government behaves as if it is a private corporation engaged in a quest for efficiency and productivity. Like a private corporation exercising its prerogative to keep swathes of information confidential, the Singapore government has not heeded calls for greater transparency and accountability. Although the government has supported the information needs of global business in order to secure its status as an investment-friendly site (Rodan 2004), it is more difficult for researchers working on aspects of Singapore's development or governance to secure information (Low 2004). The political hegemony exercised by the government means that key information – for example, the numbers of highly skilled migrants, their countries of origin, and financial details of the partnerships which constitute Singapore's "World-Class Universities" platform – is not published, thus ensuring that it cannot be used toward the end of political mobilization by concerned citizens or opposition parties.

Singapore's primary goal is to remodel itself into an innovation-driven knowledge hub, and this informs other key policy platforms including the initiative to attract international students to establish Singapore as a "student hub" and the strategy of recruiting highly skilled labor (dubbed "foreign talent" in Singaporean policy parlance). Unlike countries like Australia and the UK which have used international student fees as means of subsidizing higher education budgets, the government of Singapore is less concerned with building an education export industry. Instead, it has focused on recruiting what is perceived as "high-value international students," essentially postgraduates with the potential to contribute "innovation and entrepreneurial capital" to its knowledge economy project. Postgraduate international students, especially those enrolled in the disciplines of science and engineering, are supported by scholarships, some bond-free. International student fees at undergraduate levels are also heavily subsidized by the state.

This chapter examines the "assemblage" of people, ideas, and institutions that underpin Singapore's project to become an education and knowledge hub. It is structured in the following manner. The next section offers a sketch of the national context, with a focus on Singapore's political economy, its unique style of nation

building, and its political leadership. It provides the historical context to understand Singapore's approach to hub building. This is followed in Part three by a description of its Biomedical Sciences initiative and three recent partnerships with elite foreign institutions: the medical education and research alliances with Duke University and Imperial College, and SMART, and a research alliance with the Massachusetts Institute of Technology (MIT). The paper concludes with a discussion of the possibilities and limitations of Singapore's style of knowledge hub development. Singapore's ruling party has foregrounded its technocratic credentials, arguing that the system rises above politics, ideology, and sectarian interests, and relies instead on impartial advice and technical expertise from the world's most eminent experts.

Yet, Singapore's knowledge hub strategy features in some cases a series of deeply asymmetrical partnerships with foreign universities. Relative to schemes to court foreign institutions and foreign talent, local capacity building initiatives are modest. In the long term, these arrangements are potentially problematic, first because they are premised on skewed alliances where financial risk is largely absorbed by Singapore, a state of affairs which cannot be sustainable and, second, because the differential and preferential treatment accorded to foreign talent may present challenges to social cohesion in the broader society (Ong 2005).

Three research projects have informed this chapter: the globalizing strategies of key universities in Asia, a study of the "World-Class Universities" project, and an investigation of the transnational networks of Singapore's scientific talent. The findings outlined in this chapter are based on analyses of government and institutional policies, including readings of annual reports and operational plans of universities and public research institutes. Insights from interviews with members of key public research institutes and universities were also deployed.

National Context

By most visible measures of nation building, Singapore is a resounding success. Without natural resources, the city-state has acquired a level of material affluence and social peace which is the envy of many countries. Its economic growth, although vulnerable to the fluctuations experienced by its key trading partners, remains respectable and for 2011 was estimated to be between 5 and 6 % (Bloomberg News 2011). What follows is a description of Singapore's political economy, political leadership, and style of nation building. These features are crucial in understanding how Singapore has approached its education and knowledge hub building.

Singapore, like many other British colonies, achieved decolonization and formal political independence through negotiations between Whitehall and its local elites, who were largely educated in the metropolis and cultivated by the British (Barr and Skrbis 2008). A political independence achieved without insurgency and revolution had some dividends, and unlike its regional neighbors Indonesia and Vietnam, the machinery of the colonial state remained largely intact. Singapore inherited "a workable system of governance and bureaucracy, fiscal infrastructure, a position in global

markets albeit one that was subordinate, a domestic capitalist class and the promise of (conditional) support from its former colonizer," Britain (Barr and Skrbis 2008). Given this background, an elitist and, over time, increasingly aloof culture of governance emerged (Tan 2008a: 24). A failed attempt to merge with Malaysia closed off possibilities to share a common market and curtailed its plans to diversify its economic base, leading Singapore to intensify its drive to seek foreign investment to support its industrialization plans. These early developments entrenched a special regard for foreign expertise in the political imagination of Singapore's governing elite.

Having decided on a policy to seek foreign direct investment, the government established the Economic Development Board (EDB). An international production model that leveraged off an efficient seaport and airport to move people and cargo was adopted, and this enabled the growth of tourist services, financial services, and business services. As the city-state was thriving economically and made a "leapfrog from third world to first world," its wholesale modernization and industrialization projects were lauded and used to interrogate the validity of center-periphery models of development. Some of this earlier optimism is being questioned amid concerns that Singapore's reliance on foreign capital has curtailed its capabilities for innovation (Jomo 2004; Low 2004).

Unlike its Southeast Asian neighbors which adopted ethno-cultural nation-building models, Singapore embraced a variant of civic nationalism (Brown 2005) based on a secular and modern idea of citizenship. English was promoted as the working language, while Malay, Mandarin, and Tamil were recognized as official languages. The choice to use English was both politically and economically strategic. Singapore's established status as an internationally connected port city required the population to have access to a language with international currency. The adoption of English was also a deft political maneuver to manage the large proletarian class of Chinese with Communist sympathies and to reduce the authority exercised by Chinese entrepreneurs. With English as the primary language of instruction in the school system, university entry privileged local students with strong English language backgrounds. Class privileges aside, this policy has helped to position Singapore as a regional provider in the global education market. Students from Vietnam, Thailand, Indonesia, and Malaysia, who prefer an English language higher education, are choosing Singaporean universities ahead of their national universities. Because Singapore is now the more affordable option compared to the main English-speaking study destinations of Australia, the USA, the UK, Canada, and New Zealand as international students fees are heavily subsidized by the state. The government has not been slow in capitalizing on regional interest in English language education by offering generous scholarships to outstanding high school students to complete their high school education in Singapore. The policy logic here is "to get them young" so that they can establish relationships and solidarities and acculturate themselves to the norms and mores of Singapore society.

Having an English-based school system also helped to advance Singapore's engagements with the English-speaking intellectual and scientific world. In the period before its declared policy of internationalization, the then University of Singapore was capitalizing on its historical and political connections with Britain,

Australia, New Zealand, and North America by sending its university staff for doctoral education as well as recruiting teaching staff.

Governed by the People's Action Party (PAP) since achieving political independence, Singapore's success is explained and legitimated through the ruling party's espousal of a "strategic pragmatism." Claiming to eschew ideology, the ruling party has deployed a variety of policy tools and strategies that work in the name of technocratic nation building. A state-sanctioned, foreign MNC-dominated industrialization program was established at the cost of suppressing local labor and local capital (Jomo 2004; Low 2004; Trocki 2006). These factors, along with the "pragmatic" choice of adopting English as the working language, Singapore's city-state status, and a historical and ideological disposition to engage with global capitalism, have combined to shape the trajectory of its development as a knowledge and education hub (Ho and Ge 2011).

Mapping the Policy Context for Hub Development

By the end of 1970s, Singapore has run its course as a labor intensive production platform for multinational companies. The state's threefold response to this development created the conditions for the formation of Singapore's knowledge and education hub plan. First, labor policy following the recommendations of the 1991 Strategic Economic Plan changed from viewing foreign workers as low skilled and a temporary stop-gap measure to considering foreign labor as a permanent and critical supplement to the domestic labor force (Ho 1994). This was a policy milestone in creating the conditions and possibilities for recruiting highly skilled migrants and international students under the Global Schoolhouse project by mid-2000s.

Second, as detailed in the two National Technology Plans of 1991 and 1996, and in the Industry 21 platform, industrial policy was reconfigured to transform production by moving up the value chain. The government formed the National Science and Technology Board (NSTB) tasked with the mission of identifying and promoting key areas of research and development in order to enhance economic competitiveness. The NSTB, later renamed as A*STAR, benchmarked its efforts against other nations by designing a measurable target of the required proportion of research scientists and engineers (RSEs) per 10,000 workers. The first technology plan established a target of 40 RSEs per 10,000 to be achieved by 1995. By 1994, the RSEs target had been exceeded at 41.9 RSEs per 10,000 amid concerns that this target was not in itself sufficient to sustain a viable research and development program. Smaller nations such as Israel were noted to have set targets as high as 130 RSEs (Hang 1999: 29). A manifestation of these anxieties was the ramping up of postgraduate education to meet RSEs targets. From the 1990s, both the National University of Singapore and the Nanyang Technological University expanded their science and engineering postgraduate intakes in order to deliver enough research personnel needed to sustain Singapore's technological push. In addition, the intake of international students in these disciplines was also expanded.

Third, while manufacturing was to be sustained through research and development, a services-led strategy was also introduced in 1986 to mitigate the effects of greater competition for manufactured products (Dicken and Kirpatrick 1991; Perry 1992). Singapore, it was argued, needed to encourage multinationals to see the city-state as a base for strategic control, innovation, and key operations in their drive to exploit new markets in Southeast Asia, South Asia, and East Asia (Ministry of Trade and Industry (MTI) 1991). *The Singapore Economy: New Directions* (MTI 1986) highlighted this operational headquarter strategy; it also mooted the idea of an education hub as part of a broader approach to building service-based industries. Formally announced in 2002, the education hub-building platform known as the Global Schoolhouse rested on three broad strategies: invite a select group of elite universities to establish operations in Singapore as world-class universities, attract large numbers of foreign students to enroll in education institutions located in Singapore, and change the mind-sets of local institutions and citizen-subjects to become more entrepreneurial.

Singapore's postindependence industrial policies, including the Industry 21 platform, to remake itself into a knowledge-based economy have foregrounded foreign direct investment as the primary source of external capital, continuing with a long-standing trend of favoring foreign capital over indigenous capital. The PAP's economic policies have operated on the assumption that the presence of MNCs would enable large-scale technology transfer and innovation. Singapore's approach to development can also be read as a geopolitical strategy. In the intervening years between the beginning and the ending of Cold War tensions, Singapore regarded its "free world" affiliations and in particular those with the USA as vital for both its security and for regional stability. With the end of the bipolar world order, Singapore intensified its regional economic, cultural, and political engagements, driven by a geopolitical rationale of a "rising Asia." Aware of the soft power exercised by educational aid, the city-state's education hub strategy seeks to cultivate regional elites by offering university placements and short-term professional development and training opportunities to bureaucrats. A regional imaginary also informs Singapore's foreign talent policy, fuelled by an awareness on the part of the government, that Asian foreigners are more likely than Caucasians to choose to live permanently in Singapore (Yeoh and Huang 2003).

Singapore's approach to development which was centered on supporting foreign direct investment is now considered an obstacle to success in the high stakes of scientific innovation and business entrepreneurialism. In contrast to Japan, Taiwan, and South Korea which adopted public policies aimed at creating their own economic champions in the form of large national conglomerates capable of driving the national economy forward by producing internationally competitive products, the PAP's policies of providing infrastructural subsidies and tax incentives to foreign exports in the postindependence years led to the marginalization of the city-state's domestic business class. It is significant that the PAP government's traditional approach of supporting development by, and through, foreign capital has resonances with the main platforms of the Global Schoolhouse where a select group of elite universities are being given large incentives to establish some kind of presence and activity in Singapore.

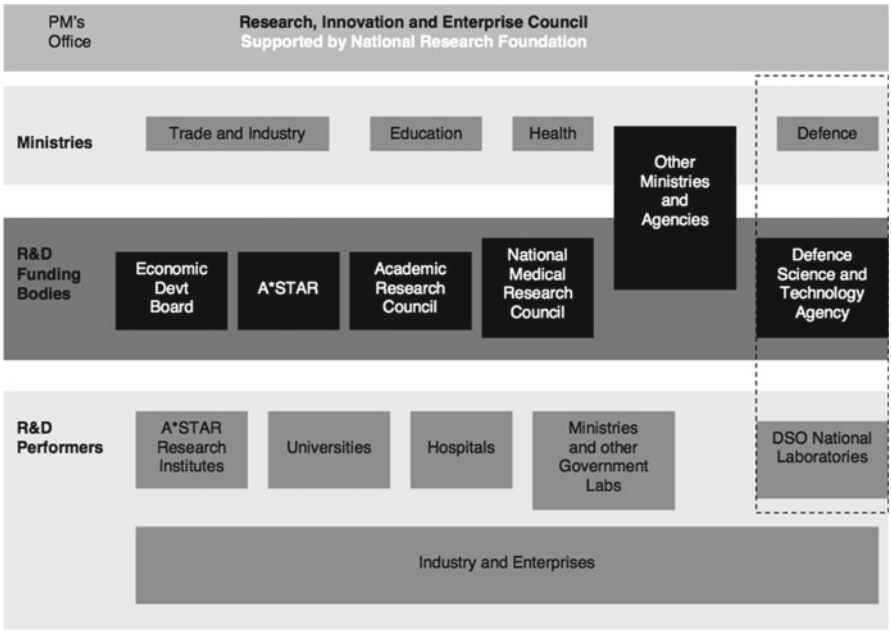

Fig. 8.1 Overview of R&D agencies and bureaucracies (*Source*: NRF presentation adapted from Kumar and Siddique (2010))

Figure 8.1 depicts the key ministries and agencies involved in managing Singapore's education and research and development agenda. At the apex is the Prime Minister's Office which houses the Research Innovation and Enterprise Council (RIEC), a key division within the National Research Foundation (NRF). The NRF plays a significant policymaking role in the city-state through its stewardship of the RIEC. It also holds a major research funding role. Another important institution in the research and development matrix is A*STAR, the former National Science and Technology Board. The Ministries of Trade and Industry (MTI), Health (MoH), and Education (MoE) oversee and fund various programs and initiatives which constitute the broader research agenda. As noted earlier, a vitally important cog in the wheel of the state is the Economic Development Board (EDB), which is located within the MTI. The EDB plays a critical role in identifying potential foreign partners for the entire gamut of activities that constitute Singapore's hub-building projects including wooing elite universities targeted by the Global Schoolhouse's World-Class Universities initiative. The EDB is also a founding investor in various technology start-ups. The Singapore Tourist Board, located within the MTI, administers marketing and promotional campaigns to attract international students to Singapore.

What is noteworthy in this snapshot of the education and research and development terrain is the preeminent role played by the state. The private sector, foreign and domestic, plays a very small role both in financing and the actual doing of

R&D, although moves are afoot to increase private sector involvement. The major producers of intellectual and innovation capital underpinning Singapore's knowledge hub project are public institutions – universities and publicly funded research institutions like A*STAR institutes. A second point of interest concerns the significant role played by foreign experts who sit on the numerous Scientific Advisory Boards (SAB) and International Advisory Panels (IAPs). These groups of eminent experts constitute a long-standing instrument of governance deployed by the government to support its various development agendas, including its current interest in building R&D capacity. They help to bolster claims by the PAP that Singapore is a technocracy and that its public policies such as the "World-Class Universities" initiative are based on objective and rational criteria.

There are a number of initiatives which have emerged as part of Singapore's project to become an education and knowledge hub. These are the Biomedical Sciences initiative, the Campus for Research Excellence & Technological Enterprise (CREATE), the Singapore-MIT Alliance for Research and Technology (SMART), and two university medical alliances. These examples have been selected to highlight some of the complexities and contradictions arising from hub-building projects, including the asymmetric and arguably unsustainable partnerships and alliances with elite universities. In a country without a system of state-sponsored welfare, a skewed investment in foreign institutions and foreign bodies has the potential to create higher levels of competitive anxiety in the wider society, entrench ethnic and class-based disadvantages, and ultimately to threaten social cohesion (Tan 2008a).

Building Biomedical Sciences Initiative

In a bid to maintain its position within the global hierarchy of developed nation-states, Singapore announced its policy to become a leading biomedical sciences center in 2000. In singling out the biosciences as a key pillar of its development policy, the government was investing a great deal of political and economic hope in what is arguably a high-risk endeavor.

Having identified the biomedical sciences sector as a key pillar of Singapore's knowledge-based economy, A*STAR, the former National Technology and Science Board, was established to implement the city-state's Biomedical Sciences (BMS) initiative (A*STAR 2011a). In its early phases, the initiative focused on recruiting a critical mass of foreign scientists engaged in basic biomedical research. A*STAR offered attractive remuneration packages and long-term research funding, including support for basic science research. High-profile foreign scientists were targeted for recruitment. The former managing director of A*STAR, a leading personality in Singapore's bureaucracy, described his approach to recruitment as "a whales and guppies" strategy – bringing in internationally eminent scientists to Singapore to mentor and inspire young Singaporean scientists. Scientists at the very top of the pinnacle (A-list scientists) were allowed to maintain two laboratories, one in their

home base and one in Singapore (*Nature* 2007). For its critics, this was a deeply controversial strategy raising the issue of whether scientific leadership could be exercised from a distance. Concerns were expressed about the governmental desire to showcase trophy researchers over the adoption of more pragmatic recruitment targets. These attractive and flexible offers have been tightened in part because of popular disquiet, and increasingly foreign scientists have been encouraged to locate themselves primarily in Singapore.

Within a decade of its policy announcement, Singapore was starting to establish a name for itself particularly in stem cell research and sequencing technologies. It was also making sufficient inroads in attracting a critical mass of foreign researchers. Here, the government was assisted by a number of exogenous factors: under the Bush presidency, the revival of the religious right as a political force contributed to restrictions on embryonic cell research and a general alienation of America's scientific community, encouraging some researchers to leave their country. The 2008 global financial crisis generated a reduction in opportunities for scientists not only in biotech start-ups in the USA and the UK but also in publicly funded research institutes and universities. In the UK, the profoundly anti-Keynesian policy platform installed under the conservative government acted as a push factor for scientists. Similarly, Australia's stringent funding environment and perceptions of red tape has steered researchers at all levels, from established senior scientists to early career researchers, to consider relocating to other destinations. Thus, the mix of hefty salaries, excellent infrastructure, and generous funding regimes with relatively few strings attached in the early phases of the Biomedical Sciences initiative helped to place Singapore on the map as an exciting scientific destination (*Nature* 2010).

Aware that recruiting foreign scientists is not in itself sufficient to sustain the biomedical sciences industry, and mindful of public unease about the influx of foreign talent and the entitlements they receive from the state, the government introduced the A*STAR Graduate Scholarships scheme which allows successful applicants to study in some of the world's most renowned universities (A*STAR 2011b). A slick advertising campaign has seen billboards and advertisements on buses extolling the virtues of a career in science. A*STAR set up a target of training up to 1,000 Ph.D.-qualified researchers from Singapore by 2010. Scholarships were initially made available to Singaporean citizens, permanent residents, and ASEAN nationals who had completed their education in the country's most prestigious junior colleges and high schools. The pool was subsequently widened to include graduates of polytechnics, and in a move to further spatialize opportunity, Singaporeans who have been living and studying overseas were also permitted to apply (A*STAR 2011c). A*STAR also offers the Singapore International Graduate Award (SINGA) in conjunction with the National University of Singapore and the National Technological University (NTU) to support worthy doctoral candidates from anywhere in the world in the biomedical, physical, and engineering sciences.

In the engineering and physical sciences, a major research and development initiative is CREATE, discussed below, which also draws heavily on the expertise of foreign institutions.

CREATE: Campus for Research Excellence and Technological Enterprise

CREATE was announced in 2008 with the objective of fostering collaborations with overseas partners. It has been described as a world-class research center, a "talent magnet and innovation hub," and a "multinational, multidisciplinary enterprise." It is funded by the government of Singapore through the NRF. CREATE's research programs are flagged to be in areas which align Singapore's research interests with those of its partner institutions. It is located at University Town or U-Town at NUS, a purpose-built campus that will eventually also host five undergraduate residential colleges and also residences for some 1,700 graduate students. The NRF website observes:

> Many US and European universities are eager to establish a presence in Asia in a way never contemplated before because of the keen awareness of the rise of Asia and the increasing shift of global dominance towards Asia. CREATE offers a multi-national, multi-disciplinary research enterprise unlike anything known till now, strategically located in the heart of Asia, at the nexus of East and West. (NRF 2011c)

Implicit in this promotional narrative is the assumption that in seeking to establish their presence in Asia, American and European universities are sharing the financial risks associated with building and resourcing their international operations. Singapore portrays itself as a strategic node in the heart of a new Asia – the center of a new calculus of power. CREATE Singapore is discursively endowed with a similar hybrid identity, one capturing an East/West mixing unfettered by asymmetry, unevenness, and inequality which characterized earlier expressions of global relations.

CREATE is expected to draw on, and contribute to, elite research networks which foster innovation. It houses research centers which are allied to leading research universities: MIT (Massachusetts Institute of Technology), ETH (the Swiss Federal Institute of Technology Zurich), Technion (Israel Institute of Technology), TUM (the Technical University of Munich), and the Hebrew University of Jerusalem. Of these institutions, MIT is probably the most prolific in Singapore. From 1998 to 2010, it was a partner with the government of Singapore in the Singapore-MIT Alliance. An engineering (post)graduate education program was designed to attract talent from the region and to produce entrepreneurs to meet Singapore's knowledge economy aspirations. It has been currently collaborating with the government of Singapore to establish SMART (the Singapore-MIT Alliance for Research and Technology). MIT has also been contracted to provide management and curriculum advice for the island's fourth university, the Singapore University of Design and Technology.

SMART (Singapore-MIT Alliance for Research and Technology)

In announcing the establishment of the Singapore-MIT Alliance for Research and Technology (SMART) in 2008, Dr. Tony Tan, the then Chairman of NRF paid tribute to the government's 10-year relationship with MIT and observed that SMART

would provide the impetus for a shift in Singapore's academic culture. In his words, "our universities must embrace a culture of academic entrepreneurship, like MIT, in order to play an active role in contributing to the economic development of Singapore" (MIT 2008). He goes on to elaborate on "why Singapore chose to work with MIT":

> If the companies founded by MIT graduates and faculty formed an independent nation, the revenues produced by the companies would make that nation the 24th largest economy in the world. The 4,000 MIT-related companies employ 1.1 million people and have annual world sales of US$232 billion. MIT is thus a good example to illustrate the impact and contribution that research universities can bring to the economy. (Tan 2008b)

SMART's Innovation Center, which is modeled on MIT's Deshpande Center for Technological Innovation in Boston, aims to identify and develop ideas with potential commercial application into business enterprises. Its director observes that a key challenge facing Singapore is to "pull technology out of academia and develop it into a business" (Kang 2011). In this, MIT promotes itself as providing the intellectual capital and networks to help Singapore replicate the entrepreneurial and innovation-driven culture associated with Silicon Valley and Boston's Route 128.

MIT's motivations for entering into another alliance with the government of Singapore are anchored in a desire to maintain its position as a preeminent center of engineering research and innovation. MIT has traditionally raised income from a mix of endowments, tuition fees, and government grants. Like other American universities, it has experienced lower returns on investments, reductions in philanthropic contributions, and declining revenue from government grants in the face of the 2008 global financial crisis. Strategic partnerships like SMART and CREATE provide alternative funding streams to cushion the institutions from the effects of economic downturns in its history. Financial considerations aside, institutions like MIT with interests in applied science regard partnerships as a way of being connected to problems in industry, nationally and globally (McKersie 2006; Reif 2011). Collectively these factors coupled with declining domestic enrolments in the STEM (Science, Technology, Engineering, and Mathematics) disciplines and competition for high-caliber graduate students have prompted MIT and institutions of its ilk to look overseas (Reif 2011).

MIT has not released details of funding received from the government of Singapore unlike Duke University, though it has acknowledged that it generally requires its international sponsors to cover the entire research and education costs (Reif 2011). It is possible then that SMART's financing model, like that of the Singapore-MIT Alliance (SMA), involves the Singapore government assuming the bulk of financial responsibility and by extension, financial risk. SMART also has a presence at MIT's parent campus by way of SMART's Singapore Research Professorship Chairs although it is unclear how funds are distributed between SMART's operations in Cambridge Mass and Singapore.

In analyzing the public discourse surrounding the announcement and establishment of SMART, there are resonances with the advent of the Singapore-MIT Alliance discussed elsewhere (Sidhu et al. 2011). The Singapore-MIT Alliance was, in many ways, an asymmetrical alliance. The government of Singapore has taken

the role of a venture capitalist by providing all funding to establish purpose-built lecture theaters to enable the transmission of lectures from MIT to Singapore and research funding for various projects and postdoctoral fellowships. MIT provided the intellectual property, developing the curriculum for the master's-level programs, and providing doctoral supervision in collaboration with staff from the National University of Singapore and the Nanyang Technological University. The Alliance ceased its operations in 2011 without the fanfare of publicity which characterized its life. Although it was formulated with the objective of increasing the entrepreneurialism of engineering graduates at Singapore's two universities, NTU and NUS, it is unclear whether any systematic evaluations has been conducted on SMA's contribution to this end.

University Alliances

Singapore's universities have built up a number of alliances with overseas universities. The partnerships described below are exemplary in terms of the scope to fuse education and research, scale of funding support, and the long-term nature of commitments.

Duke-NUS Graduate Medical School

In 2005, the government of Singapore formalized a 7-year agreement with Duke University to establish the Duke-National University of Singapore (NUS) Graduate Medical School. The government approached Duke in response to a series of recommendations made in the 2001 Oxburgh Report on medical education which examined ways of building up the requisite human capital comprising clinician researchers to enable Singapore to succeed as a hub for biomedical sciences and industry (Williams et al. 2008).

According to Duke University sources, the government through its Ministries of Health, Education, and Trade and Industry committed around US$ 350 million to the venture (Williams et al. 2008: 122; Duke Medicine 2005). One-third of the fund was meant for the construction of a new building to house the Graduate Medical School. The remaining two-thirds were allocated for staff salaries, start-up research funding, travel, and other infrastructural costs.

The inaugural batch of students, largely drawn from countries in the region, was admitted to the Duke-NUS GMS in 2007 and graduated in 2011. Enrolment statistics in 2010 listed 186 students from 21 nationalities, an intake of about 50 students each year. By any measure, these are miniscule numbers, suggesting that the greater part of the alliance's resources are focused on advancing research ahead of medical education. A Ph.D. program was introduced in 2010 focusing on cancer and stem cell biology, cardiovascular and metabolic disorders, emerging infectious diseases, health services and systems research, and neuroscience and behavioral disorders

(Duke Medicine 2005, 2006). Publicly, both parties in the alliance observed that Duke University's distinctive curriculum which devotes an entire year of the medical education program to independent scholarly research was more likely to produce physician-scientists, an important human capital source for Singapore's aspiration to be a leading biomedical hub (Duke-NUS Graduate Medical School 2009; Prime Minister's Office 2009).

In terms of governance, the Duke-NUS GMS's governing board has representatives from Duke, NUS, the sponsoring ministries, the national health system (SingHealth), and representatives from the business community. The contractual agreement between the government of Singapore and Duke University identified a number of key performance indicators including "numbers of Duke University faculty recruited, academic and professional standards of faculty, numbers of signature research programs established under strong leaders, student qualifications, enrolment and performance, competitive grant funding, publications of high impact and invention disclosures and patents" (Williams et al. 2008: 127). Unlike Johns Hopkins University, an earlier alliance partner, the GMS has not experienced difficulties in recruiting faculty from the US medical schools: "the excitement of a pioneering venture, stable research support, attractive compensation plans that include allowances for housing and travel convinced senior and junior faculty to relocate" (126). Writing about the ingredients for a successful partnership, Duke staff noted the importance of senior leadership relocating to Singapore with their families to take on the day-to-day management, close working relations with NUS executive, and engagement with local clinicians (Williams et al. 2008).

Why was Duke interested in Singapore? First, it saw the Singapore initiative as vital to its ambitions to "become an active participant in the globalization of biomedical sciences, medical industries and health care" (Williams et al. 2008: 124; Duke Medicine 2011a, b). Here, Duke executive staff made explicit references to Thomas Friedman's thesis that "the world is flat." Citing the rise of medical tourism and the emergence of global competitors in health care provision and research and development, it portrayed globalization as an urgent and inevitable strategy (Dzau 2008; Duke Medicine 2011a, b).

Second, the University's administration in Durham in the USA was aware of the presence of a number of domestic challenges, financial and political:

> In research American medical schools are struggling under the current austerity of National Institutes of Health budget contraction with no clear end in sight. The Duke-NUS GMS can offer exceptionally favorable start-up packages based on intramural funds as well as the opportunity to compete for peer-reviewed competitive research funding. (Williams et al. 2008: 126)

Of domestic political pressures in the USA, Duke noted that "Singapore may provide opportunities in certain areas (e.g., primate research and human embryonic stem cells) where political or other constraints create barriers for the US scientists" (Williams et al. 2008: 126). Also in Singapore's favor was access to private endowments. By 2008, the Duke-NUS GMS had accrued US$ 120 million in funds.

Duke's alliance with the government of Singapore has been emblematic of the rationales and strategies underpinning the globalization of elite American universities. Duke, like MIT, sees the alliance as "a valuable strategic opportunity to expand its global reach and research" (Duke Medicine 2005). It is not surprising as the financial risk inherent in its global strategy is primarily underwritten by the government of Singapore.

Imperial NTU College: Lee Kong Chian School of Medicine

At the National Day Address in 2010, the Prime Minister of Singapore announced that the Nanyang Technological University (NTU) was setting up a medical school jointly with Imperial College London. With the first intake of students scheduled for 2013, the Lee Kong Chian School of Medicine will be Singapore's third medical school. Like NUS' Yong Yoo Lin School, it offers a 5-year undergraduate degree. The official reason provided for a third medical school was the need for more doctors to deal with Singapore's aging and growing population.

The School, named after Lee Kong Chian, a successful China-born businessman and rubber magnate known for his philanthropy in education, medicine, and cultural activities, received S$150 million from the Lee Foundation. Contributions from the government of Singapore saw the establishment of an endowment fund of some S$ 400 million for the new medical school.

In establishing its brand identity to set it apart from the other medical schools in Singapore, the Lee Kong Chian School has emphasized its patient-centered approach, which it describes as "bringing service back to medicine." NTU leaders have also highlighted the medical program's interdisciplinary character drawing on engineering and medicine (NTU 2011).

A key issue arising from international education and research partnerships concerns the commitment of academic staff from the partner institution to travel to Singapore and to effectively embed themselves in its sociocultural and clinical contexts, an issue which played a part in unraveling the alliance between the government of Singapore and Johns Hopkins University (Sidhu 2009). In promoting the alliance to their staff, Imperial executive leaders emphasized that "new jobs and new opportunities for current Imperial staff, funded by Singapore, will result" (Imperial College Reporter 2010a, b). Staff has been invited to register expressions of interest for full-time teaching positions and short-term secondments in Singapore. Plans are also afoot for the Lee Kong Chian medical school to employ additional staff. The School will also call upon the services of clinicians in Singapore's hospitals and polyclinics.

Imperial's leadership has also emphasized reciprocal benefits in the relationship with NTU, noting that because Singapore has a different way of delivering primary healthcare from the UK, "London could learn just as much from Singapore healthcare deliverers, as they could from us" (Imperial College Reporter 2010b). The technology-driven aspects of healthcare delivery in Singapore, including a system that allows for easy access to patients' electronic records, have rated a special mention for emulation.

Nonetheless, it is clear how the financial burden will be borne. The issue of which party would finance the School was not reported in the Singapore newspapers, but Imperial's online newspaper, *Imperial College Reporter*, stated that "the new medical school, which will be funded by NTU, will admit its first cohort of 50 students in 2013, the majority of whom will be Singaporeans" (Imperial College Reporter 2010a). Imperial news sources noted that partnership agreement had been made for an initial 18 years.

When fully functioning, the medical school is anticipated to enroll a total of 750 students, an intake of 150 per year. By comparison the Yong Yoo Lin School of Medicine at NUS enrolls close to twice the number, at 300 students a year. In 2010, the parent campus at Imperial London had a total of 2,000 students in its undergraduate medical program based on a yearly intake of around 300. On the basis of headcounts, then, the Lee Kong Chian medical school can be viewed as something of a "boutique" school: it has about half the numbers at Imperial College's medical school. Imperial senior staff has acknowledged that Singapore's attraction lay in the "generous research funding" available in the Asian city-state. The Vice Dean of the School provided this reassurance to the British public, "…Imperial is not going to do this in any way at a loss" (Vasegar 2010).

Issues and Challenges

Singapore has moved very fast in its efforts to remake itself into a knowledge hub. Key agencies like the NRF and A*STAR were established, given the budget and authority to fund strategic research areas, draw in internationally known researchers, and facilitate key alliances with well-known overseas universities. The rapid growth in infrastructure and scientific outputs notwithstanding, a number of challenges have now surfaced.

State-Society Relations: Impact of Foreign Talent Policies

Paradoxically, despite maintaining that its people are its most precious resource, Singapore's political leadership is of the view that depending on the capacity of the local population alone is insufficient to enable the city-state to remodel itself into a knowledge and innovation hub. The official position is that Singapore has to welcome and invest in foreign talent by providing world-standard remunerations, world-class infrastructure, and a safe, family-friendly environment. Ministerial speeches construct foreign talent as a highly mobile group feted by countries and cities the world over. The prevailing logic is that Singapore must remain attractive to this class of knowledge entrepreneurs or they will choose another city to discharge their talent, creativity, and entrepreneurialism, leading to economic disinvestment and possible stagnation.

There is considerable disquiet among Singapore's citizens that the government's foreign talent policy has mutated over successive years from one targeting those at the very top echelons of professional, management, and techno-scientific expertise to a broader spectrum of labor with skill sets which are difficult to differentiate from those found among Singaporeans. Foreign talent policies in this context have come to be seen as an underhand instrument to suppress wages and maintain Singapore's competitiveness. If blogs and letters to *The Straits Times*, the city's leading newspaper, are any indication, the local population remains suspicious of the lack of transparency in the criteria used to evaluate what constitutes "talent." That some groups of international students receive bond-free scholarships, a privilege not available to Singaporeans who are generally required to serve out their bonds, is another issue of concern. In addition, competition for jobs and housing and congestion issues (particularly in public transport) have increasingly alienated Singaporeans, and the issue of foreign talent dominated the 2011 elections in Singapore which saw a record number of seats fall to the opposition.

Commercial Outcomes Versus Blue Sky Research

The Biomedical Sciences initiative has flourished insofar as increasing A*STAR's scientific output of published papers in highly esteemed journals. This work has also helped put Singapore on the map especially in stem cell research and sequencing technologies, as this interviewee observes: "The kind of stuff that we do has got us on the map. In certain areas, like stem cell research, we have definitely made our mark" (Research Scientist, A*STAR institute). A major concern for A*STAR's senior scientists is the continuing support from the bureaucracy, which is described as "feeling insecure as to whether [research] being conducted [will be] useful for the economy" (Cyranoski 2008). This view from a leading scientist hints at the unfulfilled hopes arising from the economy of expectations generated by Singapore's development architects:

> We are increasingly finding that they want to know about what the direct pay-offs are, the direct financial returns. I think that as soon as you start trying to explain your investment in terms of direct IP value, you are doomed to find yourself that you have failed because there is no chance of recovering one billion Singapore dollars a year. (Senior Scientist, A*STAR institute)

These uncertainties have intensified following the release of recommendations from the 2010 Economic Strategies Committee (ESC). The Committee highlighted the need to develop Innovation Capital – described as translating ideas into the marketplace so as to create value from Singapore's R&D investments. The ESC also recommended closer ties and "mission-oriented" research collaborations with the private sector (MoF 2010). These sentiments were not entirely unexpected as resonances were present in the Science and Technology Plan (2005–2010) which observed that:

> A*STAR will expand linkages between public sector R&D and industry by directly supporting industrial innovation activities, providing/sharing R&D human capital and technical facilities, and undertaking development in the commercialization of technology. (MTI 2005)

Nonetheless, the government's response to the ESC recommendations in the form of a policy shift in September 2010 came as a surprise to the research community. Taking immediate effect were plans to divert one-third of the total research budget into a new category dubbed "industrial alignment funds." Researchers seeking to access these funds are now required to demonstrate that their work has industrial applications. Core research funding to the A*STAR institutes was subsequently reduced to 70 % of previous budgets (MoF 2010; Normile 2011). Researchers, particularly those in the biomedical sciences, have voiced concern that the policy has been introduced rapidly with little consultation. Herein lies the conundrum – Singapore's fleet-footed response, which in the past earned it plaudits as it built up a formidable bioscientific infrastructure and reputation, is also problematic. Policy changes can be effected very rapidly with little consultation in a top-down manner.

Research is by its very nature high risk given the unpredictability of its outputs. In the early 2000s, when Singapore embarked on its quest to become a biomedical sciences hub, the biosciences were riding on an economy of hope and expectations, although the scientific community was under no illusion of the difficulties ahead, as this account shows:

> [It] is a mistake to emphasize too much the immediate applications of biology into medicine. It is just a very risky business model. It takes a very long time to be successful. They [MTI] don't understand that when you bring in scientists, this is a very long-term investment. There is not a real appreciation of the scientific culture [in Singapore], as opposed to the engineering culture which involves trying to get applications of science into the marketplace. (Senior Research Scientist, A*STAR institute)

For those foreign scientists who were promised unremitting support to do basic research, the policy shift has prompted some to leave Singapore. There is also concern within A*STAR that the industrial alignment policy is intended to reconfigure A*STAR institutes into centers of translational research, in place of a looser model sketched by Phase One of the initiative when both applied and basic research was championed.

The "bench-to-bedside" story of a seamless, joining-up of basic research, development, and commercialization in the biosciences was never plausible but was nonetheless justified as a key plank in the government's planning for the nation-state's economic development. The argument made by the ministers and senior bureaucrats was couched in the political discourse of survivalism, that Singapore had no choice but to embrace the biomedical sciences, and that the sector would be a force for social good, eventually delivering economic growth for Singapore.

Replicating an Entrepreneurial Ecosystem: Sociocultural and Political Forces

Can Singapore emulate an entrepreneurial ecosystem embodied in and marketed by elite American universities? It is clear from various ministerial statements that the government of Singapore has paid considerable attention to Silicon

Valley and Route 128, which have been popularized in business and policy literatures and have assumed near mythic reputations. Other techno poles (e.g., Sophia Antipolis) have also been the object of attention by the city-state's policymakers who are hoping to recreate the innovation architecture of research organizations, technological artifacts, social practices of invention, and networks of people and capital in a mutually reinforcing virtuous cycle. Singapore's latest Science and Technology Plan (2011–2016) confirms that the government will continue to invest significant resources towards the goal of remaking Singapore into a knowledge-based economy by utilizing foreign talent and the expertise of foreign institutions.

The jury is still divided on whether the "Temasek model" (also described as the "EDB model") which is premised on the government adopting the role of venture capitalist will succeed in developing a sustainable entrepreneurial and innovation ecosystem. MIT Professor Huang Yasheng argues that although successful in developing Singapore's manufacturing industry, the "Temasek model" is flawed in the case of knowledge-driven innovation:

> …growing up in the big shadow of state intervention has dwarfed the entrepreneurial culture [in Singapore]. The 'orderly' environment here dulls the incentive to think out of the box. Everything is very well organized. Entrepreneurship typically happens in a more chaotic environment. It's not just about money; it's culture. (Tan 2010)

This argument raises the question of how social practices and place-bound factors shape the innovative aspects of knowledge work and high-end, research-driven innovation and entrepreneurialism. A rich and sophisticated body of research has documented the extent to which technological innovation in the USA has been shaped by the country's legacy of defense spending and its ensuing military-industrial complex. It is argued that this context established important preconditions which subsequently enabled American universities like MIT and Stanford to develop cutting-edge technologies (Leslie 1993). This context cannot be readily translated into any setting. Furthermore, it can be argued that the status-driven, disciplinary, and hierarchical culture in Singapore militates against experimentation, risk taking, and the inevitable failures that accompany innovation (Sidhu et al. 2011).

Concluding Comments: Limits and Possibilities

What is to be made of the plethora of programs and strategies in place to transform Singapore into a knowledge and education hub? Any analysis of Singapore's current approach to knowledge- and innovation-driven development requires engagement with its political economy and history of nation building and a close examination of the country's political and bureaucratic cultures.

A number of points can be made about Singapore's hub strategies: First, nearly all aspects of Singapore public policy can be read as subordinate to its broader economic policy. Thus, hub-building projects have been formulated to support the

government's agenda to sustain economic growth by moving up the value chain towards knowledge economy status.

Second, the state plays a very significant role by assuming the identity of venture capitalist. The cumulative effects of this economic paternalism are that, in contrast to countries like the USA where a robust private sector drives cutting-edge innovation, Singapore's private sector continues to have a fledgling R&D profile. Although this state of affairs has been flagged by the government for intervention (NRF 2011a), it is noteworthy that the PAP-led government has historically been indifferent to local entrepreneurship, adopting a series of policies postindependence which effectively hollowed out the entrepreneurial core of Singapore society.

Third, there are strong continuities between contemporary policies of knowledge hub building and Singapore's early industrialization policies in that the state's political imagination is heavily weighted towards the foreign as a source of creativity and innovation. Local capacity building is certainly supported, evident in the funding of Singapore's universities which surpasses the resources available to publicly funded research universities in much of the developed world. However, it is noteworthy that the government of Singapore has invested the lion's share of resources in courting foreign universities, foreign researchers, and foreign companies. This policy stance has been justified as being vital to Singapore's broader objective of "leapfrogging" into the realms of cutting-edge innovation and entrepreneurialism. It is a position that rests on seeking the most "efficient" solution to innovation-driven development rather than, arguably, the most effective and sustainable one.

Fourth, the structures and cultures of governance in place in Singapore are unique in that they are informed by an elitism, albeit one that claims to be premised on meritocratic principles. This means that the country's political and administrative elite can and do effectively place what they consider to be the needs of the economy ahead of the immediate welfare needs of the country's citizens. At least prior to the watershed elections of May 2011, state institutions have been generally indifferent to popular opinion and regard their responsibilities as supporting the government's agenda for economic growth above all other concerns. This model of governance, it should be noted, would encounter significant difficulties in another context where grassroots pressures exist or where there is a viable political opposition. Although official discourse is steadfast in maintaining that "people are Singapore's most precious resource," the government has given priority to securing innovation capital through the most "efficient" means, namely, by bringing in foreign institutions and foreign talent ahead of local capacity building.

Looking beyond Singapore at the immediate East Asia region, there are emerging challenges to its project to become a regional education and knowledge hub. Of the new players, China is the most aggressive in its attempts to endow its best universities with research funds and provide incentives for its best researchers. Existing strengths in industry in Japan, Korea, and, to a lesser extent, Taiwan has meant that these countries have strong corporate profiles in research and development, in addition to state support. In the next decade, Singapore's

attempts to draw the best researchers from these countries are likely to be curtailed by more intense competition from within the region. Moreover, an ongoing concern for the maintenance of Singapore's current research ecosystem is the international mobility of the best researchers and their ability to respond to new opportunities in different parts of the world.

Singapore straddles the three models outlined by Knight's (2011) typology of education hubs: student hub, skilled workforce hub, and innovation/knowledge hub. It seeks to attract international students at all levels from high school to doctoral education by providing bonded and nonbonded scholarships. Singapore's rationale for recruiting foreign means is not primarily concerned with building an education export industry. At the same time, its foreign talent policy qualifies Singapore as a skilled workforce hub. Finally, its investment in science and technology outlined in its Science and Technology Plans (2000–2005; 2005–2010) is a clear indication of Singapore's ambitions to become an innovation/knowledge hub.

Looking ahead, Singapore should continue to enjoy some success in attracting international students and a skilled workforce given its status as an English-speaking global city with good infrastructure including subsidized higher education for international students, amenities, and quality of life. Its greater challenge lies in achieving the third mode, the knowledge hub, which requires for its success, an intensified effort in local capacity building and a more hands-off approach in setting research agendas. Singapore officially aspires to build a culture of scientific discovery and business entrepreneurship, and this requires its political and bureaucratic elite to examine the societal dimensions which both limit and nurture innovation. The strengths of Singapore's governance lie in having ministers, key bureaucrats, and key public sector leaders pulling together in the same direction. Equally, this feature can also be regarded as a weakness as it reflects an increasingly homogeneous culture which reduces the probabilities of bringing in radically different and diverse perspectives.

A strong state-led effort at hub building has enabled the development of cutting-edge infrastructure, but popular disquiet is rising, and this will ultimately challenge Singapore's hub aspirations. These questions, which are raised by a leading business academic Linda Lim (2008), are echoed by an increasing number of Singaporeans:

> Do we devote our carefully husbanded national savings, accumulated over a couple of generations of repressed consumption, to letting the state make big bets on a few major, capital-intensive, expensive projects dependent on foreign capital, foreign labor, foreign skills, foreign entrepreneurs and foreign markets in which we have a lot of competition and no intrinsic comparative advantage? A national government should not use domestic savings to create employment disproportionately for foreigners, simply in order to claim success in establishing a particular sector of its choosing, that may not be validated by underlying market forces.

With calls for greater engagement with issues of socioeconomic inequality, and attention to how the state can improve the life chances and opportunities of every citizen in this global city, the government will increasingly be challenged to rethink its blueprint for economic growth and innovation (Lim 2008; Tan 2008b).

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Chapter 9
Botswana Country Hub: Africa's First Education Hub

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National Context

Formerly the British protectorate of Bechuanaland, Botswana became independent in 1966. At independence, it was one of the poorest countries in the world, but owing to mineral wealth, prudent management of sovereign wealth, and healthy public finances, it has become one of Africa's shining lights economically and socially (Leith 2006).

The country's economy depends mainly on diamond revenues although tourism, beef, and other mining sectors contribute to export revenue. Botswana has consistently ranked high in transparency and credit ratings, widely noticed in the early 2000s with a higher credit ranking than Japan (Dickie 2011). Its population of two million people is growing at a rate of 1.67 % per annum. Of this number, 62 % are aged 15–64 years, with a median age of 22.3 years (US CIA 2011).

The literacy rate is a high 81.2 %, with men and women comparable (World Sites Atlas 2011). While Botswana has one of the highest incidences of HIV-AIDS in the world, it also has one of the most progressive programs to address it. This has significantly reduced mortality arising out of the disease (Econsult 2006). With one of the highest economic growth rates in the world up to the onset of the 2008 global recession, the country has quickly developed into a middle-income country, with per capita GDP of $13,100 in 2010 (US CIA 2011).

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Overview of the Tertiary Education Sector

Botswana educates over 42,000 tertiary students, representing a gross enrolment ratio of 15.1 % of the 18–24-year-olds in 2009–2010 (Botswana Tertiary Education Council (TEC) 2010). Of these, 33.9 % are enrolled in the University of Botswana, and a fast-rising 41.0 % in private tertiary education providers, including 21.7 % in Limkokwing University of Creative Technology, a Malaysian-headquartered institution that has seen remarkable growth as it provides publicly funded places unable to be met by the public sector.

Botswana is unable to provide tertiary education in all areas, and 7,315 students study overseas, with government support (for 2,551 external placements in 2008/2009) and self-funded students. As the country builds its own capacity, government support for overseas study is planned to reduce at least in relative terms. Countries of preference for study are South Africa (5,194), the UK (591), Australia (511), the USA (236), and Namibia (198) (UNESCO 2010).

A notable feature of Botswana's development is that the government has consistently given priority to education, as demonstrated by significant resources going into the sector over recent decades. Government expenditure on education has always been high and increased by 122.8 % during the National Development Plan 9 period from 2002/2003 to 2008/2009 (Botswana 2010). The country has the fourth highest share of per capita GDP allocated to tertiary education (Klein 2011).

The sustainability of this high level of expenditure is under serious scrutiny. Education has been free from primary to secondary level, up to the introduction of a cost recovery policy. Parents who could afford to pay for their children are now required to contribute up to 5 % of the cost of secondary education, while primary education remains free of charge. At the tertiary level, students who qualify and get admitted to universities, locally and externally, have been funded in line with the Student Grant/Loan Scheme, whereby those pursuing scarce and essential programs receive grants, while others get partial grants and/or interest free loans, depending on the program pursued. Concern is increasing about the difficulties in collecting from those who were previously supported through the Student Grant/Loan Scheme. The education system is presently structured as shown in Table 9.1.

Tertiary education is being reformed in particular, with the release in 2008 of the first tertiary education policy that provides guidance on the future direction of tertiary education for the next two decades (Botswana Ministry of Education and Skill Development (BMESD) 2008). It also provides a further milestone in the development of Botswana as a knowledge society and serves as a strategic framework that will help realize the potential of future generations of Botswana.

The policy recognizes that tertiary education has a significant role to play in ensuring Botswana's successful transition from a resource-driven economy to a diversified economy, one characterized by a highly skilled knowledge-intensive service sector. As a further step, tertiary education is seen as having a key role in laying the foundation for the development of Botswana as an innovation knowledge-driven economy.

Table 9.1 Education system in Botswana

Stage	Level	Years	Notes
Primary	Primary school	7	Education system: 7-3-2 (7 years of primary, 3 years of junior secondary, and 2 years of senior secondary education) Duration of compulsory education: 7 years Primary School Leaving Examination (PLSE)
Secondary	Junior secondary education	3	Junior Certificate Examination (JCE)
	Senior secondary education	2	Botswana General Certificate of Secondary Examination (BGCSE)
Vocational	Vocational and technical teacher training and nursing education		Certificates and diplomas coordinated by the Botswana Training Authority Teacher training diplomas and nursing diplomas validated by the University of Botswana
Tertiary	University		U Botswana, Botswana Accountancy College, Botswana College of Agriculture, Botswana University of Science and Technology

Source: Foreign Credits (2012)

Consequently, one of the policy objectives addressed the globalization of knowledge production:

> To ensure that by 2026 the tertiary education system is demonstrably playing a leading role in advancing the quality and utilization of research, knowledge creation and innovation and that through its excellent research record and the strength of its relationships with other sectors of the national and global economy, it is recognized as a valuable ally and partner in the on-going development of Botswana's knowledge society (Botswana 2008b).

Open and distance learning opportunities are being extended, including through a plan to establish the Botswana College of Open and Distance Learning. This will serve as an open university to offer qualifications from certificate to Ph.D. level through a variety of programs. As of 2012, the government is yet to decide on this matter.

The number of private education institutions offering certificate and degree programs, registered by the Botswana Training Authority and the Tertiary Education Council, continue to increase. Enrolments in private tertiary institutions have risen from 28.2 % in 2007/2008 to 41 % in 2009/2010, representing an increase from 8,784 to 17,373 enrolments (TEC 2010). Foreign institutions are Limkokwing University of Creative Technology (Malaysia) and Botho College (a franchise of NIIT, India). They provide opportunities for increased access at vocational, technical, and tertiary levels. In addition, the government is strengthening its programs by building more senior secondary schools, expanding the University of Botswana and its offerings in medicine, engineering and technology, health sciences, and other fields. A second public university, the Botswana International University of Science and Technology (BIUST), is being established to respond to skills shortages in the country and close program gaps that have forced students to take up offers outside the country.

Economic Diversification

The Government of Botswana is focusing on education as one of the sectors that should play a meaningful role in economic diversification away from its overreliance on diamond revenues. There have always been efforts by the government to diversify the economy over successive national development plans but with limited success.

A specific strategy was developed by the Business Economic Advisory Council, which sought to accelerate economic diversification and sustainable growth. This became known as the Botswana Excellence Strategy, providing for the first time a clear focus on diversification. The strategy gave birth to six economic hubs of diamonds, agriculture, medicine, transport, tourism, education, and innovation.

By focusing on the sectors of diamonds, agriculture, medicine, transport, tourism, education, and innovation, the hubs serve to support the conditions for doing business in Botswana. Whereas the first five hubs address specific sectors, the latter two follow a multidisciplinary approach. The Botswana Education Hub (BEH) aims to encourage leading international universities to establish schools and programs with a strong emphasis on the globally relevant theme of sustainable development and in support of the market sectors earmarked for growth. By adding partnerships and linkages between local HE institutions and global academia, Botswana is determined to become a viable contender in the regional graduate student arena and exporter of knowledge-based products and services (University of Botswana 2011).

The concept of the Botswana Innovation Hub (BIH), on the other hand, incorporates best practices from science and technology parks worldwide and will offer state-of-the-art infrastructure and a wide range of business services. The physical facilities are being constructed near Gaborone International Airport with the aim to serve knowledge-intensive activities and innovation and value-added environments for ICT, biotechnology, mining, and energy clusters in particular. Tax benefits, permit exemptions, and training schemes are examples in the repertoire of incentives offered by the government to companies relocating from elsewhere in Southern Africa and inward investors. The BIH incubation services will add opportunities to BIH tenants to easily link up with existing SMEs or start-ups and spin-offs from tertiary institutions.

By contrast the diamond hub focuses on developing downstream activities in its own industry, such as jewelry making given that the country has been exporting its diamonds in raw form. All of them share a common conception and work together to build complementarities.

Development of the Education Hub Concept

The education hub works closely with other hubs to create the intended powerful cluster of business innovation and activity to transform the economy of the country. All the hubs provide or encourage conferences, workshops, training, and research in support of their missions. The role of the education hub is to coordinate

these without competition or overlap. The industry foci of the other hubs coincide, in whole or in part, with the niches of the education hub.

Botswana's aspiration to become an education hub for Southern Africa and beyond is distinct from other education zones, in the sense that it is not concentrated in one location, and that it does not focus only on tertiary or higher education. The concept of the Botswana Education Hub is that the entire country has to become a hub, encompassing all levels of education – preprimary, primary, secondary, vocational and technical, tertiary, open and distance learning, as well as lifelong learning. The Botswana Education Hub is a response to the need for ensuring that the quality of education at all levels is high, and at international standards, to facilitate smooth transitions to higher levels. In developing the strategy, the Business and Economic Advisory Council identified the poor quality of education at all levels as one of the challenges hindering economic diversification. Other challenges include poor learner performance in mathematics and science, as well as a mismatch between training and industry requirements that results in the unemployment of graduates while the country continues to import relevant skills to serve industry. Botswana has also faced the problem of limited training spaces locally at higher levels, resulting in the sponsorship of many students for tertiary education outside the country, at costs much higher than if such training was offered locally.

The broad approach taken by the education hub plans focuses on overcoming capacity shortages and promoting modernization of the whole education system. These steps are necessary to create an internationally recognized modern system to attract foreign investment. Botswana believes that it is an attractive destination for international students, if its education system is comparable (e.g., with 12 years secondary completions) and credits are transferable. It has the attractions of relative prosperity, transparency of governance, a secure and cohesive society, and an attractive array of natural and cultural attractions.

Key Rationales

The motivation for establishing an education hub was threefold. In the first instance, the government had long been disturbed by the perceived and real poor standard of education and hoped that by adopting a more focused attention, it would be able to raise quality and address the mismatch between skills produced and available job opportunities. The poor quality of education especially in science, technology, and engineering has been reflected in the World Economic Forum's Global Competitiveness Reports (World Economic Forum 2011). Secondly, the expectation was that the education hub would lead to the production of high-level skills required for the success of the other five hubs and consequently promote economic diversification and sustained growth in a very direct way. Third but not the least, it was also expected that improved quality of education at both the schools and tertiary levels would lead to the attraction of external students, academics, and

investors in education and in that way contribute to the growth of foreign direct investment and reduce the cost to the government of external training.

The architects of the education hub were not oblivious to the existence of a large and comparatively well-developed and diverse educational market of South Africa. Since 1994, South Africa is the largest higher education market for regional and international students, researchers, and investors in education in sub-Saharan Africa. In view of this, it was felt that with careful planning and targeted investment, the smallness of the country, its geographic position in the subregion, and Botswana's comparative advantage in terms of political stability, low levels of crime, low tax regime, a liberal regulatory environment, transparency, and government's commitment to investment in education could all be harnessed to create a unique educational system on South Africa's doorsteps.

Sponsor of Hub Plans and Establishment of Initiatives

The main sponsor of the six hubs is the President of the country, who drives them through the National Strategy Office (NSO). However, the responsibility of implementation and promotion of the hubs on a day-to-day basis was delegated to respective government ministries. In the case of the education hub, the responsibility fell naturally to the Ministry of Education and Skills Development. The ministry was tasked with the establishment of the hub and provision of leadership in the formulation of the concept and clarification of its broad goals and objectives.

Various efforts have been made to give shape to a clear conceptualization of the education hub. A project initiation workshop was held in November 2008 at the initiative of a coordinator of the education hub to formulate a concept statement for the education hub, its objectives, activities, and risks, among other factors. The workshop reached the conclusion that the education hub should position Botswana as a regional center for skill development in the strategic areas of mining and energy, tourism, and business. The aim is to ensure that skills development is aligned to national requirements.

Similarly, the Botswana Export Development and Investment Authority (BEDIA) commissioned a study in April 2008 on their own initiative, having seen tertiary education hubs elsewhere, to assess the viability of Botswana as an education hub (BEDIA 2008). The study found that it was feasible to have a single tertiary education hub in Botswana with a concept of the African Centre of Excellence, in the form of a campus in Gaborone focusing on niche strategic areas of medical science and research, mining and energy, business, agriculture and livestock management, hospitality and tourism, conservation and veterinary science, as well as peace and justice. These were identified on the basis that the country has a comparative advantage and or potential to succeed in the region.

The Ministry of Education and Skills Development adopted the concept of centers of excellence and niche areas as recommended by the study. It did not agree to the construction of a new campus, noting that the University of Botswana and other

institutions should rather be strengthened to avoid unnecessary cost and duplication. Rather, a broader national capacity building approach was adopted to address the needs with Botswana's education system. Along with those improvements, it was also suggested that reputable foreign institutions be attracted to form partnerships with local institutions to fill existing gaps in the market.

A strategy and business plan was prepared for the Botswana Education Hub by a team of consultants in 2009. Consequently, project profiles of the identified niche areas for the education hub were developed. The study also identified incentives for investing in these areas. Interested foreign private investors are encouraged to enter into partnerships with domestic or existing institutions to agree on how best to achieve the intended objectives per each niche area.

The niche areas identified by the excellence strategy and translated into the education hub gave rise to particular actions, summarized in Table 9.2.

As an example, the health and medical services niche would be developed through the following measures. The broad field is already part of the monitoring and coordination task of the education hub, particularly the construction of an expanded Faculty of Health Sciences in the University of Botswana. It is to be noticed that Botswana has given exceptional attention to HIV-AIDS partnerships as the Botswana-Harvard School of Public Health AIDS Initiative for HIV Research and Education, the African Comprehensive HIV/AIDS Partnership (Gates, Merck), etc. The field has other strong international partnerships with institutions, foundations, and development organizations, and in the area of medical research and training, the education hub needs only to continue and expand its present monitoring and facilitation role.

In the government's brief for the education hub business plan, the research dimension is uniquely singled out as it presents a challenge and an opportunity for action. The challenge is that there is already considerable research undertaken, most of it international in its origins, conduct, and application. The opportunity is to find the means to leverage better advantage for Botswana's research initiatives and project partners in these transactions so that increasingly lead researchers and the intellectual property benefits that flow are sourced from Botswana. There is a very large deficit in knowledge production to be made up in Africa south of the Sahara, but from a small base Botswana may be able to develop a leading position in the region, with South Africa.

Education Hub as Part of Botswana's Vision

Two related statements of vision have guided the development of Botswana's education and in particular the education hub since its establishment. The first is Botswana's Vision 2016. The vision is a product of the work of a Presidential Task Group appointed in 1996 to review Botswana's past aspirations and successes, with the view to "formulate our aspirations and dreams for the future. What kind of society would we like Botswana to be by the year 2016, when we will be celebrating our

Table 9.2 Summary of actions in priority areas

Niche	Education hub approach
Medical science and research	Support internationalization of medical education provided by existing entities; support capacity strengthening for international public health and health promotion, allied health professions, and traditional health, supporting the creation of a national research fund and support for industry at international standards; help with international linkages; consider recommending a scholarship program to support graduate entrants to Botswana-based research programs, including some for international students (this applies to other niche areas)
Mining and energy	Leverage industry's strong training and international profile to support diversification and sustainable development, stronger R&D, and clean coal and stronger minor mineral presence
Business and management	Prospective transforming programs in training and at enterprise level including export opportunities; an Africa-leading GSM or graduate school of business; senior public sector staff college or GS Public Admin or Government
Agriculture and livestock management	Articulation and consolidation of present education and research capacities; open issue of whether new entity is required; sustainable pastoral and agricultural use of arid and semiarid lands; major marketing push
Hospitality and tourism	Africa's best resort/hotel management school at the peak of growing diverse tourism and hospitality programs could be associated with UB campus at Maun; follow private sector needs
Conservation and environment	Dispersed network of institutions including NGOs with international presence; strong arid/semiarid orientation; retain link to wildlife management and sustainable rangelands; major theme of Botswana International University of Science and Technology and partnerships; likely relationships to help build international linkages and support. Very strong in Botswana's brand for international students
Veterinary science	Strong practice base, few institutions in southern Africa; possibility of major institution could be scoped along with other possible initiatives
Peace and justice	This niche needs further definition; develop education, training, research, and engagement programs to serve the southern African region and beyond. Hold early search conference to identify leadership roles for Botswana, and develop the most promising proposals, whether through a new institution or an active program led by existing institutions
Science and technology n.e.c.	The Botswana International University of Science and Technology is the dominant element of the hub's engagement; its planning gives education hub good guide to modes of support and sources of funding

Source: Performance Growth Consultants and Learning Cities International (2009)

fiftieth anniversary of independence" (Botswana Presidential Task Group 1997: 69). More specifically, the Vision stipulates that:

> By the year 2016, Botswana will be an educated, informed nation. All people will be able to have good quality education that is adapted to the needs of the country. Schooling will be

> universal and compulsory to the secondary level. Good quality vocational and technical training will be available at secondary level and beyond as an alternative to academic study. Entrepreneurship and business skills will be an integral part of all schooling. No student will be disadvantaged by ethnic origin, gender, language or remoteness of settlement (Botswana Presidential Task Group 1997: 71).

The second was the approval in 2009 of the National Human Resource Development Strategy (NHRDS), which proposes that "by 2022 it will be universally accepted that the quality, productivity and motivation of its people will be Botswana's single greatest and most valuable resource" (Botswana Ministry of Education and Skills Development 2009b). In fact, the NHRDS was long anticipated by the Vision 2016 when it stated that

> Botswana will require an integrated system of human resources for anticipating and meeting requirements for human resource development in the medium to long-term. Therefore, national human resource development, planning and management must be developed to build flexibility into the education system, so that it can respond quickly to changing needs (Presidential Task Group 1997: 32).

Primary Objectives

The objectives of the Botswana Education Hub were approved by the Government Implementation Coordinating Office, and it officially seeks to:

Make Botswana an education hub: Develop Botswana as a regional center of excellence for education and promote economic diversification and sustainable growth through the provision of quality education, training, and research in key strategic areas such as science, technology and engineering, conservation, mining, hospitality and tourism, finance, and business management and thus creating business and employment opportunities

Align skill development with social and economic needs: Facilitate the alignment of skills development with national requirements by supporting the initiatives of other hubs and sectors through the provision of appropriate skills.

Promote quality and access: Promote quality and access to education at all levels from preprimary to secondary to ensure that there is a sufficient pool of qualified students in key areas to feed into tertiary education.

Encourage local and international participation: Encourage local participation in the provision of quality education as well as attract high-quality foreign players in terms of faculty, students, and investors by creating an environment conducive to both local and foreign education provision.

Make Botswana a preferred education destination: Promote Botswana as a preferred and premiere educational destination in the region and internationally.

Building on these objectives, a strategic plan and a business plan were developed in 2009 and include the following activities:

- Build up priority areas, through measures with specific targets.
- Establish an education hub coordination unit.

Table 9.3 Botswana Education Hub approach to other hubs

Other Botswana hubs	Education hub approach
Transport hub	Cooperation on education and research underpinning; helping specify skill needs, enable skilled professionals and other workers in transport
Innovation hub	Promote education services incubator, possible education hub presence, cooperation on education and research underpinning, and innovation in education, possible hub presence
Diamond hub	Assist training services and research for beneficiation and exports, enhance future value chain through meeting skill requirements
Health hub	Cooperation on education and research underpinning as a stakeholder contribution
Agriculture	Cooperation on education and research underpinning as a stakeholder contribution

Source: Performance Growth Consultants and Learning Cities International (2009)

- Support other hubs in the cluster (see Table 9.3).
- Promote market entry and provide start-up training and education space.
- Review and reform barriers to investment and educational services.
- Grow the international capacity of the schools sector.
- Internationalize Botswana curricula.
- Support internationalization of technical training and open and distance learning.
- Support community-based learning regions.
- Establish a Botswana international education marketing arm**.**

Policies and Regulation

In 2010, a study was commissioned by the education hub to develop project profiles for the identified niche areas. Each profile was a marketing tool outlining Botswana's social, economic, and political developments to date and the advantages of investing in Botswana. Potential international investors were targeted to receive the profiles.

Incentives for the education hub were considered to ensure that the intended objectives would be realized. The guiding principle in determining the incentives was to avoid financial ones such as tax breaks or subsidies and instead develop those of a regulatory nature that sought to break down barriers to investment in education. Land was set aside outside the cities to be allocated in consultation with BEDIA and Land Boards. In line with the Botswana Excellence Strategy, the Ministry of Education and Skills Development set out to improve the processing of study visas and work permits for knowledge workers and the government committed to sponsor students in local institutions whose programs have been accredited and are relevant to the needs of the economy. Finally, the principle of establishing public-private partnerships was accepted, to allow private investors to offer programs through the

use of existing public institutions in situations where excess capacity exists or in partnership with those public institutions.

Another important policy decision was to merge the existing Botswana Training Authority (BOTA) and Tertiary Education Council (TEC) under the Human Resource Development Council (HRDC) by 2013 and mainstream their processes and systems to ensure that investors are assisted within reasonable time when seeking to register and accredit their programs. This is part of strengthening the overall quality assurance mechanism. New private institutions, both foreign and local, continue to be registered and accredited. While BOTA has registered about 285 institutions as of 2011, TEC has registered about 31 institutions. More are expected as investors show interest in project profiles for the education hub in areas such as tourism, energy, and mining, among others.

Student sponsorship by the government is guided by skills shortages in the economy so as to address the challenge of unemployed graduates and mismatch of training and industry needs. A top achievers scholarship program was introduced in 2010 under the office of the education hub, and about 20 talented students who had excelled at BGCSE were selected for sponsorship to world-class institutions. Likewise, 30 students were selected in 2011. The number will increase over the years, and the intent is for these talented young people to return to the country upon graduation and assist in driving key sectors of the economy and other hubs.

In consultation with Botswana's Missions abroad, the education hub has started the "Study in Botswana" program. Since September 2010, the local tertiary institutions are encouraged to participate in education fairs in Namibia, Swaziland, Lesotho, Mozambique, and Zambia, and more Botswana Education Fairs are planned for subsequent years.

The expectation is that by 2013, Botswana should start receiving increased numbers of regional students in its tertiary institutions. Private tertiary institutions are exploring ways of accommodating foreign students with private property developers. The University of Botswana and the Botswana Accountancy College provide hostel accommodation to foreign students as a matter of priority. The growth in the number of foreign students will be monitored over time in line with the target set in the business plan for the education hub.

Worth noting is the work to establish the Botswana National Qualifications Authority which will be responsible for the development and administration of the national qualifications framework. This is an initiative that will play an important role in the establishment of Botswana as an education hub as it will facilitate the transfer of credits across borders.

Major Actors and Stakeholders

Stakeholders include departments within the Ministry of Education and Skills Development, parastatal organizations, tertiary institutions, schools, and other hubs. Other stakeholders include the private sector, specifically government-recognized

institutions, given that the hub seeks to increase private sector participation in the economy. The role of the private sector is to complement the efforts of the government in providing education as well as to invest in services and infrastructure supporting the development of education as an export product/service and for import substitution purposes. The parastatal sector also plays a similar role as these are government-owned institutions that have been allowed to operate independently for efficiency reasons.

From the period 2008 up to 2010, the education hub, like other hubs, was reporting to the permanent secretary in the Ministry of Education and Skills Development. As of 2011, hubs report to the President on a quarterly basis to ensure timely progress to meet objectives. Before the education hub report goes to the Office of the President, the National Strategy Office reviews it to determine whether or not there is reasonable progress and to discuss any issues that may require attention.

Once fully operational, the Human Resource Development Council (HDRC) will become a major player in the development of the education hub. Through the sectoral human resource development committees, the HDRC will be able to identify those skills in greater demand in the economy. The HRDC will influence the development of the hub in a very direct way as will the National Credit and Qualifications Authority (NCQA). Establishing two new national education agencies is an important step in the development of Botswana as an education hub, but it takes time, effort, and patience to ensure that these organizations are functioning effectively.

Current Activities and Accomplishments of the Education Hub

Capacity Building of Local Institutions

Two additional developments which will fast-track the work of the education hub include strengthening the capacity and quality of local higher education institutions. The first is the development of the Botswana International University of Science and Technology (BIUST). The importance of BIUST goes beyond providing expanded access, as it will focus on research and education in the identified niche areas of the five industrial hubs. The second is expansion of the University of Botswana (UB) to offer new programs in science, technology, and health. Other measures are being put in place to strengthen technical colleges and brigades offering technical and vocational training by recruiting skilled and experienced instructors and lecturers both locally and internationally. The Ministry of Education and Skills Development has also taken a deliberate decision to sponsor students to these institutions given that there are shortages of such skills in the labor market. The BIUST project and the expansion of the UB will help in the realization of some of the objectives of the education hub.

Promotion of Partnerships

All institutions of higher learning, both private and public, continue to enter into partnerships with foreign institutions for program offerings, student exchanges, and joint research projects. The education hub promotes partnerships with reputable institutions in Africa and around the world. It must be noted that institutions have always pursued such partnerships, but the education hub plan emphasizes in the identified strategic niche areas which strengthen the country as a center of excellence. A priority for the hub is to ensure that all partnerships are effective and functional and to stress mutual benefits through knowledge and skills transfer.

A partnership between the Ministry of Education and Skills Development and the University of Warwick in the UK was initiated by the education hub office to support the gifted youth program in 2010. Botswana also hosted the International Gateway for Gifted Youth Boot Camp in 2010 which sought to expose Botswana's talented students to international aspects of teaching and research, as well as to offer a platform for them to network with their peers from other countries. Another partnership was initiated with the Louisville University from the USA where the university brings in their students to Botswana schools on an annual basis for an internship program to share knowledge and experiences on issues of concern such as substance abuse and bullying and to impart life skills in general.

International Marketing

Participation in regional education fairs and the newly developed Study in Botswana program are used to market Botswana as an emerging regional education hub. Local institutions have agreed that if the country is to meet an optimal number of foreign students, they have to commit to a minimum of 5 % of their students being from outside the country. The University of Botswana has set a target of 10 %. Success, however, will depend on developing a comprehensive marketing and recruitment strategy, especially given the fact that Botswana is late in entering the global market for students.

Investment Promotion

Project profiles to attract foreign investment have been developed for the areas of medical science and research, mining and energy, business and management, agriculture and livestock management, hospitality and tourism, conservation and environment, veterinary science, peace and justice, democracy, governance, and economic management. The profiles provide pre-feasibility information to potential investors in terms of the viability of establishing training and research programs to help develop Botswana serve as a center of excellence for the region.

Intended Outcomes

Import Replacement

The government has adopted a target of 70 % reduction in the import of education services by 2016. Increased local capacity will result in more programs and space for local training and reduce the number of students going for training externally. Table 9.4 shows an already declining percentage of external training, partly as a result of the government's decision to sponsor students to attend local private institutions.

World-Class Institution

A second target is that one local tertiary institution be ranked among the top 400 institutions by 2016. There are discussions by key stakeholders to increase research funding for institutions and to pursue international accreditation of programs. The Botswana College of Open and Distance Learning has been recognized in the region as the only college that should offer certificate programs in open and distance learning, after a bid that saw many institutions competing for this opportunity in the region. The University of Botswana has also embarked on an ambitious strategy of being a research-intensive institution by 2022.

Transferability

It is planned that by 2016, all local public and private institutions should offer globally transferable and internationally recognized qualifications. The National Credit and Qualification Framework which has been benchmarked internationally is designed to facilitate and implement this process.

Internationalization

The internationalization of the education system in Botswana is critical to the development of a national-level education hub as it has to attract upgrade of and internationalize the curriculum, recruit foreign students, seek international branch campuses, and attract researchers from other countries. Only if the curricula are internationalized, it will be possible for the country to export excess qualified human resources and bring in foreign direct investment. At the same time, it is critical that education and training programs are relevant to domestic labor market requirements.

Table 9.4 Number of students placed and sponsored by government (2003/2004–2009/2010)

		2003/2004	2004/2005	2005/2006	2006/2007	2007/2008	2008/2009	2009/2010
External placement	Enrolment	2,171	2,006	2,005	2,206	2,706	2,551	670
	%	25.07	25	0.27	28.61	14.9	12.24	7.1
Local placement	Public institutions	6,488	5,946	5,482	5,500	5,160	6,230	6,136
	%	74.93	75	0.73	71.33	28.42	29.89	65.06
	Private institutions	–	–	–	4	10,290	12,063	2,626
	%	–	–	–	0.05	56.68	57.87	27.84
	Total placement	8,659	7,952	7,487	7,710	18,156	20,844	9,432

Source: Department of Student Placement and Welfare (2008), updated

Issues and Challenges

The development and positioning of Botswana as a country-level education hub involves the development of new higher education policies and regulations and secondly the upgrading and coordinating of existing higher education institutions. This is a new and far-reaching intervention strategy for Botswana. It is inevitable that there should be some resistance and confusion. A major challenge affecting the hub and higher education institutions is funding which has been made more difficult by the financial crisis and global recession. In Botswana, both public and private institutions depend heavily on funding from the government through sponsorship of students. It is important that institutions look to foreign student recruitment as an alternative source of funding. However, the influx of more international students in turn requires building of student hostels which requires either public or private sector support.

Tight immigration procedures have been identified as an impediment to the recruitment of good researchers, and, thus, streamlining to infuse efficiency is required. However, in spite of new efforts to improve the immigration system, there have been complaints that visas and work and study permits are not processed in an efficient or timely manner. This poses a serious threat to efforts to establish centers of research excellence and to maintain quality efforts in institutions of learning. In view of the challenge, the Minister of Education and Skills Development has been charged with the responsibility to intervene on behalf of institutions to expedite the issuance of study, work, and residence permits.

There positioning of Botswana as a regional education hub by 2016 is an ambitious and long-term objective. To create the best environment and high-quality system for teaching, learning, and research is a steep challenge. This requires resources to equip laboratories, improve physical infrastructure, up-skill teachers, and address student welfare issues. The program to refurbish laboratories has started, and the government has given priority to the maintenance of existing infrastructure during the National Development Plan 10 (from 2010 to 2016); hence, education facilities are gradually improving. Conditions of service for teachers need to be improved, and discussions are ongoing to determine how best to address teacher concerns within affordable limits to ensure that teachers are motivated to improve teaching, learner performance, and research.

A great deal of work remains to be done in terms of building awareness and commitment among different stakeholder groups to realize the goals and aspirations of Botswana's hub building agenda. Stakeholders in the education sector need to appreciate that the hub strategy does not seek to compete with them or interfere in their mandate but rather to facilitate, coordinate, and ensure that everybody is working toward a common goal in achieving the strategic focus of overall quality, relevance, and global competitiveness of education for export purposes, economic diversification, and growth.

A dialogue needs to continue in terms of whether or not the Ministry of Education and Skills Development is at liberty to order independent quality audits across institutions to ensure that the country is on the right track to being a global player in education and has the highest-quality assurance standards. Such an

approach may be worthwhile especially at the early stages of establishing the regional education hub.

There appears to be no meeting of minds on some of the important focus areas for the education hub such as attracting new providers, both local and international, attracting foreign students, and promoting and developing partnerships between local and external institutions. Those against the participation of the new providers in the education hub argue that local institutions are already discharging these functions without the hub framework. There is concern that the hub attaches more importance to attracting so-called foreign reputable institutions to set up in Botswana, in the very niche areas that local institutions are already involved.

It is worth mentioning that existing institutions subtly resent the education hub initiative for promoting private investment in education, as they believe that the market is too small and already saturated. This is a debatable point as it is up to the regulators to assess if there is room for additional participation, depending on the type of programs that are being introduced and their added value, as well as to determine the extent to which healthy competition among institutions offering the same programs is constructive.

Finally, there is the issue of the locus of responsibility of the education hub as a unit in the Ministry of Education and Skills Development but under the supervision of the Hub Coordinator by the Permanent Secretary. Related to this is the question of whether the hub would receive sufficient funding under a line ministry with so many priorities and obligations. When the issue was raised earlier while developing the hub strategy and business plan, a key argument was that establishing the coordination unit within the Ministry would provide the strongest link to the education strategies being implemented by the government. However, the education hub has roles which go beyond the ambit of the Ministry, especially in its links to other economic development activities, and its need for flexibility in dealing with foreign investors. The hub needs a degree of independence with a reporting structure not subservient and with adequate funding to facilitate execution of their respective strategies (Botswana Ministry of Education and Skills Development 2009a).

Discussions continue about whether the hub may need to move out of the Ministry and be established as a legal autonomous body with own budget, for it to grow. Real or perceived political interference should be avoided at all cost, as this may compromise the hub's integrity and ability to make independent decisions. There is an urgent need to intensify dialogue with key stakeholders to get their buy-in. Clarity of roles between key players in the education sector may lead to reduced tension between them and create a conducive environment for the education hub to flourish.

Concluding Remarks

Botswana, as one of the smallest countries in the Southern African region, has an opportunity to position itself as a regional education hub in key strategic areas as mining, environment, tourism, and other sectors given that the country has unique

attributes such as rich mineral deposits, the largest wetland in the world, variety of animal species, stable economy, and good governance. These can be packaged into strong program offerings and interesting research in order to share the knowledge with the rest of the world.

In considering the form that an education hub might take, the government wisely chose to address the transformation of its education capacity and the internationalization of its higher education sector by identifying education and training opportunities in particular niches where Botswana has a comparative advantage. Promotion of these opportunities is being done in cooperation with other industry hubs. Notwithstanding the difficulties of building stakeholder support and turbulent global economic conditions that have put some public investments on hold, Botswana has an opportunity to become a key Southern African destination for students, scholars, research institutions, and educational investment.

The country offers a peaceful environment for study and research and a rich culture of dialogue, freedom of speech, and association, among other aspects relevant to the creation of a knowledge society. Infrastructure development is fairly good, and with the creation of other hubs supporting the rest of the economy in transport, innovation, health, agriculture, and diamond production, the country is set to move forward.

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Chapter 10
Emerging Hubs: South Korea, Sri Lanka, Mauritius, and Bahrain

Lois Dou and Jane Knight

This chapter introduces four countries that can be generally labeled as emerging hubs. The brief profiles of each country illustrate that their plans to become an education hub have not been fully realized as of 2012. While ambitious targets in terms of attracting foreign education institutions and students have been set for each country hub, the progress toward achieving the goals and targets is varied. South Korea has been successful in recruiting international students, but its efforts to attract international institutions to newly built global education campuses have not been as fruitful and are still a work in progress. Korea's lack of a national plan or strategy to bring together their different cross border higher education initiatives leads one to question whether it is intending to develop and position itself as a major Northeast Asian Regional Education Hub or whether it prefers to develop two economic education free zones and focus on keeping Korean students at home for their higher education studies by providing foreign programs in English through international branch campuses. The next 5 years will tell the tale.

Both Sri Lanka and Mauritius announced their hub plans in 2011 and are thus considered to be newly emerging hubs. The strong focus on recruiting international students puts them into the student category of education hubs, but it is premature to know whether their education hub plans are anything more than a branding label for a new marketing campaign aimed at international students. Bahrain has been included in this chapter because it announced very ambitious plans in 2006 to become an education hub, but their progress seems to have been stalled and there is little information available as to the current level of activity and accomplishment. The road to becoming a recognized and respected education hub is full of unexpected twists and turns. It is premature to predict the future success of these four countries' efforts to build and position themselves as education hubs. Information is

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available on their ambitious targets, but there is relatively little data available on their actual progress and accomplishments; hence, the term "emerging education hubs" is used to describe these four country hubs.

South Korea

Located in Northeast Asia, South Korea spans over the southerly half of the Korean peninsula and occupies 99,720 km^2 with a population of 48,860,500 (CIA 2012a, b). From the 1950s onward, South Korea has achieved rapid economic growth with per capita income rising to roughly 17 times the level of North Korea. In the 1960s GDP per capita was comparable with levels in the poorer countries of Africa and Asia. In 2004 South Korea joined the trillion-dollar club of world economies. South Korea is currently ranked as the 12th top world trade partners. Over the past four decades, South Korea also demonstrated global integration to become a high-tech industrialized economy. Its economy relies heavily on industries such as automobile, petrochemical, electronic, shipbuilding, textile, and steel.

The growth of the South Korean education sector is closely tied to the economic growth over the last few decades. South Korea's K-12 education system consists of 6 years of primary school, 3 years of middle school, and 3 years of high school education. Postsecondary education generally consists of 4 years of university before graduate studies. The K-12 education has been claimed as the catalyst in Korea's reconstruction efforts. The student numbers in all levels of education have nearly doubled between the 1960s and 1970s, as the country focused on rebuilding the nation and human resources development (MEST 2011).

Higher Education System

The Korean higher education system is nationally organized under the Ministry of Education, Science and Technology (MEST). The annual expenditure on higher education is about 2.6 % of the annual GDP, which is the second highest in the world. Worth noting is that the government's postwar expenditures were mostly spent on the K-12 education, which has not substantially changed.

The first recorded higher education institution was the Sungkyunkwan University established in 1398. The modern universities and colleges, however, were not introduced until the 1880s under the guidance of the American missionaries. The first modern, comprehensive university established under the Korean central government is the Seoul National University. In 1946, the government reorganized the Kyungsung Imperial University into Seoul National University (SNU) and mandated it to offer both undergraduate and graduate programs. With the new Higher Education Act in 1998, the central government laid down a more concrete foundation for the higher education sector, which is comprised of universities, industrial

Table 10.1 Types of higher education institutions and enrollments in Korea (2008)

Type of institution	Number of schools	Number of students	Number of teachers
Junior college level	151	776,782	12,100
Junior college			
Polytechnic college			
Cyber college			
Undergraduate course	217	2,484,650	57,841
University			
University of education			
Industrial university			
Polytechnic college			
Air & Corr. University			
Cyber college and university			
Graduate level	1,055	301,412	3,097
Independent graduate school			
Graduate school			

Source: Adapted from Lee (2009)

universities, teacher colleges, junior colleges, correspondence universities, technical colleges, and miscellaneous schools (MEST 2011). Table 10.1 provides information on each category of institution in terms of student enrollments and the number of teachers.

There are several national bodies that oversee the new development and operation of the higher education sector in Korea. They include the Ministry of Education, Science and Technology (MEST) which monitors and coordinates human resource development policies and governs matters related to school education and other academic affairs. Another important organization is the Korean Council for University Education (KCUE) which has a wide diversity of tasks. It is responsible for professional research on the management of colleges and universities, the implementation of the college entrance system, provision of admission information, development of policies to increase financial support to universities, and university evaluations. The National Institute for International Education (NIIE) looks after the education of overseas Koreans, international education exchange and cooperation, overseas training of teaching university students, selection and management of government scholarships recipients, and support services for overseas study.

The Korea Research Foundation (KRF) establishes and implements programs to support research activities, manages academic research funds, provides subsidies for operating academic research organizations, supports domestic and international academic exchanges, provides scholarships and education loans, and conducts evaluations on the management of research in universities. Finally, the Korea Foundation promotes international understanding through creative exchanges by supporting Korean studies' development overseas; providing fellowships; supporting museums, exhibitions, and performances; and organizing international conferences, forums, and other exchange programs.

Table 10.2 Student inbound and outbound mobility

	2004	2005	2006	2007	2008
Korean student abroad	159,903 (2003)	192,254	–	217,959	216,867
Foreign students in South Korea	16,832	22,526	32,557	49,270	63,952

Source: Adapted from Byun and Kim (2011)

In 2002, there were about 3.5 million students enrolled in the Korean higher education system. By 2008, the enrollment rate was at 70.5 % reaching universal level (Lee 2009). But, according to the survey results from the Federation of Korean Industries, Korean higher education institutions provided only 26 % of the knowledge and skills required by the industry. This surprising finding stimulated the launch of the "Brain Korea 21" project to better equip graduate students in terms of knowledge and skills required by industry. It was widely believed that the labor-based manufacturing industry puts a strain on the economy with the rising costs of production, weak South Korean currency, and inevitable trade losses. Therefore, the South Korean government shifted its priority to scientific and technological research in universities to decrease the country's economic reliance on the traditional manufacturing industry (MEHRD 2005).

The national quality assurance system is the responsibility of the Ministry of Education, Science and Technology (MEST). It indirectly accredits institutions through evaluations of individual universities' compliance with government regulations and provides funding accordingly. Also evaluations of institutions and specific academic fields are conducted by several organizations, such as the Korean Council for University Education and the Korean Council for College Education (KCCE). The privately owned *JoongAng Daily* also publishes independent rankings of schools and specific academic fields every year.

In 2009, Korea ranked 10th in the world in terms of the number of international students with approx. 50,000 international students. This represents only 1.4 % of the world's total number of mobile international students. However, the number of Korean students going abroad for full undergraduate and graduate degree programs has always been significantly greater than the number coming into the country. Table 10.2 clearly illustrates this phenomenon. For instance in 2008 more than three times the number of students left the country for foreign programs than those international students entering. This reality is in fact one of the key drivers for Korea to become an education hub and attract foreign providers into the country in order to encourage domestic students to stay at home for an international education experience, especially in English.

Planning South Korea as a Northeast Asian Education Hub

It is hard to pinpoint an exact date for the announcement of Korea's intention to become an education hub, largely due to the fact that there is no master plan at the national level. The evolution of Korea as an education is characterized more as an

incremental approach rather than a comprehensive national design. While projects such as the biotech complex started as early as 1994, the actual establishment of the Songdo area which now houses the Songdo Global University Campus (SGUC) did not officially begin until 2003 (IFEZ 2011). The Jeju Global Education Campus (JGEC) initiative began in 2006 when the MEST announced its plans to establish an English-language town, but the actual construction of the city started in 2009 (Jeminilbo 2011).

Rationales for developing South Korea as an education hub are diverse and include the following: (1) to attract and retain talent and to provide the infrastructure for knowledge production and innovation, (2) to increase competitiveness in the knowledge-based market, (3) to reverse the brain drain by having Korean students enroll in international branch campuses in Korea, (4) to attract foreign students and allow universities to generate more revenues through recruiting international students, and (5) to improve the quality of education and research offered.

In the early 2000s, the central government expanded its internationalization plans to attract more international students. The plan was to address the falling numbers of domestic student and to allow universities to generate more revenues through recruiting foreign international students. Although domestic enrollment rate was still fairly high, the government was concerned about its decreasing birth rate and gradual decline in enrollments. The Korean higher education institutions were therefore encouraged by the central government to examine and improve the quality of education and research offered and to enhance internationalization efforts to better attract and serve the foreign students and scholars (Byun and Kim 2011). In addition to the international student recruitment plan, two special initiatives were underway: the development of Songdo Global University Campus (SGUC) and Jeju Global Education City (JGEC). Each initiative has different but complementary roles and goals.

The Songdo Global University Campus is located in the Incheon Free Economic Zone (IFEZ) which is just 1 h west of Seoul. The central government has allocated 8.8 billion US and 52,000 acres of land to construct and develop the IFEZ (MEST 2011). The aim of this special zone is to accelerate South Korea's transition from manufacturing-based to knowledge-based economy. Initially, the IFEZ authority planned to recruit ten foreign branch campuses to Songdo area by 2012 (MEST 2011). The selection criteria are based on the academic reputation of the institutions and programs while avoiding duplications of programs. The IFEZ authority was unable to recruit all ten foreign institutions by 2012, but it continues to actively recruit appropriate tenants.

Once established in the SGUC, the institutions are given autonomy in terms of setting enrollment targets, admission criteria, and curriculum so that branch campuses can maintain the same standards as their home university. Students enrolled in the SGUC-based campuses will be granted degrees from their home universities and become eligible for further study in the home universities. Although students will be admitted to different institutions and programs, they will share facilities such as lecture rooms, laboratories, libraries, cafeteria, and student residences (Lee 2009). MEST reports that approximately 10,000 undergraduate and graduate

students are expected to enroll at the SGUC by 2015. This is an ambitious target, and its achievement is questionable given the enrollment data as of 2012 and the fact that only one foreign campus is operating as of 2012, the State University of New York at Stony Brook.

Jeju Global Education City is the second special education zone initiative. Located in Seogwipo, in the southwest region of Jeju, the JGEC is constructed over a 3,792,000 m^2 site. JGEC is being developed to provide educational, cultural, and recreational experiences in English. It is to become an ideal destination for both domestic and international students wanting to learn English while going through the K-12 and postsecondary education. This way, the hub can retain some of the large number of Korean students going abroad to study and thereby reduce the outward flow of currency and talent to foreign destinations. Furthermore, the development of the education hub will boost Jeju's regional economy by creating more jobs and attracting foreign talent.

The JGEC plans are ambitious. It aims to recruit 12 world-renowned primary, middle, and/or high schools to the school zone by 2015 in order to create an English-based living/learning environment. To the university zone, the city plans to recruit ten world-renowned higher education institutions offering programs in education, tourism, arts, and other professional areas also by 2015 (Jeminilbo 2011). The JGEC claims that the university zone was modeled after Dubai Knowledge Village in that foreign providers will rent lecture spaces while their student share residences, libraries, cafeteria, gymnasium, and community hall. The arts zone will provide additional English-language environment outside of the classroom, in which students can practice English while engaging in activities of their personal interest. This zone has been modeled after New York State's Chautauqua County. Finally, the English Education Center will offer language training to English teachers and civil servants; and the center will be involved in English education policy research and consulting. Through the establishments of these educational infrastructure and partnerships, Jeju province hopes to create a high-standard educational environment for both domestic and international students (*Jeju Weekly* 2012).

Major Actors and Policies

To fulfill these goals, actors at different levels have been involved in the education hub initiatives. The central government is the prime promoter and sponsor but at this point in time does not have a coordinated strategy or master plan. Macro policies and laws such as special zones and allocation of funding have been enacted by the central government. At the ministerial level, Ministry of Education, Science and Technology (MEST) was mandated to attract more foreign education institutions, students, and scholars to contribute to the growth of the special education zones while at the same time retaining more domestic students to stay in the country (Byun and Kim 2011). The MEST also serves as a crucial liaison between the central government and the provincial governments in financing and implementing different hub initiatives.

Under the central government's direction, the Ministry of Strategy and Finance and Ministry of Land, Transport and Maritime Affairs (MLTM) contributed in developing and funding the JGEC initiatives. The Ministry of Knowledge Economy (MKE) is also a major actor in terms of setting relevant economic policies. Meanwhile, local bodies, foundations, and the political parties are individually and collectively contributing to building the education hub.

At a macro level, Brain Korea 21, a project established over 10 years ago for nurturing highly qualified human resources for the twenty-first-century knowledge-based society, has a key role in facilitating the development of the education hub project. The objectives of Brain Korea 21 initiative include: (1) to develop world-class graduate schools and nurture R&D manpower, (2) to enhance research capability, (3) to nurture specialized regional universities and strengthen industry-university ties, and (4) to reform university system and to develop creative human resources (MEHRD 2005).

At an operational level, several laws and regulations have been enacted. Private School Act was legislated in 1997 to allow foreign providers to establish campuses in Korea (Byun and Kim 2011). Further to this, the central government introduced the Special Act on the Establishment and Operation of Foreign Educational Institutions in 2005 to reduce previous restrictions placed on the foreign providers/institutions in opening foreign universities in Korea. One of the common incentives is tax exemption over a period of time. For example, the JGEC is designated as a special investment zone in which foreign higher education institutions will be waived of income tax for 5 years and property tax for 10 years. Both JGEC and SGUC provide additional financial incentives to accelerate the recruitment of foreign educational institutions.

Accomplishments and Looking to the Future

At the Songdo Global University Campus, Chadwick International School (K-12) opened its Songdo branch campus in September 2010, and by 2015, it is expected that POSCO Education Foundation's private high school will also open a satellite campus in Songdo (Invest Korea 2015). These primary and secondary schools are complemented by the opening of the branch campus of the State University of New York (SUNY) at Stony Brook in 2012. SUNY Korea accepted its first cohort of 405 graduate students in the following programs: computer science, technology and society, and quantitative finance. SUNY Korea plans to offer research-oriented graduate education in accordance with the home university's standards, ensuring that students experience American higher education experience in Korea.

George Mason University and the University of Utah plan to enroll their first cohort of students in 2013, and by 2014, Alfred University, University of Illinois at Urbana-Champaign, and Belgium's Ghent University plan to open a branch campus in the SGUC, but no concrete action has been taken to date. Memoranda of understanding have been signed with Russia's Moscow State University and

St. Petersburg State University. Of interest is that Korean universities are also being recruited to SGUC. Being part of an international education initiative motivated Yonsei University and Incheon University to establish branch campuses in SGUC. Given the number of institutions being established and the planned enrollment targets, the Songdo Global University Foundation was created in 2012 to serve the administrative body overseeing the operational management of the university campus.

Similar levels of activity are evident at JCEC. In 2011, United Kingdom's North London Collegiate School and Korea International School opened in school, and in 2012 Canada's Branksome Hall Asia was ready to enroll students. The JCEC reports that it has signed memoranda of understanding with St. Albans School and Noble and Greenough School both from the United States. By 2015, the JGEC aims to host 9,000 students. However, there is growing concern whether that targets will be met given the slow progress in constructing the city and in the recruitment of international schools and universities (Jeminilbo 2011). In response to this concern, the Jeju provincial government plans to invest an additional 1.5 billion USD in JGEC by 2017 to support the construction of all the education facilities, the arts zone, an English education center, and other real-estate developments (*Korea IT Times* 2012).

The four major initiatives, Brain Korea 21, International Student Recruitment Plan, the Songdo Global University Campus in Incheon Free Zone, and the Jeju Global Education Campus, collectively demonstrate Korea's commitment to build itself into a respected education hub in Northeast Asia. The challenge remains whether these initiatives will continue to act independently or will they be coordinated at the policy level to create Korea as a country level hub. Given the emphasis on the recruitment of international students and scholars plus the attraction of foreign education institutions, K-12, and universities, Korea can be described as a student hub. However, the stated rationales go beyond providing education opportunities for local and foreign students by identifying the importance of human resource development and the need for a more robust knowledge production and innovation capacity. It remains to be seen what will be the direction and sustainability of Korea's current and future plans to build itself as a student, talent, or knowledge-based education hub.

As of 2012, the absence of an explicit national plan to move the education hub forward in an integrated and strategic fashion seems at odds with Korea's level of interest and investment in building and positioning itself as an education hub. However, the number and diversity of government ministries and policy sectors at national, provincial, and zone levels indicate the complexity of the education hub plans and operation and realistically make a coordinated national strategy more difficult to achieve.

Sri Lanka

Sri Lanka is an island country located in southern Asia with an area of 65,610 km^2. With a population of more than 20 million, the per capita is $5,600 which results in the highest purchasing power parity basis in the region (CIA 2012a, b). Natural

resources include limestone, graphite, mineral sands, gems, phosphates, clay, and hydropower. Sri Lanka continues to experience strong economic growth, driven by large-scale reconstruction and development projects following the end of the 26-year conflict with the Liberation Tigers of Tamil Eelam. Economic activity rebounded strongly with the end of the war and an IMF agreement, resulting in 2 straight years of high growth in 2010 and 2011. As of 2012, Sri Lanka is pursuing a combination of government-directed policies and private investment, both foreign and domestic, to spur economic growth.

Higher Education System

The higher education system in Sri Lanka is rather centralized. The Ministry of Higher Education is responsible for policies to regulate the higher education sector, the allocation of public funds and other substantial resources to universities and technological institutes. The University Grants Commission is responsible for planning and coordinating higher education, allocating funds to institutions, maintaining academic standards, regulating the administration of higher education institutions, and admitting students to undergraduate programs (IAU 2012). As of 2012, there are 15 national universities, two Buddhist universities, 12 advance technological institutes, and 17 higher education institutes in this country with a total of about 90,000 students (Nawaratne 2011; MOHE 2012b).

Plans to Become an Education Hub

Early in 2011, the Ministry of Higher Education declared the Government's intention to promote Sri Lanka as a regional education hub in Southeast Asia. The promoters of the Sri Lankan education hub program claim that there are two major challenges facing the country's development. The first is the necessity to broaden access to higher education opportunities and the second is a more effective utilization of the country's natural and human resources. Based on these concerns, the major drivers behind the education hub project are the following: (1) to cater for the huge demand for foreign students to study abroad, (2) to market Sri Lanka as a study destination in the region, and (3) to ensure that the youth of the country develop a more integrated and inclusive worldview (Nawaratne 2011).

Of importance to Sri Lanka's aspiration of becoming a desired education destination is the involvement of foreign branch campuses. To that end, the country has developed new policies to attract international branch campuses, but as of 2012 there is yet to be a branch campus operational in the country. Thus, the goal of attracting ten world-class foreign university campuses by 2013 is extremely ambitious and hardly reachable. Establishing such lofty goals which may be unattainable in the short run, and even in the long term, raises the issue of how realistic the plans

are and whether there is a strong predisposition to marketing forces and rhetoric. Two other initiatives identified by the government include the creation of a new quality assurance system to regulate and monitor quality across state and private sector provision and a new policy to ease restrictions on state universities' ability to enroll foreign students and offer internationally accredited programs. In this scenario, the country is expecting to attract 10,000 foreign students by 2014 and increase to 50,000 by 2020 in order to become the most "cost-effective" (attractive tuition fees) education hub in Asia (MOHE 2012b). It is challenging to determine whether this goal is achievable or even realistic given that there is little data available that provides the current enrollment situation of international students in Sri Lanka and that in 2012 the current enrollment of all higher education students (local and international) is 90,000.

Current Activities and Progress

The University of Colombo has been recruiting students to its medical faculty from China and Vietnam and has plans to increase this significantly and to encourage all faculties to do the same. In 2001 International College of Business & Technology (ICBT) had over 300 international students. Sri Lanka Institute of Information Technology (SLIIT) has been recruiting in Bangladesh and has internationalization as one of its key priorities in its 10-year plan. Sri Lanka's Buddhist institutions have established small campuses throughout the world and are attractive for international students who intend to study Buddhism (Nawaratne 2011).

Sri Lanka's Higher Education Ministry has taken steps to award 150 scholarships for foreign students to study in local universities, as part of its plan to turn the country into a higher education hub. Under this scholarship program, foreign students get full scholarships and have a chance to study medical, management, law, engineering, and arts degrees. The international students will also be assisted with living expenses. It is reported that students from China, Japan, and Southern Asia including India and Pakistan are the most likely to benefit from the scholarship scheme. Worth noting is that this scholarship program enables the Sri Lankan universities for the first time to get the opportunity to have international students (De Alwis 2011). At the same time Sri Lanka's University Grants Commission has decided to increase the admission of fee-paying foreign students at local universities from just 0.5 % of the overall intake to 5 % from the academic year of 2013–2014. In addition, the Sri Lankan government has initiated incentives to foreign institutions including land subsidies, tax rebates, and tax-free imports of building materials and other equipment (*University World News* 2011). These are concrete and important initiatives. Nevertheless, it is difficult to imagine that the country will be able to increase its international student enrollment to 10,000 students by 2014.

Sri Lanka's goal of becoming a recognized education hub has triggered a number of steps designed to increase the quality of the higher education sector. These include: (1) an evaluation of strengths and weaknesses of the higher education

sector resulting in a new strategic plan to bring all universities to international standards, (2) a more systematic assessment of global "opportunities" for international engagement, (3) development of the facilities of the higher education institutions, (4) upgrading the quality, skills, and commitment of academic and administrative staff, (5) ensuring a student-centered approach to higher education with an emphasis on the creativity and competencies of students, and (6) making education a major source of export by transforming Sri Lanka into an "education exporting" country instead of "education importing" country (MOHE 2012b).

These are large-scale and bold plans for a relatively small country. A key question is how these major reforms will coincide with the development of an education hub. Is it a chicken and egg situation? Are these ambitious plans being undertaken to enhance the potential of becoming an education hub, or are the demands of being an education hub necessitating this kind of major reform and upgrading of the higher education system policies, infrastructure, and human resources? Either way, the improvement and changes will require significant investments and a long-term plan.

The 2012 scenario of Sri Lanka's international education efforts indicates a small number of international students, no foreign branch campuses, and reluctance on the part of some higher education institutions to export education by significantly increasing the number of foreign students. This raises serious questions about education hub status. Is Sri Lanka's plan to become an education hub anything more than a new and more aggressive international marketing campaign to attract more international students? Only time will tell whether the country has adopted the term education hub as more of a "brand" than a serious and comprehensive initiative to strategically develop a critical mass of local and international actors working together on cross border education initiatives.

Mauritius

Mauritius is an island nation with a total area of 2,040 km^2 and approximately 1.3 million inhabits as of 2011 (Mauritius Census 2011). It gained its independence from the UK in 1968. With a stable democracy, regular free elections, and a positive human rights record, the country has attracted considerable foreign investment and has earned one of Africa's highest per capita incomes of $15,100 as of 2011. It is a middle-income diversified economy with growing industrial, financial, and tourist sectors. For most of the period since its independence from 1968, annual growth has been in the order of 5–6 % (CIA 2012a, b).

Education System

During the past several decades, education reform in Mauritius has focused on the preprimary, primary, and secondary levels. The government has now turned its attention to the higher education sector. Higher education is offered at universities,

polytechnics, and teacher training colleges. In addition, private organizations and overseas and regional institutions deliver tertiary-level programs. Most of these institutions are relatively small and are affiliated to an international institution using a mixed-mode system, encompassing both distance learning and face-to-face tutorials (IAU 2012). In terms of public higher education institutions, the University of Mauritius is the primary institution, while others include the Mauritius College of the Air; Mahatma Gandhi Institutes; University of Technology, Mauritius; Mauritius Institute of Education; and the Mauritius Institute of Health. Over 30 private organizations offer tertiary-level programs. The percentage of students enrolled in public institutions is estimated at 62.5 %, with 37.5 % in the private sector (SARUA 2008).

Education Hub Plans

In 2011, the Ministry of Tertiary Education, Science, Research and Technology officially announced plans to develop Mauritius as a higher education hub. As part of the National Strategic Plan for Education and Training (NSPET) 2008–2020, the goal is to create an enabling environment for Mauritius to emerge as a Regional Knowledge Hub and a Centre for Higher Learning and Excellence (SARUA 2008). The idea of becoming an education hub can be traced back to 2000 when the government came forward with the New Economic Agenda which emphasized that Mauritius should shift from traditional economic sectors to the service sectors.

Higher education reform and internationalization have been deemed as the two major approaches to realize this vision of being an education hub. Meanwhile, increasing the number of international students is regarded as the major manifestation of international development in higher education. The major objective of the regional higher education hub is to increase the gross tertiary enrollment rate to 70 % by 2015 (from 45 % at present) and attract 100,000 foreign students by 2020 (Minney 2012; Business Mega 2011). However, given the fact that there were only 62 international students in Mauritius in 2009 (UNESCO 2009), this plan for the future does not appear to be realistic or attainable. Even if the UNESCO data is incorrect and Sri Lanka hosts hundreds of international students, the highly ambitious goal of 100,000 students by 2020 raises the very serious question as to whether the country has the capacity to absorb such a staggering increase in students and still maintain quality academic offer.

The two major national bodies in charge of higher education sector are the Ministry of Education and Human Resources (MEHR) and Tertiary Education Commission (TEC). The Mauritian Government, through the MEHR, offers major funding for the construction and improvement of the higher education infrastructure. The Tertiary Education Commission (TEC) and Board of Investment (BOI) play a role in developing and branding the country as an ideal destination for international and local students who are pursuing higher learning.

The TEC aims to position Mauritius in the region as a reputable knowledge hub and the gateway for postsecondary education. To this end, Regional Centers of Excellence are planned and an integrated marketing strategy for promoting Mauritius as a Regional

Knowledge Hub and a Center of Higher Learning is being prepared. Efforts to attract foreign and local investment in educational service are underway; institutions are encouraged to establish strategic partnerships with industry and commerce; and the professional communities are working toward the development of a collaborative and cooperative knowledge-based system to support innovation. A residence hall will be set up to accommodate the increasing number of international students while new and attractive study program would be developed (Maull 2010). The Study Mauritius Office is instrumental in putting Mauritius on the world higher education map by assisting in destination branding and building a regional reputation.

Current Activities and Progress

To attract more branch campuses of foreign higher education institutions is the major strategy to establish Mauritius as a higher education hub. As of 2012, seven foreign universities have set up branch campuses in Mauritius. They are Middlesex University (UK), Vatel Hotel School (France), Birla Institute of Technology (India), London College of Accountancy (UK), NIIT (India), Limkokwing University (Malaysia), and JSS Academy (India). Additionally, there are more than 50 private local tertiary education providers in Mauritius that work closely with foreign universities. Most of these private institutions are local counterparts of overseas institutions and offer programs ranging from sub-degree to postgraduate. The collaboration form takes a mixed-mode system including both distance learning and face-to-face tutorials (Tertiary Education Commission 2010).

Mauritius' education hub framework indicates that the country sees itself primarily as a student hub. The emphasis is clearly on recruiting more international students and foreign branch campuses which provides increased access for local, expatriate, and international students. It is too early to determine how serious and successful Mauritius plans are to become a reputable center for high-quality education and research. A huge increase in the number of international students requires a significant and sustainable investment in the physical, human, and academic program and technological infrastructure of the tertiary-level sector. There is little doubt that Mauritius is striving to increase its international higher education profile. However, whether their efforts will be seen primarily as a stronger more aggressive international student recruitment strategy or a well-respected education hub where local and international actors working closely and purposefully on a well-articulated cross border higher education and research agenda is yet to be seen.

Bahrain

Bahrain is an archipelago of 33 islands located in the Arabian Gulf, to the east of Saudi Bahrain. It covers a total area of about 800 km^2 and has 161 km of coastline with a population of 1.2 million people (GCC 2012). It is an oil exporter. As of

Table 10.3 Private higher education institutions in Bahrain (including international branch campuses)

University	Starting date	Source country of branch campus
The Gulf University	2002	
Al-Ahlia University	2003	
University College of Bahrain	2002	
Applied Science University	2002	
Birla Institute of Technology International	2002	
Arab Open University/Bahrain Branch	2003	
The Kingdom University	2004	
Delmon University for Science and Technology	2004	
The Royal University for Girls	2005	
International branch campuses		
AMA International University of Bahrain (IBC)	2002	Philippines
New York Institute of Technology (IBC)	2003	USA
Bahrain Medical University Irish Surgery College (IBC)	2004	Ireland

Source: The private higher education institution information is from Al-Khalili (2008) IBCs information from the OBHE (2012)

2012 the GDP is estimated as 20.2 billion dollars, leading to per capita of US $15,560 (Economist Intelligence Unit 2012). The government type is constitutional monarchy. Islam is the major religion and Arabic is the main language across the country.

Higher Education System

Three national agencies are directly associated with the higher education system in Bahrain. The Higher Education Council ensures that legislative and regulatory requirements are in place; it also has responsibility for the overall steerage of the sector to ensure that national policy objectives are met. The Quality Assurance Authority for Education and Training (QAAET) conducts external reviews of quality assurance of higher education institutions and assesses the quality of programs focusing on whether or not graduates have acquired appropriate level of skills and knowledge (Dowling 2011). The Bahrain Qualifications Framework ensures that program qualifications are at the right level and adhere to unit standards and level descriptors.

There are 4 public and 12 private higher education institutions in Bahrain. The four public universities were established between 1975 and 2002, while the private institutions are more recent as they were all established since 2000 (IAU 2012). Table 10.3 illustrates that of the private universities nine are local and three are branch campuses of foreign institutions.

Awareness of the need for economic sustainability and the unfavorable agricultural conditions has led the government to pursue a development strategy that has resulted in Bahrain being one of the most diversified economies in the Gulf. In this regard developing Bahrain as an education hub through its Higher Education City project is an innovative new development.

Sponsors and Rationales

In late 2006, Bahrain announced its intention to become a higher education hub at a total cost of $1 billion. The Bahrain Executive Development Board (BEDB) made the announcement after agreeing to jointly undertake this major initiative with the Kuwait Finance and Investment Company (KFIC). According to the agreement signed by the two organizations, the KFIC was to be the project's main investor and developer. This was an early start to the project, but it appears to have been stalled and has not yet reached its full potential.

The drivers and anticipated benefits of the Higher Education City are diverse. The primary rationales for education hub project are (1) to provide a technologically skilled workforce for the current and future labor market in Bahrain and the region and (2) to help the government leverage increased direct investment into the Kingdom.

The macro policy which guides the establishment of the project is Bahrain Vision 2030, a national project for economic and education reform. Vision 2030 has been developed in consultation with over 1,000 Bahrainis from the public sector, private sector, academia, and civil society. It covers the period from 2008 to 2030. The Vision has been underpinned by a national economic strategy detailing strategic initiatives across a range of sectors which together will deliver the long-term aspirations outlined within the Vision.

Plans for Being an Education Hub

Plans for education hub development include the establishment of laboratories, an international center for research, several branches of foreign universities, and a specialist academy. The courses offered focus on three areas of study: engineering, business, and science disciplines. According to the original plans of the Higher Education City, it would incorporate all the required infrastructures and facilities including scientific laboratories. The education hub was planned as a truly integrated, state-of-the-art center for science and learning. These plans are strategic and ambitious but to date have not been realized.

According to the data available on the website of Ministry of Education, there are nearly 7,000 international students studying in Bahrain during the academic year of 2011–2012 which approximately accounts for 21 % of the total enrollment in 2012.

Table 10.4 Number of higher education students (including international students) in Bahrain

	2006–2007	2007–2008	2008–2009	2009–2010	2010–2011	2011–2012
Total number	12,457	26,991	30,325	24,767	34,689	32,327
Number of males	10,433	15,543	17,139	13,541	15,830	12,762
Number of females	8,024	11,448	13,286	11,226	18,859	19,564

Source: Secretariat General of the Higher Education Council (2012)

Table 10.4 indicates the development of student numbers of all the higher education institutions in Bahrain.

Work in Progress

Other than diversifying and strengthening the current labor market, another major objective for Bahrain's higher education hub is to enhance the international student numbers. To this end, attracting and establishing branch campuses of internationally renowned higher education institutions was a priority. A branch of the Philippine AMA International University opened in Manama, Bahrain's capital in 2002, and currently offers four bachelor's and two master's programs in computer science, international studies, business informatics, and engineering. The Royal College of Surgeons in Ireland has been operating its "constituent university," the Medical University of Bahrain since 2004. India's Birla Institute of Technology has established a branch campus as a private institution with government approval in Bahrain. The New York Institute of Technology (NYIT) has operated in Bahrain since 2003 and opened a new purpose built branch campus in Adliya in June 2005 from where it offers programs in business administration, computer science, and interior design at both the undergraduate and postgraduate levels (OBHE 2007).

The growth of Bahrain into an education hub is not without its major challenges. In late 2008, the Sorbonne University in Paris announced that it would be the first tenant of Higher Education City. The University College Bahrain, which was previously supported by Canada's McMaster University, also once appeared to be offering degrees in collaboration with the American University of Beirut. In 2007 the German Hannover University declared that it would support the establishment of a new institution, the "Euro University." Specializing in environmental sciences, the new university was scheduled to open in September 2007 (Baby 2007). However, by reviewing the current status of the development of Bahrain's education hub, these plans seemed to have been stalled for various reasons.

In 2009 Bahrain launched a Science and Technology Park aiming to attract regional and international businesses working on new technologies such as renewable energy, environment, information and communication, and clean technology (Munden 2009). The project has been financed by the Kuwait Finance House and is expected to be completed in 2015. It is believed that the Science and Technology Park would open new horizons for foreign investment. It is reported that the Science

and Technology Park would contain more than one million square meters of business, entertainment, and education facilities, and its major objective is to promote investment in key technologies such as transport. The focus sectors are ICT and health care and medicine (EUROPE 2010). However, again there are no more recent reports on the current development of the Science and Technology Park after 2010. The announcements do not appear to be translated into concrete actions and accomplishments. Therefore, the possibility of Bahrain turning itself into a full-fledged education hub is doubtful in the short term and the future remains to be seen.

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Chapter 11
Comparative Analysis of Education Hubs

Jane Knight

Introduction

The education hub case studies have clearly demonstrated that 'one size does not fit all'. While there may be some similarities across the countries in terms of driving rationales to become an education hub, the approaches, plans, and strategies differ according to the priorities and local context of each country.

The purpose of this chapter is to undertake a crosscutting comparative analysis of the six hub countries. The four emerging hub countries are included on several points of analysis, but in general there is less information available on these case studies given their more recent state of development. It is important to note that the comparative analysis respects the differences among the countries given the critical role that local culture, governance, and history play in determining the goals and approaches to education hub development. Additional context issues include the ethnic makeup of the population, the maturity of the education system, and the economic development priorities. The crosscutting analysis builds on the framework discussed in Chap. 3 and aims to examine features which characterize the different types of hubs and identify key factors for their development. The purpose is not to rank or rate the achievement of the individual country hubs. Each hub is a unique constellation of drivers, politics, investments, and actors, and the richness comes from looking at the differences and similarities, not in determining a hierarchy of accomplishment.

The fact that the comparative analysis focuses on country-level hubs means that whenever possible, national-level vision, strategic planning, and policy documents

The analysis presented in this chapter is based on the information and data gleaned from six case study chapters, the emerging hub chapter, and an informal survey and interviews with the case study authors.

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are involved. There are exceptions such as UAE where the majority of the planning and implementation is done at a subnational level. With country-level hubs, the number and location of different initiatives can vary. This applies to the larger countries such as Malaysia, UAE, Korea, and Botswana. A country-level hub differs from a zone- or city-level hub as the latter generally involve a specific geographic area and co-location of actors. Planning documents are also critical to zone- and city-level hubs, but they encompass a more localized jurisdictional level and are therefore more difficult to compare with national policies.

The key themes which are addressed in the comparative analysis are the following: the dates of establishment and operation, the degree of progress, the planning and implementation approaches used, rationales, policy sectors, influential actors, and beneficiaries.

Date of Establishment and Progress

The number of years a country has been building itself as an education hub has enormous influence on the evolution and progress of hub development. Even though a master plan or some kind of strategy is critical to success, there is no question that hub building is an evolutionary process which includes unanticipated opportunities and changes along the way. For example, the economic crises of 2007 and 2012 have had a significant impact in several countries, especially on Botswana's plans to become a centre of education activity. The first step is to look at the founding dates and general lines of progress as illustrated in Table 11.1.

Qatar and Singapore are the first countries with a clear vision of becoming an education hub having announced their intentions in 1995 and 1998, respectively. Over the last 17 years, Qatar has made substantial progress in developing its Education City, Qatar Science and Technology Park, and the new research facilities and programmes. Singapore has also made an impressive degree of progress starting with the establishment of the Global Schoolhouse project in the early years and transitioning into a research and innovation intensive hub by 2012.

In 2003–2004, UAE and Hong Kong declared their plans to become a recognized centre of education excellence and programmes. Of these two countries, UAE has

Table 11.1 Founding dates and progress of country-level hubs

	Qatar	UAE	Hong Kong	Malaysia	Singapore	Botswana
Announce	1995	2003	2003	2007	1998	2008
Implement	1995	2003	2008	2007	1998	2008
Progress	High	High	Low	Mod–high	High	Low
Current type of hub	Talent/student	Student/talent	Student	Student	Knowledge	Student
Aspiration	Talent/ knowledge	Talent/ knowledge	Talent	Talent/ knowledge	Knowledge	Student/ talent

Source: Knight (2014)

made significant progress towards realizing their goals, while Hong Kong is still in early stages of development. Malaysia's announcement of education hub plans was in 2007, and it is has moved forward in a remarkable way, partly because it already had a foundation of international branch campuses and students to build on and partly because of the strong political will. Botswana is one of the later countries to announce its plans in 2008. It is slow in making visible progress given its rather complex plan to develop six hubs, one of which is education whose purpose is to supply the other industrial hubs with the necessary talent.

The picture blurs when examining the founding dates for the emerging hubs. For instance, Korea started work on Songdo Global Education University Campus in 2003 and Jeju Global Education City in 2009. Progress has been slow and Korea has not yet reached its full potential as an education hub. Hence, in spite of its early start date, it is still as an emerging hub almost 10 years after its first announcement. Bahrain is another interesting example. It first announced its education hub plans in 2006, but there have been few concrete developments since, and one questions whether it is an emerging hub that has stalled or whether the claim to education hub status was more of a branding exercise than a serious endeavour. Both Sri Lanka and Mauritius announced their plans in 2011 and are in the very early stages of development. It is definitely too early to determine if these are serious projects or merely international education marketing efforts designed to recruit more international students.

Table 11.1 identifies what type of education hub each country is as of 2012 and notes medium to long-term aspirations. The categorization of the education hubs into student, talent, or knowledge/innovation is suggestion only. Many factors help to determine whether an education hub is oriented to student, talent, or knowledge/innovation purposes. These key elements include drivers, rationales, objectives, plans, policies, regulations, as well as concrete activities and accomplishments to date. The categorization of the hub types is examined in more detail at the end of this chapter, but this initial categorization of hub type as suggested in Table 11.1 is intended to help with the first steps in the crosscutting analysis.

Plans, Policies, and Regulations

As discussed in Chap. 2, two key concepts in the definition of an education hub are 'planned' and 'strategic'. These concepts indicate that hub development is not an ad hoc process and that there should be some evidence of solid strategic planning. Table 11.2 provides an overview of the key planning, policy, and regulatory documents that have been used by each country as discussed in the case study chapters. Four types of documents have been identified: (1) a *national vision* or plan which identifies the need, rationales, and priorities of the country and how they are linked to education hub development; (2) *national-level policies* and plans from different sectors such as education, economic, or human resource and how they relate

Table 11.2 Influential policies and regulations shaping hub development

	Qatar	UAE	Hong Kong	Malaysia	Singapore	Botswana
National vision or plan which addresses education hub development	Yes Qatar National Vision 2030 (est. 2008)	No Only emirate-level plans – no national-level plan	No Annual Policy Address by Chief Executive 2004/05/09/12	Yes National Vision Policy	Yes Singapore 21 (est. 1999)	Yes Botswana Vision 2016 (est. 1997)
Sector-level plans which include hub	Yes Higher Education Strategy	No Only at emirate level	Yes University Grants Committee Review HE 2010	Yes National Higher Education Strategic Plan 2020 (2007)	Yes Industry 21 platform	Yes HRD strategy (2009) Tertiary Education Policy (2008)
Master/strategic hub plan	By component Developed by Qatar Foundation	At emirate level only That is, Dubai Strategic Plan 2015 (est. 2005)	None	By component That is, EduCity in Iskandar	Yes	–
Operational regulations	Yes Scholarships, intellectual property	Yes At emirate level, i.e. tax incentives, QAA	Yes Scholarships, work/resident permits	Yes Scholarships, QAA	Yes Research guidelines	No

Source: Knight (2014)

to or influence hub development; (3) a *master plan* for the hub or explicit plans for education hub components; and (4) operational-level regulations and policies to guide and control the implementation of education hub plans.

Table 11.2 demonstrates that countries take very different approaches to planning and implementing education hub strategies. For instance, in Qatar, the National Vision 2030 includes the positioning of Qatar as an education hub in the region and to that end the Qatar Foundation has been identified as the national leader to oversee all aspects of the education hub development. UAE, by contrast, has no national plan or coordinating mechanism for becoming an education hub. All work is done at the emirate level with Dubai and Abu Dhabi taking the lead. Interesting enough each emirate has developed its own individual approach to investments, priorities, and actions. The fact that Dubai has developed two education free zones to attract providers and students differs from Abu Dhabi's approach which is to invite and finance world-renowned universities. Hong Kong has been heavy on the pronouncements of education hub plans but light on actual planning and concrete implementation steps. Malaysia has a multifaceted approach to hub development involving many actors and initiatives and is consequently guided by a series of different policy and regulations all of which support hub development. However, an overall county-level hub master plan still seems to be absent in spite of the numerous initiatives underway. Botswana has been guided by a National Vision document and supported by sector-level strategies as well as a hub master plan. In spite of a comprehensive planning approach, there seems to be limited action when it comes to implementation. In terms of the emerging hubs, Korea has identified two priorities – Songdo Global University Campus (SGUC) and Jeju Global Education City (JGEC). The policies and plans are at the component level only given the absence of a national plan. Sri Lanka and Mauritius are focusing all of their efforts on international student recruitment plan, and it is still questionable whether their efforts are in fact anything more than a marketing and recruitment effort.

Table 11.2 suggests that all countries except UAE and Hong Kong have a vision document that specifically addresses the importance and role of being an education hub for national development purposes. It is interesting to speculate what impact a national vision or even sector plan would have in UAE. Would a more systematic and coordinated planning and policy approach result in an enhanced hub initiative or has the absence of a national plan allowed each emirate the freedom to develop its own approach? In one sense, UAE is highly regarded as a successful education hub given that it hosts the largest concentration of international branch campuses in any one country. But, on the other hand, it is not possible to estimate the impact if a more strategic and unified approach was taken. In general, a high-level vision or policy document recognizes the importance and benefits of being an education hub, but in reality it does not always translate into concrete action. Hong Kong is an example of this and perhaps Bahrain as well.

While vision- or sector-level policy documents speak to the priority assigned to hub development, the actual hub master plan and operational regulations translate intention into reality. It is revealing that only Singapore and Botswana actually have a hub master plan. In Singapore, it has definitely resulted in a success and

recognition of Singapore as an education hub. In Botswana, it is early to say, but progress has been modest since the first announcement of hub plans in 2008. Thus, vision statements, sector-level plans, hub master plan, and operational regulations are important assets but not enough. Political will and investment in hub activities are equally important. For example, financing for incentives to recruit education providers and R&D companies, student scholarships, research funding programmes, and physical infrastructure are additional prerequisites. Equally important is the endorsement and involvement of the community in local/foreign collaboration as it is these interactions which help to make an education hub flourish.

Planning and Implementation Approaches

The analysis of key policy and regulatory documents, as discussed in the previous section, leads to the question of what kind of approach these countries take to planning and realizing their education hub ambitions. Figure 11.1 provides a comparative perspective on the country approaches and consists of two horizontal axes. The first axis represents a *planning approach* continuum from a reactive stance through to proactive and strategic. The 'reactive' position indicates that a country is responding to trends, opportunities, and external factors that make a hub attractive. The 'proactive' approach denotes deliberate attention and action to ensure that an education hub can help to meet specific objectives. The 'strategic' outlook is a more calculated, and informed approach focused on how an education hub is linked to national plans and priorities for development.

The second horizontal axis in Fig. 11.1 represents the *implementation approach*. The 'fragmented' approach involves each hub component being dealt

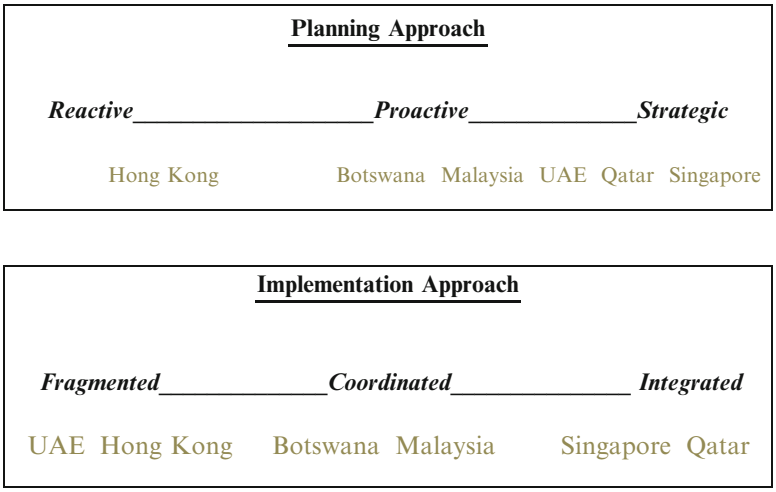

Fig. 11.1 Planning and implementation approaches (*Source*: Knight 2014)

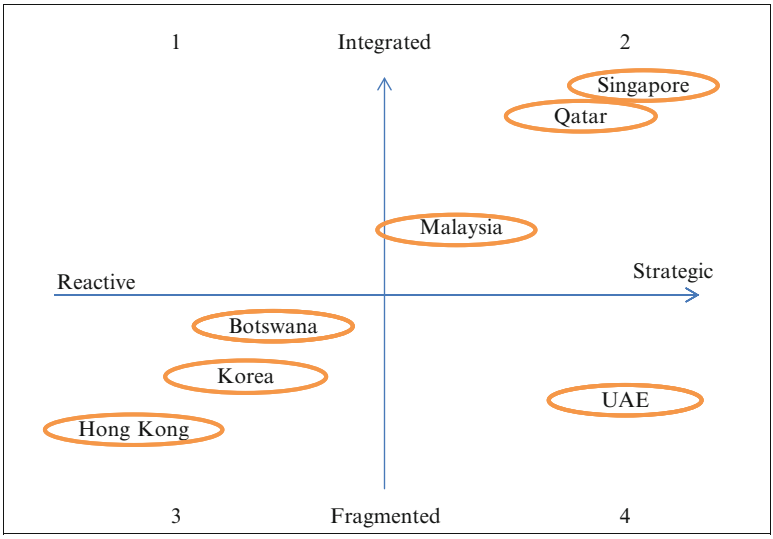

Fig. 11.2 Planning and implementation positions of education hub countries

with separately. The midpoint suggests some degree of 'coordination' among the various hub initiatives. The 'integrated' approach involves a deeper and more systematic level of collaboration among the hub components to attain the added value that comes from the 'whole being greater than the sum of its parts'. Figure 11.1 shows where each country more or less sits on both axes as determined by the information provided in the case study.

Figure 11.2 combines the two axes. The horizontal axis denotes the planning approach and the vertical axis indicates the implementation approach. When combined, they permit an analysis to determine which quadrant best characterizes the overall approach of each country. It is clear that Hong Kong and Botswana are in the reactive quadrant (third) taking a more fragmented approach to implementing their plans. This may help to understand why their overall progress is low to moderate. On the other hand, UAE is between proactive and strategic in its planning approach, but the lack of any systematic coordination among the emirates positions it in the fourth quadrant. The second quadrant indicates a stronger strategic planning approach and a more coordinated or integrated path to implementation. Qatar and Singapore are located in quadrant two because they show the greatest progress towards a strategic/integrated approach. Malaysia is also located in quadrant two but is closer to a coordinated approach than a strategic approach given their absence of a hub master plan.

The emerging country hubs of Sri Lanka and Mauritius are not positioned in the diagram as they are not far enough along towards implementation. However, Korea has made substantial progress with Songdo Global University Campus but would be located in quadrant three given their rather fragmented approach.

Driving Rationales

A study of key rationales reveals a great deal about why, how, and in what direction a country is heading with its education hub. As discussed in Chaps. 2 and 3, there are five major categories of rationales driving education hubs: (1) education and training, (2) research, (3) economic, (4) human resource development, and (5) status. Each major category can be subdivided into sub-rationales as noted in Table 11.2. The case study chapters permit a close examination of both explicit and implicit motivations and tell an interesting story as to why a country is building itself as an education hub and, secondly, if the actors, plans, and accomplishments are coherent and consistent with the rationales.

Table 11.3 provides an impressionistic review of the importance of each rationale per country. The term impressionistic is used because the analysis is based on the interpretation of the information provided in each case study. By looking at the bolded boxes in Table 11.3, it is evident that the number one rationale is economic. There are three sub-rationales included in the economic group. The one that stands out as the most important is the need to diversify the economy by shifting to knowledge- and service-based one. The economic diversification rationale applies to all country hubs albeit at different levels of importance. For four countries, Hong Kong, Malaysia, Botswana, and UAE, the drive is to strengthen the education industry, and ultimately revenue generation is of secondary importance, while attracting foreign direct investment is important for UAE and Botswana.

Table 11.3 Ranking of rationales by country

Rationales	*Overall rank*	*Qatar*	*UAE*	*Hong Kong*	*Malaysia*	*Singapore*	*Botswana*
Economic Diversify economy Income generation Attract investment	1	M	**H**	M	**H**	**H**	**H**
Education and training Quality of HE system Access for students Skill training	2	**H**			**H**	L	**H**
Skilled work force Attract foreign talent Retain local/foreign workers Prepare skilled work force	3	**H**	**H**	M	L	**H**	M
Status Recognition in region/world Improve competitiveness Geo-political influence	4	L	L	**H**	M	**H**	L
Research Knowledge production Innovation application	5	**H**	L	L	L	**H**	L

Source: Knight (2014)
H high, *M* medium, *L* low

The second most important rationale is education and training. Four countries including Qatar, UAE, Malaysia, and Botswana make this a high priority. Education and training rationales include three subgroups: (1) improving the overall quality of education; (2) increasing access to higher education opportunities for local, expatriate, or international students; and (3) educating and training workers with the skills needed by industry. This ranking of rationales is consistent with the fact that the majority of countries see themselves as a student-type education hub which focuses on the provision of education and training programmes and services (see Table 11.1).

Developing a skilled workforce ranked third in importance. This rationale applies to all countries because of the desire to shift their economies to knowledge and service sectors, and a fundamental requirement is having the necessary talent pool. A skilled workforce ranks high for both Qatar and UAE given their heavy dependency on expatriate workers. Singapore is a different scenario as they are actively seeking out foreign scientists and knowledge workers to fuel their drive to produce new knowledge and innovations.

The status and branding rationale sits in fourth place and is higher for the four countries in Asia. This may reflect the rather competitive playing field in this region with four countries plus Sri Lanka aiming to be an education hub. Particularly noteworthy is that both Qatar and UAE rank status lower even though increasing their attractiveness and competitiveness in the region is high on the agenda.

Finally, research and knowledge production ranks as lowest of the five groups of rationales. Only Singapore and Qatar rate this rationale high which is consistent with their strategic approach of moving towards a knowledge- and innovation-based economy. Worth noting is that these two countries have the longest experience in hub building. Of interest is that Malaysia rates research high on its list of rationales, but to date, their plans, policies, and actions do not support this. It seems to be a longer-term aspiration.

This analysis of rationales points out that economic reasons are the key drivers for education hubs – even though the economic reasons vary from country to country. Secondly, education and training motivations are of secondary importance with improving quality of the higher education system and increased access being top reasons. The skilled workforce is a close third as the importance of attracting, training, and retaining talent is absolutely critical to moving towards knowledge- and service-oriented economic base. Status is fourth and relates to the soft power and geopolitical influence and position in the region and beyond. This is a more difficult rationale to pinpoint as it means very different things to different countries and sectors. Suffice to say that the current obsession with higher education rankings may be influencing hub development especially in terms of attracting world-renowned institutions and the most promising and accomplished scholars and students. This particular rationale is prevalent but would benefit from more in-depth examination. Finally, research ranks as the fifth most important rationale and is usually interpreted to mean knowledge production and its applications for society through innovation. These are important levers to move away from a dependency on natural resources or manufacturing to knowledge- and service-oriented activities.

An in-depth analysis of the six country hubs plus the four emerging hub nations reveals a plethora of individualized rationales. This is to be expected given the different contexts and circumstances of the host countries and the international engagement of their higher education systems. The five rationales described in this section only address the most common and important ones but should overshadow those that are specific to the conditions of each country. For example, Qatar is the only country which identifies increased cultural exchange and understanding as a primary rationale for their education hub work.

Investment: Domestic/Foreign, Public/Private?

Countries that are serious about their education hub development require significant investment to jump start the projects and sustain them. The three major types of investments in hub development are (1) domestic public investment, (2) domestic private investment, and (3) foreign private investment. Foreign public investment is not listed because to date it has played a very minor role. The costs of foreign public universities establishing branch campuses can be considered as a kind of public foreign investment, but even this kind of financing is interpreted to be foreign private investment according to international trade law. It is difficult, if not impossible, to get reliable data on the amount or percentage of investment for each of the three categories. Only estimates are available and thus not robust or reliable. Nevertheless, the estimates suggest that public domestic investments are the most important. The most significant public financing comes from government investment agencies such as TECOM in Dubai and Khazanah Nasional from Malaysia. It is challenging to be precise about the actual amount provided by these government investment bodies because they in turn attract private domestic and foreign investment.

While domestic government investment agencies are the most important financiers of education hubs especially for building infrastructure and facilities, government departments also contribute substantial programme and operating costs. It is estimated that the percentage of *public* domestic investment ranges from as much as 98 % in Qatar to negligible in Botswana. The amount of *private* domestic investor is equally difficult to pinpoint, but it ranges from about 50 % in Hong Kong to only 2 % in Qatar. The level of foreign private investment is surprisingly low and seems to be limited to the actual setup and operational costs of foreign education and training institutions, R&D agencies, and foreign companies. It is suggested in the case study chapters that there is as much as 20 % of foreign private investment in both Hong Kong and UAE, about 5 % in Malaysia, and zero in Qatar.

It is clear that each country has its own capacity and strategies to fund education hub initiatives. Qatar is an interesting but unique model. As noted in the Qatar chapter (Chap. 4), all physical infrastructure and facilities are provided for foreign branch campuses and companies located in Education City and the Science and Technology Park. Furthermore, 100 % of the sizeable operating costs for the eight branch campuses and the two international colleges are covered by the Qatar Foundation.

In addition, generous research grants are provided to home campus institutions as well as the branch campus. The annual operating costs to support Education City, Science and Technology Park and the extensive array of research programmes and grants are the total responsibility of the Qatar government and are extremely high. Is this government full funding model sustainable and is it optimal? In essence, Qatar is importing and purchasing all the education programmes, service, and research for the education hub activities. Furthermore, if asked whether this model is replicable in any other country, the answer is probably no or only in small rich nations like those in the Gulf region. A pivotal question is how long can or should a country attempt to build and strengthen domestic capacity by purchasing and importing foreign expertise. It has been 17 years since Qatar first started its work on inviting select foreign universities to establish specific programmes in Education City. Is this the first phase of Qatar's long-term plan to develop more domestic human resource capacity as it loosens its reliance on natural gas and foreign expatriate talent, or is this becoming modus operandi? The next phase in Qatar's hub development is yet to be seen, but it is questionable and perhaps even advisable, whether it can continue with the present model indefinitely. Will a new model focus on bringing all the branch campuses included in Education City into a new Qatari higher education institution? Will a multinational university or an 'edu-glomerate business' be created by building or strengthening a common link among the foreign institutions? Different models can be imagined, but there is no concrete signal as to what is the next step.

The UAE offers a completely different set of circumstances in terms of funding, investments, and revenue generation. As previously noted, each emirate has developed its own approach to making UAE an education hub. Abu Dhabi has invited world-renowned institutions such as New York University and the Sorbonne to set up a branch campus in customized facilities provided by Abu Dhabi. In addition, MIT was invited to help develop and advise on the development of Masdar City, the first carbon-free zone in the world. Masdar City hosts world-class research facilities, scientists, and graduate programmes, all of which are supported by the Abu Dhabi government or ruling family. This represents an enormous domestic public investment. Dubai is a different story. Dubai Strategic Plan called for the establishment of several theme-based economic free zones. Two of these are education focused – Knowledge Village and Dubai International Academic City. TECOM, the investment arm of the Dubai government, is mandated to build the physical infrastructure and facilities for these zones and recruit reputable foreign institutions and training companies. As explained in the UAE chapter (Chap. 5), the tenants of these zones enjoy attractive tax and regulatory incentives to set up operations and offer their education and training programmes. Unlike the situation in Qatar and Abu Dhabi, the foreign institutions and providers do not have their operating costs subsidized and they pay rent for the use of common facilities. It is estimated that in Dubai's two economic free education zones, the public domestic investment is about 80 % and private foreign investment is about 20 %. The amount of revenue generated from facility rentals for TECOM and from tuition fees for branch campuses/private training companies is not known, but given that these zones are

relatively stable and operating at full capacity, the funding formula seems to be working. An interesting new development in Dubai International Academic City (DIAC) is the construction of a stand-alone campus by Manipal University and Heriot-Watt University. These long-time resident institutions of DIAC are confident enough to move out of rental facilities and cover the costs of building their own facilities. This is an example of how private foreign investment is increasing, but they are isolated cases, not a trend.

Hong Kong presents yet another scenario. The government has made limited public investment into hub development since it first announcement in 2004. Overall, there has been little progress to date making one ask if the hub plan is more rhetoric than reality. However, as of 2012, a plot of land has been set aside for domestic or foreign universities to set up a branch campus. Unfortunately, there is no concrete information as to whether Hong Kong will fund the building of the infrastructure and physical facilities as has been done in most of the other hub countries or whether the tenant universities will be responsible for building their own facilities. The primary public investment by Hong Kong has been in the form of scholarships to attract international students, most of whom come from China. From the policy side, Hong Kong has developed new regulations for residency permits. Thus, since the first policy statement announcing Hong Kong's goal to be an education hub, public domestic investment has been surprisingly low and foreign investment negligible. Perhaps the lack of major public or private investment is responsible for the apparent lack of major progress.

The public investment of the Botswana government, beyond engaging in a fairly sophisticated planning and consultation process, appears to be small. Botswana hub plans are still on track but have been negatively impacted by the 2008 and 2012 economic crisis. As discussed in the Botswana chapter (Chap. 9), the education hub is one component of a rather complex six hub model. The education hub is countrywide in scope, while the other five hubs are zone specific and are focused on industry sector priorities. The efforts by the Botswana government thus far have included a new international student recruitment plan, the development of a new university – the Botswana International University of Science and Technology (BIUST) – and the promotion of international partnerships between foreign and domestic institutions. Given the early stages of Botswana's hub development, it is difficult to determine the extent of the public/private and foreign/domestic investments.

The financial investments in Singapore's hub building activities since 1998 are impossible to determine due to the lack of any published information on public/private or domestic/foreign sources. Therefore, no conclusions can be drawn. As discussed in the Singapore chapter (Chap. 8), the overall impression and assumption is that domestic public investments have fuelled the education hub development especially the setting up of foreign universities. Worth noting is that the role of the Singapore government has been referred to as 'venture capitalist' in terms of its role in bank rolling the education hub efforts.

The situation in Malaysia is complex given the number of different components to the hub strategy. Malaysia has been home to five branch campuses for almost a decade, and two more have been recently established. Both private foreign and

domestic funds were used to fund these initiatives. But, with the establishment of an economic free zone in the form of EduCity @ Iskandar, there has been serious investment by the public investment arm of the government, Khazanah Nasional. It has funded the building of infrastructure and education facilities to attract international institutions. Malaysia has experienced a striking increase in the number of international students enrolled in public and private higher education institutions. Public funds have been used to provide scholarships, yet on the other hand, international student tuition fees represent a major private investment in the country. In general, it is estimated that public domestic investment represents 50 % of the funding, complemented by 40 % of domestic private investment. The remaining 10 % is made up of foreign private investment and other sources.

The analysis of the different hub case studies leads to the conclusion that public domestic investment is critical to the development of education hubs. Hub building also requires private investment from domestic and foreign sources, but the importance of government support to kick start and leverage other sources of financing should not be underestimated. UAE and Malaysia are examples where initial public investment has paid off and attracted other streams of private funding. Hong Kong, where there appears to be little progress after almost a decade of policy announcements, has suffered from the lack of any coordinated leadership among the actors and the absence of major public investments – except by the individual public higher institutions in terms of their efforts to attract international students. Singapore and Qatar present other models where financing of education hub activities has been done primarily by the government (or ruling family), and over the last 15 years much has been accomplished. Of course, the sustainability of such funding and the ability to replicate this model in other nations are two unanswered questions.

Active Policy Sectors

As discussed in Chap. 3, an analysis of the key actors and policy sectors involved in education hub development sheds light on the priorities and strategies. A review of the case studies shows a diversity of active policy sectors which include education, trade and export, science/technology, human resource development or labour, foreign affairs, immigration, economic development, industry, culture, and heritage, among others. An examination of which sectors are taking a lead role in hub development gives clues as to the driving rationales as well as the kind of expected outcomes. This in turn provides corroborating evidence of the type of education hub a country is or aspires to become. Table 11.4 identifies and compares the policy sectors which play a primary, secondary, or minor role for each of the hub case studies. It is revealing to see that education is not necessarily the prime policy sector influencing the education hub development.

Hong Kong identifies education as the primary policy sector for hub development with secondary importance going to trade/export, economic development,

Table 11.4 Comparison of policy sectors involved in each hub case study

Country	Primary role	Secondary role	Minor role	No role
Qatar	Education, HRD, science/technology, finance/investment	Foreign affairs, economic development, industry	Culture and heritage	Trade/export, immigration
UAE	Trade/export, HRD, economic development, finance/investment	Education, HRD, industry	Science/technology, foreign affairs, culture and heritage	Immigration
Hong Kong	Education	Trade/export, science/technology, economic development, HRD, and immigration	Foreign affairs, finance/investment, culture and heritage, industry	–
Malaysia	Education, HRD, industry, immigration, finance/investment, economic development	Foreign affairs, science/technology, trade/export	–	Culture and heritage
Singapore	Science/technology, HRD, foreign affairs, immigration, economic development, industry	Education, trade/export, finance/investment	Culture and heritage	–
Botswana	Education, trade/export, finance/investment, economic development, HRD, industry	Foreign affairs, science and technology	Immigration, culture and heritage	–

Source: Knight (2014) based on information from case studies and interviews

HRD, and immigration sectors. These sectors closely align with their goal of strengthening higher education as a successful industry and attracting foreign students and scholars for academic and employment purposes.

In contrast to Hong Kong, Singapore sees the primary policy sectors as science and technology, human resource development, industry, as well as economic development. The education and trade/export sectors are seen as secondary in importance. This reflects the priority that Singapore gives to international research projects and commercial application of new knowledge. Recruiting and retaining foreign talent is a fundamental, albeit somewhat controversial, element of the hub strategy and explains the importance Singapore attributes to the human resources sector. It is interesting to note that Singapore is the only country which ranked foreign affairs as a primary policy sector. This may be directly linked to the importance they attach to perceived status and recognition as an education and knowledge hub within the region and around the world.

United Arab Emirates provides yet another variation in key policy sectors, particularly at the emirate level. Once again, education is not seen as a primary sector. Dubai in particular attributes a high level of importance to the human resource development, trade/export, and economic development sectors which is consistent with their emphasis on developing talent through international branch campuses and foreign training companies. This reflects their status as a student hub with aspirations to becoming a successful talent-oriented education hub. Worth noting is the role that culture/heritage policy sector plays in UAE. Even though it is ranked as minor in importance, it has a major role due to the large number of expatriates studying and working in the country and the need to have an explicit 'emiratization' policy in place. The support of UAE culture and values among the domestic population is becoming more of an issue given the influx and high percentage of foreigners from all corners of the globe, especially from South Asia. Finally, secondary importance is given to science and technology, foreign affairs, and trade/export. UAE is ultimately focused on reducing its dependence on oil and expanding its service industry. This demands a highly skilled labour force. UAE sees being an education hub as a means of achieving this goal. In UAE, it is recognized that the most important player in policy development is the ruling family of each emirate.

In Qatar, the royal family also has the most influence on planning and policy for education hub development. The education sector, HRD, science and technology, as well as finance/investment are of high importance, while foreign affairs and economic development are of medium importance, and trade/export, immigration, and culture/heritage are of low importance. It is clear that Qatar does not see education as a tradable service designed to increase revenues. On the contrary, Qatar sees education as an investment to develop the human resources of the country, especially Qatari citizens. While Qatar and UAE share the same belief in the importance of the education sector, they different substantially in terms of other key sectors. Qatar ranks science and technology high due to the goal of developing a research culture and expertise in the country, while UAE, and more specifically Dubai, not Abu Dhabi, sees it of lesser importance.

In the case of Korea, an emerging hub, the three most important policy sectors are education: science, technology innovation, and finance/investment. This coincides with their desire to be a student hub in the first phase and move towards being a more knowledge- and research-based hub in the future. Korea, unlike the other education hub countries, does not make attracting foreign talent a major priority. Therefore, HRD and immigration sectors are not important. Korea's main goal is to decrease the number of Korean students going abroad for education and employment and thus efforts to keep them at home by providing high-quality foreign education and training in Korea.

The comparative analysis of key policy sectors stresses two important points. The first is that while education may be the most common sector, it does not always take the lead and it has to work in conjunction with other influential policy areas. Collaboration among different policy sectors is not always straightforward as different and often competing agendas are at play. Nevertheless, collaboration among the sectors is critical and a major issue for successful hub planning and implementation. The second point is that different types of education hubs (student, talent, knowledge/innovation) demand a different assemblage of policy sectors. This is further influenced by the overall national vision or multiyear plan and the economic development agenda. The role and figuration of policy sectors in education hub development is instrumental to understanding the development of an education hub. It is a complex and usually politically sensitive issue and worthy of further investigation and analysis.

Influential Actors

The previous section addressed the policy sectors actively involved in education hub development. This section addresses the types of actors who are most influential. Actors come in different shapes and sizes. They can be public or private, foreign or domestic, local or national, governmental or non-governmental, and providers or funders. Overall, there are specific actors that are consistent across all hub countries and all hub types. The most important actors are the local government departments as well as non-governmental organizations – not private companies. The important role of these government actors in terms of setting priorities, funding, developing guiding policies and regulations, and implementation should not be underestimated. This is true even where there are economic free zones as these areas also need operating guidelines and financial support even though they are considered to be zones void of onerous regulations. The purpose of Table 11.5 is to illustrate the diversity of actors influencing and shaping the direction and development of each individual hub. Of interest is the different constellation of actors which for the most part reflect the driving rationales and type of hub.

For Qatar and Singapore, local and foreign research funding agencies are seen as key actors. This is consistent with their emphasis on education and knowledge/innovation. For the student hub countries (Hong Kong, Malaysia, and Botswana), it

Table 11.5 Examples of keys actors for county-level education hubs[a]

Qatar	UAE	Hong Kong	Malaysia	Singapore	Botswana
Qatar Foundation for Education, Science and Community Development	Emirati-level government	Ministry of Education and Manpower	Ministry of Higher Education	Research, Innovation and Enterprise Council	National Strategy Office (President's Office)
Qatar National Research Fund	TECOM (Investment Agency)	University Grants Com	Khazanah Nasional	Ministry of Trade and Industry	Botswana Export Development and Investment Authority
Rand-Qatar Policy Institute	University Quality Assurance International Board (Dubai)	Hong Kong Trade and Development Council	Malaysia External Trade Development Corp	Singapore Tourist Board	Ministry of Education and Skills Development
	Knowledge and Human Development Authority, Dubai	Immigration Department	Ministry of Science, Tech and Innovation	Ministry of Education	Human Resource Development Council
		Heads of Universities Committee	Malaysian Qualifications Agency	Economic Development Board	National Credit and Qualifications Authority
		Quality Assurance Council	Malaysian Immigration Depart	Nat Science and Tech Board	
		Research Grants Council		A-STAR	

[a]Examples taken from hub chapters

is not surprising that local and foreign higher education institutions were identified as primary actors. Of lesser importance for all the countries were private (domestic and foreign) investment firms and regional or international bodies. This confirms the finding that at this stage of development, the main investors are primarily public or quasi-public agencies and that regional bodies have very little influence on country-level hub policies or activities. Singapore is a particularly interesting case study as it shows the diversity of actors involved including the Economic Development Board which is seen to take the lead. Other key actors include the Ministry of Education, the Tourism Board, Ministry of Trade and Industry, as well as research councils. As with policy sectors, the diversity of actors shaping and managing education hub initiatives is startling and accurately reflects the complex nature of education hub development and the players needed to make the education hub successful as well as sustainable.

Issues and Challenges

A review of the case studies reveals an interesting mix of pressing issues and challenges. The diversity of issues reflects the cultural contexts, priorities, and the degree of progress in each country. A myriad of issues were raised, but the analysis unearthed 12 major points, some of which are at the macro level of national priorities and trends, some at the meso level of planning and policy making, and others at the micro level of implementation. Each of the key issues is discussed below.

Alignment of education hub initiatives with national needs and priorities was frequently mentioned as a major challenge and was overall ranked as the number one issue. Interestingly it was more prevalent in the Gulf countries and Botswana than in South East Asian hubs. Leveraging and managing adequate financing was ranked number two. Given the high level of domestic public investment across all the hubs, attracting more private investment and ensuring financial sustainability are definitely major challenges.

Education and training level operational issues were ranked in third place. This included issues such as scholarships, curriculum relevance, student support, faculty recruitment, hostel accommodation, recruitment procedures, admission policies, and quality assurance/accreditation. Brain drain or the retention of local and foreign talent was positioned in fourth place and was especially important for Malaysia, UAE, and Botswana.

At the meso level, the coordination of different hub components was ranked fifth in importance and reflects the fact that several countries such as Hong Kong, UAE, and Korea take a more fragmented approach due to the lack of a master or strategic hub development plan. Alignment of education and training with industry needs was identified by the majority of countries as a major driver and challenge for hub development. Attracting foreign partners whether it was for education, training, or research purposes was seen as a key issue for Hong Kong and Botswana, both of whom have experienced limited progress and are still in the early stages of development.

Competition from within the region is a priority issue for the three countries in South East Asia but interestingly not identified as a major challenge for the two Gulf States. For the countries orientated to knowledge production and innovation, primarily Singapore and Qatar, the regulations for intellectual property rights and patents present a significant operational issue.

There are a number of issues that were not common to all the countries but were nevertheless had major consequence for individual countries. Examples of these include cultural identity and language issues for Qatar and to some extent UAE. For Singapore, social cohesion between local and foreign institutions, research companies, training agencies, students, and scholars is an ongoing concern. For countries with a diversity of actors and hub components such as Malaysia, UAE, Korea, and Singapore, the commitment and clarity of roles among different actors and sponsors is a challenge. For Hong Kong, the lack of a major coordinating body is a significant challenge and perhaps barrier to progress.

Finally, there are operational issues related to work permits, visas, immigration, or residency matters which present challenges to many countries albeit they are minor-level issues. Other challenges include graduate unemployment, fly-in academics, qualification recognition, recruitment incentives for tenants in free zones, education tourism, consumer protection, gender balance and integration, changing demographics, role of the employers, commercial, and applied research versus blue sky research. In some respects, these issues are generic to many different forms of cross-border education not just education hubs per se.

It is important to stress that these issues and challenges represent the views and concerns of the hub sponsors and organizers more than the foreign or local higher education institutions, R&D bodies, training companies, students, researchers, faculty members and others.

Beneficiaries

Most of the comparative analysis across the six hubs has been from the host country perspective as the emphasis has been on driving rationales, policy sectors, and influential actors. But, it is equally important to identify the main beneficiaries and the diversity of benefits.

Qatar is an interesting situation given that it falls into the category of a talent/student hub and the primary beneficiaries identified are the local students and the country as a whole. For local students, they now have access to high-quality international education programmes while staying at home. The local education institutions have also benefitted from education reform to improve the standards of their education. The country benefits from building a strong workforce and generating new knowledge through research. Clearly, the benefits accrued have been for the locals and country first. Secondary beneficiaries include regional students who also have access to the international branch campuses located in Education City, local industries that hire graduates and engage in collaborative research, the public sector

which is the largest employer in the country, and finally the health care sector due to their close partnerships with the Weill Cornell Medical College. The local economy has benefited from the construction of the new facilities at Education City and the Qatar Science and Technology Park. It is interesting to note that the companies, research groups, and other tenants in the Science and Technology Park are seen as secondary beneficiaries. This may reflect the early stage of development of research and innovation culture and expertise in Qatar. While the country sees itself on the path of becoming a knowledge/innovation hub, its primary benefits focus on improving the qualifications of the workforce and enhancing the quality of education available to local and regional students.

Malaysia, which is categorized as a student hub, emphasizes local and foreign higher education institutions as primary beneficiaries due to the large increase in the number of international students. Yet both local and international students benefit as they now have increased and affordable access to higher education opportunities. Economic benefits are seen primarily in relation to the international student fees and their expenditures related to housing, accommodation, tourism, airline, etc. It is interesting to note that Malaysia does not link the benefits of international students to increased talent for industry or for economic diversification and competitiveness. This further confirms Malaysia's status as a student hub.

Hong Kong is similar to Malaysia in that the primary beneficiaries are noted as the higher education sector including students and institutions. The recognition of students as a qualified pool of talent for new industry and economic development is not made explicit in terms of benefits to Hong Kong. Botswana is another budding student hub, and it ranks students and education providers, especially private providers, as the main beneficiaries. Second in importance are employers and industry in general. This is critical as Botswana's education hub strategy is designed to provide a qualified workforce to the five industrial-based zones in the country. An additional benefit accrued from Botswana's hub efforts is an improved reputation in the region as a destination for quality education. UAE, on the other hand, focuses on benefits for the students and institutions but acknowledges the benefits to employers, the economy at large, and the reputation of UAE as a destination for higher education and training.

Singapore, being the only country seen as an education knowledge hub, has a broader understanding and spectrum of the accrued benefits and beneficiaries. Foreign students, primarily at the graduate level are direct beneficiaries of Singapore's quality higher education, especially in light of the fact that generous scholarships and tuition waivers are available. Singapore's aggressive talent search for world-respected scientists and scholars brings benefits to Singapore's research and knowledge agenda, but it also benefits the foreign researchers themselves. The long-term goal and benefits are to build Singapore's talent pool and shift the economy to focus on knowledge production and its commercial application. Singapore's strategic efforts to become a world-renowned education and research hub bring benefits to local institutions in terms of generous funding for programme improvement, research, as well as academic salaries.

Economic Free Zones

Worth noting is the number of countries that have established economic free zones as part of the education hub strategy. UAE is best known for the establishment of economic zones in Dubai and Ras al-Khaimah. Dubai Knowledge Village which was established in 2003 and Dubai International Economic City, created in 2007, are probably the most famous zones as they house over 25 international branch campuses. Malaysia has established EduCity @ Iskandar as a free zone which is operational as of 2012. The Science and Technology Park in Qatar operates as an economic free zone but not their Education City. Korea has adopted the economic free zone approach through the establishment of Songdo Global University Campus located in Incheon Free Zone, and as of 2009, Jeju Global Education Campus is also operating within an economic free zone. In Botswana and Hong Kong, no economic free zones have been designated as of 2012, although it may be premature to rule out the possibility of doing so in the future. Singapore, being the longest established education hub, stands out as a country which has also not used the economic free zone model for their education hub development.

Impact

By virtue of the definition, an education hub attracts and involves students, workers, HEIs, research companies, and related industries from other countries in the region and beyond. However, the impact of hub activities may be national, regional, and/or global in scope. Furthermore, the scope of impact can change over time. In terms of the geographic focus of impact, all six hub countries believed that as of 2012 a national-level impact was the reality. However, both countries in the Gulf area believed that their hub activities had influence at the regional level in 2012 and would have global impact in the mid to long term. This perspective differs significantly from Singapore which places national impact as the first priority for the present as well as future. This may be due to the high level of public investment in hub activities by Singapore and the overarching priority given to the importance of diversifying the national economy to knowledge production and innovation. With the noted exception of Singapore, all countries see a global impact of their hub activities in the long term. This is a very optimistic outlook and perhaps may be a signal for increased competitiveness among education hubs in the future. All in all, it may be premature to analyze the contributions and impact of education hub activities, but an overriding issue is how the results are being captured and measured by the education hub sponsors in order to assess impact. If hubs are going to be more than branding or marketing labels, it is imperative that further attention is focused on the actual measurement of outcomes and impact.

The Evolutionary Process of Education Hub Development

The typology, as outlined in Chap. 3, emphasizes that a linear development from student to talent to knowledge is not an expectation or prerequisite. However, this analysis shows that in fact most education hubs start off as a student hub, albeit with different reasons and expectations. Four of the six countries are categorized as student hubs – Hong Kong, Malaysia, UAE, and Botswana. Only Singapore and Qatar are not in the student hub category, but it is interesting to note that when they first began their hub development in the mid-1990s, their focus was primarily on students. For Singapore, it was through the Global Schoolhouse Project, and for Qatar it was Education City. Over the last 15–20 years, these early starters have transitioned into student/talent hub for Qatar and knowledge and innovation hub for Singapore.

Malaysia and UAE are relatively mature student hubs looking towards the next phase of development. Malaysia sees itself as a country which can leapfrog from student to knowledge/innovation hub. Given the different components of the Malaysian strategy, it is not beyond reason to believe that this could occur, but it is too early to make any predictions. The current emphasis on strengthening the education export industry indicates that it is more tuned to income generation than investing in education as a tool for knowledge production and innovation. Malaysia's considerable expertise in strategic planning is not always met with the same commitment to implementation, and so only time will tell whether its goal of transitioning from a student-centred education hub to a knowledge-based education hub can be realized in the long term. It will be a challenge.

Overall UAE has been categorized as a combined student/talent hub. It is difficult not to be influenced by the education hub activities in Dubai given its acknowledged success in attracting students and a large number of international branch campuses. However, as previously noted, UAE has four emirates actively engaged in cross-border activities, and each has adopted its own approach. Abu Dhabi has attracted two prominent and highly respected universities (the Sorbonne and New York University) which currently have very small enrolments but are well funded to be showpieces for the emirate. More importantly, Abu Dhabi is investing in strengthening its research capacity by partnering with internationally recognized research centres and universities and sponsoring major research initiatives in several sectors. Sharjah is still a relatively small player in the education hub activities, and its main focus is on attracting foreign institutions. The fourth emirate, Ras al-Khaimah, is building its education capacity and reputation by attracting many research contracts as well as higher education institutions. But in the end, economic motivations are front and centre as UAE tries to reduce its reliance on oil and strengthen its service and knowledge industries, hence its commitment to become a stronger talent-based education hub. UAE has no coordination of the various education hub activities and has no country-wide national hub plan. Thus, the future direction of growth and evolution is unclear. It will likely continue to build on its foundation as a student and talent hub, but it is uncertain whether it will be able to achieve its long-term aspiration of being a knowledge/innovation hub.

Botswana and Hong Kong are also student-oriented hubs both committed to bolstering the education export market by attracting more students and foreign providers to their shores. Hong Kong's evolution has been characterized by several pronouncements about hub ambitions, some new policy developments in terms of scholarship and residency permits, but little public direct investment and no clear coordination. Hence, its development and reputation as a hub has been slow. One can question whether it is anything more than a student recruitment plan which is attracting large numbers of students from mainland China but relatively few from the region. Hong Kong has tried to position itself as a gateway to China for the rest of the world. Perhaps, it can be described more as an education gateway with China more than a thriving regional student-oriented education hub.

It is revealing that only one country, Qatar, is seen to be primarily a talent hub as of 2012. While their activities may reflect those of a student hub, their stated rationales and objectives are clearly focused on developing a large pool of human talent. Qatar wants to decrease its dependency on the expatriate population and transform the labour market so that more nationals work in the private sector. In short Qatar aspires to develop highly qualified educated citizens capable of participating in the development of the nation, especially overcoming the constraints of an over dependency on natural resources. In addition, Qatar aims to provide the region with a skilled workforce. Qatar is an excellent example of how important it is to focus on rationales and objectives in determining the type of education hub rather than concentrating on the actual strategies and activities. If the focus is on Education City which hosts the international branch campuses and a mix of local, expatriate, and international students, it would be easy to assume that it was a student hub. However, the reality is that the education and training activities are a means to an end, not an end per se. The ultimate goal is to develop a skilled workforce in Qatar and ultimately the region.

Singapore is the one country where rationales, objectives, and strategies are closely aligned to serving as a knowledge and innovation hub. To remake itself into a knowledge and education hub involves supporting industry-relevant research and attracting a highly educated workforce of students, academics, and scientists. Singapore is building on the past experiences of intensive student recruitment and attraction of foreign institutions, and it is now investing heavily in major international research projects and looking for commercial application of the new knowledge it generates. Unlike student hubs, Singapore is not interested in an education export industry in terms of using international student fees to create income. Instead it invests in recruiting high-value scholars and even graduate students with the ability to contribute to innovation and entrepreneurial capital for the knowledge economy. In this way, Singapore is both developing and attracting talent in order to develop itself and its reputation as a high-level knowledge and innovation hub.

The purpose of this chapter was to present a crosscutting analysis of the education hubs according to elements included in the analytical framework presented in Chap. 3 and other key issues raised in the case studies. The similarities and differences among the countries are illuminating and at times even startling. This leads to

the conclusion that there is no one way or best way to go about building a country as an education hub. While there are some major facilitating factors, there is no clear recipe for building an education hub.

Of equal interest is the variation in how the four student-oriented hubs went about hub development in terms of the key policy sectors, strategies, investments, and influential actors. In some ways, there was as much variation among the four student hub countries as there was among the three types of hubs. This is linked to the finding that both the talent hub (Qatar) and the knowledge/innovation hub (Singapore) evolved from a student hub orientation. This suggests that there may be a linear development from student to talent to knowledge hub which was not anticipated but is revealed by the analysis. However, this evolutionary trajectory from student to talent to knowledge recognizes that the most important distinction among the three hubs is not the strategies that are used but the driving rationales and objectives. Therefore, while a linear development is possible and even likely, it is not necessary. The next chapter will delve into this question further and also examine issues that are common to all education hub countries and others that are unique to a local situation. The question of the feasibility and desirability of education hub indicators is raised as well as areas of further reflection and research.

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Chapter 12
Education Hubs: Issues, Indicators and Reflections

Jane Knight

There is no doubt that education hubs are an evolving and complex phenomenon. However, the absence of reliable data or in-depth study on their planning and operation limits a solid understanding of their role, evolution and accomplishments. It also means that there is more speculation about education hubs than clear conclusions and more questions than answers. The purpose of this chapter is to provide another lens to widen the analysis of education hubs and deepen the lessons learned from the case studies.

The outline of the chapter is as follows. The first section tackles some core issues about hubs within the broader context of crossborder education. The topics addressed are the link between the top international student destinations and the location of education hub countries, the establishment of zone or city level education hubs, the distribution of branch campuses across education hub countries, the regional nature and engagement of education hubs and the challenges related to quality assurance and qualification recognition. The second section looks at the feasibility and usefulness of developing indicators for the three types of education hubs and puts forth a trial set to illustrate the possibilities and pitfalls. To end the chapter and conclude the book, the last section raises questions which merit further reflection and research to deepen our knowledge about education hub experiences.

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Relationship of Hubs to First- and Second-Generation Crossborder Education Activities

As pointed out in Chap. 2, education hubs build on first- and second-generation crossborder education activities. It is useful therefore to explore whether there is any relationship between education hub locations and the most popular international student destination countries. Table 2.2 in Chap. 2 listed the top 12 destination countries in the world (UNESCO 2012). Interestingly, Malaysia ranks in ninth place followed by South Korea in tenth spot and Singapore in twelfth. Worth noting is that none of the education hub countries rank in the top five. Why?

All hub countries are relatively small in size, reasonably well developed, but unable to host huge numbers of international students given their absorptive capacity. Most hubs, especially the student and talent hubs, aim to increase the number of education providers and programmes and hence the number of students. In contrast, the giants of international student recruitment like the USA, UK, Australia and Germany are already popular destination countries and do not show any movement towards education hub development. Economic development plans, international education engagement and size are all factors at play in determining desirability and potential of becoming an education hub. It appears that if an education hub is to be anything more than a branding label or status symbol, it will probably continue to be the smaller and more developed countries which can invest considerable efforts and funding into developing a critical mass of local and international actors working collaboratively on crossborder teaching, training and research activities. Thus, it will likely not be the big leading countries in international student recruitment that will transition into education hubs, it is the smaller countries. This may be counter-intuitive but the reality of the student data supports the conclusion.

A possible alternative scenario could involve these large countries establishing education hubs at the city or zone level. These kinds of education hubs are characterized by co-location of key actors in a specific geographic area. Boston is often referred to as an education hub given its concentration of universities and research institutes. Interestingly, Boston did not start out with a master plan to develop itself as an education hub, but it may be the best example of a city level education hub in the world (Crabtree 2006). India has announced its plan to establish 12 city level education hubs, but close examination of their plans shows that their goal is to foster closer links between local higher education institutions and private industry (Yeravedkar 2012). Thus, they do not plan, at least at this stage, to make the cities a centre of local and foreign actors working collaboratively on crossborder education activities. Monterrey in Mexico is an example of a city that actually did work on a strategic plan to build and market itself as a Knowledge City (Engardio 2009; Mexico Today 2012). Plans, investments and actors were on board but its early progress has stalled due to the political and economic problems associated with the growing number of drug cartels in the region. Panama City is another interesting example of an urban centre trying to turn itself into an education hub. Over the last 10 or 15 years, City of Knowledge, Panama, has undertaken several bold initiatives

(Vonortas 2002). It has developed a technopark which provides infrastructure and services to research and technology companies. It is home to many regional offices of international government organizations, manages international cooperation projects and hosts international programmes of foreign universities and one branch campus. It has yet to achieve its goal as a preferred destination for international students and foreign branch campuses, but it has developed an interesting model catering to the needs of the country and the demands of the market.

Silicon Valley in California is a well-known example of a successful zone level research and innovation hub. Other countries are trying to emulate this successful initiative. For example, Bangalore in India is often referred to as the Silicon Valley of India (Collato 2010). Korea is another interesting case. Given its strategy of developing two special education zones, the Songdo Global University Campus and Jeju Global Education Campus, it is still unclear whether Korea will be a comprehensive country level education hub or a nation which houses two education zone hubs (MEST 2009). They key difference is whether a national level plan is developed which integrates the two zones and involves other international education projects such as Brain Korea 21 or whether the zones remain as two independent initiatives.

As more experience is gleaned from new and existing education hubs, one can hope that the term will be used in a more discerning manner. This will help to decrease the ubiquitous use of education hub as a branding and marketing label for any and all international education activities. This could apply to Sri Lanka and Bahrain, for example. Are they committed to developing the necessary infrastructure, services, policies and regulations to establish an education hub or are they more interested in developing a worldwide marketing plan to attract more international students into local public and private institutions and attach the label of education hub to legitimize and promote their efforts? It is too early to tell.

It is equally illuminating to see if there is any relationship between the location of international branch campuses around the world and the location of education hubs. In Chap. 2, an international branch campus was defined as ‘a satellite operation of a recognized higher education institution or provider which offers academic programmes and credentials in a different country than the home institution’ (Knight 2008, p. 122). It was noted that as of 2011 there were about 200 international branch campuses operational in more than 67 countries around the world (OBHE 2012). Unlike the destination countries for international students, there seems to be a direct correlation between international branch campuses and education hubs. The evidence is clear and convincing as four of the top five receiving countries of branch campuses are education hubs. As presented in Table 12.1, the top receiving countries in 2011 are UAE, Singapore, China, Qatar and Malaysia. By including the six established hubs and four emerging ones, education hub countries host 40 % of the total branch campuses and represent the highest concentration of education hubs in individual countries (except for China). In contrast, the major source countries of branch campuses, namely, the USA, Australia, UK, France and India, are not seriously positioning themselves as education hubs.

Table 12.1 Top branch campus source and receiving countries 2009/2011

Top source countries	2009	2011	Top receiving countries	2009	2011
USA	78	78	UAE	40	37
Australia	14	12	China	15	17
UK	13	25	Singapore	12	18
France	11	27	Qatar	9	10
India	11	17	Canada	6	4
			Malaysia	5	7

Source: Knight (2014) with OBHE data (2009 and 2012)

In conclusion, it appears that the education hub countries are not necessarily the most popular destination for international students, but in contrast they are hosts to the largest concentration of international branch campuses. There are many factors which influence a country's decision to position itself as a hub and size appears to be one them. Smaller countries, which (1) are relatively politically and economically stable, (2) have the ability to make and attract public and private investments, (3) have a reasonably developed tertiary education system and (4) possess the capacity to undertake the necessary planning and policy preparation, seem to be more suited to developing themselves as education hubs than the large countries which are international education leaders in terms of receiving students and exporting branch campuses. As of 2012, the majority of hub countries are focused on attracting students and education providers for economic reasons or for developing a skilled workforce. Only Singapore can be described as a knowledge- and innovation-type education hub. It has an enhanced profile in terms of the excellence of the higher education system and its long history of strategic international engagement with top universities around the world.

Regional Engagement of Education Hubs

The regionalization of higher education is an increasingly important trend not only in Europe but also in Asia, Africa and Latin America (Yepes 2006; Aphijanyathan 2010; Knight 2012). It is therefore interesting to look at the issue of regionality, or in other words the degree of intraregional focus and activity, with respect to the reach and engagement of education hubs. In Chap. 2, reach and engagement were explained as the extent to which an education hub reaches out to attract and involve key actors and participants in the crossborder education activities. Given that international branch campuses are key players in hubs, the location of their home/source institutions is thus relevant to the question of regionality. Table 12.2 summarizes the total number of international branch campuses per country and indicates how many are linked to universities within the same region as the hub country and how many are sourced from countries outside the region. Three countries, UAE, Malaysia and Singapore, have a handful of branch campuses from universities located within the region representing

Table 12.2 Regional focus of branch campuses in education hub countries

	Qatar	UAE	Hong Kong	Malaysia	Singapore	Botswana	Total
Total number of IBCs	10	37	4	7	18	2	78
IBCs external to the region	10	35	4	4	14	2	70
IBCs internal to the region	0	2	0	3	4	0	9

Source: Knight (2014) with OBHE data (2009 and 2012)

about 12 % of the total. This demonstrates that the reach and engagement of education hubs in terms of branch campuses are primarily beyond the region. For some, this is an unexpected finding as education hubs have been seen to be regionally based.

Unfortunately, reliable data is not available on whether the international students in education hub countries originate from countries internal or external to the region. A best guess is that overall more students come from countries outside the region, but this is not true for all countries. Hong Kong and Qatar are two examples where this would not apply. Furthermore, UAE is a difficult situation to assess as many of the students in the UAE branch campuses are children of expatriates who have been born and brought up in UAE but hold citizenship of their home country. In this case, which country is the origin of the student – where they have lived all of their lives or the country of citizenship? The situation is murky.

Furthermore, it is not possible to analyze the regionality of international joint programmes and international institutional partnerships due to the fact that very few countries collect information on this type of crossborder activity. International partnerships vary enormously across hub countries but in general Southeast Asian countries tend to collaborate primarily with Australian, UK and American universities. In the future this may change to a stronger regional influence given the efforts of China and ASEAN countries to develop closer intraregional ties. The lack of robust data on crossborder education activities is a significant handicap to the analysis of education hub characteristics and activities.

Quality Issues and Implications

An overriding issue that touches all three generations of crossborder education activities relates to quality assurance and improvement. The field of crossborder education is growing and changing at an unprecedented rate. While education hubs have been underway in some countries for several years, they have not been recognized or totally understood for what they really are – a strategic endeavour to build a critical mass of local and international actors collaborating on different types of crossborder education, training, research and innovation activities. The term education hub has gained more currency since 2010 evidenced by many announcements of new education hubs.

The question of quality assurance and improvement is relevant and will become even more important as new education hubs and new modes of international

collaboration emerge. This discussion introduces a number of key quality assurance issues which require vigilance by the education providers as well as host/receiving country agencies such as government and non-governmental higher education bodies, professional organizations, accreditation and quality assurance agencies, credential evaluation groups, employers, students and their families. Some issues are common to all crossborder education initiatives (student mobility, franchise, twinning, joint/double degrees or distance education); others are particular to education hubs.

Recognition of Qualifications

Of utmost importance is that qualifications earned by students from international HEIs in education hub countries will be recognized by employers and other higher education institutions. Given the mobility of students these days, it is important to ask which employers – those in the 'source country', those in the 'receiving country' or those in a 'third country'? The answer is all three. The 'brain train' phenomenon, where students take a foreign credential and work for a period in country A, then move to country B for additional work and life experiences and then move to a third country C or move back home, requires that their qualifications are recognized by employers in a number of different countries or jurisdictions. It is imperative that regulations are in place to ensure that qualifications are recognized given the high priority attributed to a skilled and mobile workforce in the knowledge economy. This requires that the local governments, regional governance organizations and UNESCO – the sponsor of Conventions on the Recognition of Qualifications – help to ensure that policy frameworks are in place (Knight 2010).

It is a major risk to students, higher education in general, and employers if the validity, currency and integrity of a qualification are not assured. Given the importance of (1) student recruitment in a student education hub; (2) attracting, educating and retaining qualified labour for talent-oriented education hubs; and (3) securing knowledge workers and researchers for the knowledge/innovation hub, it is incumbent on education hub sponsors to have the capacity to review credentials of incoming students and professionals. Of equal importance is that qualifications granted through education hub institutions are bona fide and able to be recognized within the country and beyond.

Selection and Accreditation of Higher Education Providers

The diversity of education hub sponsors and actors means that those taking the lead are not always expert or experienced in higher education. For instance, economic development boards, economic free zone authorities, investment companies and trade and export agencies have more expertise in economics and industry than in education. This suggests that interventions are necessary to assure that bona fide education institutions and training companies are recruited and selected, that criteria

for licensing/registration are established and that a quality review process and an accreditation system of the academic programmes are in place.

For international branch campuses, there are a number of options at play because all have a home campus. If external accreditation practices are robust in the home institution countries and the review process includes satellite operations, there is some assurance that quality standards are being met. However, not all countries have accreditation procedures in place for satellite operations, and, secondly, the assumption that the quality of the programme offered in a branch campus location is exactly the same as the 'home' institution is not always appropriate. Quality assurance in education hubs involves a complex set of issues related to qualifications of teaching staff, admission/exit standards, evaluation schemes and social or academic student support systems for both foreign and local providers. Furthermore, students are recruited from a variety of cultures and countries which means that there are different education backgrounds, language skills, learning modes, expectations and values about higher education and evaluation. In short, the multicultural environment of education hubs and zones creates a complex sociocultural and academic environment for foreign universities and students to navigate.

It is important that Departments of Education or designates be directly involved in establishing policies and regulatory frameworks which are consistent with the national policy objectives to monitor the quality of education and training for domestic and foreign students, whether the provider is local or international. Relying on the reputation of world class or high-ranking universities does not always assure quality and attention to local context. What a university provides abroad is not necessarily what is offered at home, nor given different cultural and jurisdiction contexts, should it always be the same. Thus, quality equivalency and relevance are key issues. A great deal is at stake – for students, for foreign higher education institutions, for the receiving government, for investors and for employers – if the education hub gains a reputation of poor quality, has porous regulations or is hosting rogue (non-registered or nonaccredited) institutions or providers.

Relevance of Curriculum

Canned courses and standardized curriculum are a continuing concern for all generations of crossborder education initiatives. An ongoing challenge for branch campuses has been the adaptation of curriculum to the receiving country's cultural and jurisdictional conditions, while retaining a rigorous equivalency to the programme of the 'home' institution which grants the qualification and provides the curriculum. Education hubs depend on the capacity to attract large numbers of students from within the country, across the region and beyond. This introduces the question of how to adapt curriculum and teaching methods to a group of students with diverse cultural, linguistic and education backgrounds. These challenges are not insignificant and more research and attention is required to assess and continue to improve the relevance and quality of the curriculum and the teaching/learning process.

Faculty Qualifications and Support

A major factor in assuring the quality of the academic offer is the quality and commitment of the teaching staff. Put simply, who are the teachers in international branch campuses? This largely depends on the conditions established by the receiving authority and source country. A large grey zone exists regarding policies related to the terms of employment, benefits, support services, cultural preparation and required qualifications for instructors in these international programmes. In some situations, foreign faculty members are required to teach all programmes; in other situations, foreign oversight of local or third-country teachers is acceptable. However, the use of local instructors with no commitment or familiarity with the 'home' institution raises another crop of issues. The greying of academics, a phenomenon in many of the countries active in providing crossborder education, may be an unexpected blessing if they can be convinced to undertake a teaching contract in the branch campus. But the challenges involved in teaching students from systems with a very different set of expectations and values about higher education should not be underestimated. Increased attention needs to be given to the whole area of providing qualified and committed faculty to deliver courses in the branch campus setting and, secondly, the conditions under which these faculty are hired. The question of experienced instructors and hiring procedures also applies to foreign training companies providing professional development programmes for workers. The range of issues may vary slightly if there is no international home office or headquarters involved. However, the need for qualified instructors and fair hiring practices remains the same.

Equity of Access

The question of equitable access is complex. The diversity of education hub models results in different approaches being used to determine which students have access to foreign higher education institutions. In some countries, the recruitment of international students is a priority over access for local students even if this is not made explicit. In this case, the establishment of entrance requirements and tuition fees are normally left to the individual branch campus or company which must assure alignment of policies with the home institution but still remain competitive in the local market.

In other situations, the foreign providers are carefully selected and funded to fill gaps in the academic programmes offered by the receiving country. In this instance, access for local students is a priority as they want a foreign qualification or a specific programme without going abroad for it. In this case, equity of access has other dimensions as local students who can afford the tuition costs of a foreign institution may be the economically and socially elite of the country.

Yet another scenario involves making access for expatriate students a priority. Many children of expatriate families have been brought up and schooled in the host

country and do not want to leave the country for higher education. Language is yet another important dimension of access. Research shows that the majority of international branch campuses are offering programmes in a foreign language, English or French, and thus access is based on proficiency in the language of instruction. Finally, cultural issues are also at play when it comes to access especially in terms of programmes which combine female and male students in the same classroom or even on the same campus. Female students can be disadvantaged in this regard. Thus, equity of access involves a wide array of issues which differ from hub to hub, country to country. But regardless of the types of barriers to access, close attention needs to be given to the related equity issues.

Intercultural Issues

The social and learning dynamics of students from different cultural and ethnic backgrounds is an issue for education hubs. A multicultural educational environment such as an education hub brings new opportunities for rich intercultural teaching and a more internationalized curriculum. With the increasing emphasis on student learning outcomes, education hubs have the opportunity to focus on developing students' intercultural understanding and communication skills as well as international knowledge and insights. But there are also risks and misunderstandings – especially for students who are exposed to an education system with different values, approaches, evaluation schemes and expectations. This applies to local students who attend a foreign institution or branch campus as well as international students who are enrolled in a local institution in a foreign country. Education is often claimed to be one of the most important agents of socialization. An education hub brings together local and foreign students, teachers and providers and by doing so introduces new benefits and risks. The intercultural dynamics within education hubs warrants further attention in terms of social interactions, gender issues, teaching and learning styles and gaining a deeper understanding of cultural values and practices in order to prevent problems or conflict and take advantage of new learning opportunities.

Local/Foreign Relations

The relationship between local and foreign education institutions is another important issue to address. Education hubs intentionally bring local and foreign actors together through crossborder education activities. The relationship could be one of close academic cooperation, or it could be one of competition for the brightest international students/scholars and for funded research projects. For student hubs a stated rationale is to modernize, internationalize and improve the quality of the domestic higher education sector. This can be facilitated through close interactions

between local universities and colleges with international renowned institutions which have high-quality management practices, academic programmes and teaching/learning methods. However, interaction is often limited and relations are not always positive. Opportunities for exchange and collaboration are often lost in local institutions' feelings of resentment and competition.

Eligibility of foreign institutions and students for research subsidies or scholarships is uncharted territory in the creation of education hubs, especially for those in economic free zones. Bilateral or multilateral trade agreements can have a positive influence on foreign access to domestic funding and research programmes due to the basic principles of national treatment which requires equal treatment for foreign and domestic providers and most-favoured nation treatment which requires equal and consistent treatment of all foreign trading partners (Knight 2006). Education services, along with the intellectual property rights, patents and trademarks, are all covered under international laws from the World Trade Organization. Education hub sponsors need to be better informed about what kind of national policy frameworks and regulations should be in place to protect domestic parties while at the same time promoting more international partnerships.

As discussed in Chap. 11, a driving rationale common to talent education hubs is recruiting, preparing and retaining skilled workers for the knowledge economy. Thus, another issue at play is the potential competition between local and foreign students for jobs. There are signs that multinational companies favour foreign students as they already come with an international interest, outlook and often additional language skills. On the other hand, some countries are deliberately equipping domestic students to be more productive in the public and private sectors. It is ill advised to generalize, but it is prudent to be aware of potential areas of tension on the local/foreign interaction issue.

Sustainability of Programmes

Of key importance is the question of sustainability. Whether education hubs will be able to survive unpredictable economic and political volatility is yet to be seen. But the responsibility of education providers to offer education programmes until completion is paramount. A sound business plan and academic framework are mandatory for international programmes. This may seem obvious but its importance bears repeating when one sees closures of international institutions or branch campuses every year. The expectations of financial and reputational benefits to foreign institutions and companies are high but it is imperative to be clear, pragmatic and realistic about (1) the size of the market, (2) the ability to deliver quality education programmes and qualified faculty, (3) compliance with foreign regulatory requirements, (4) the hidden expenses and burden on home administrative and programme departments, (5) competition with local and other foreign institutions and (6) the economic and political stability of the receiving country. The long-term sustainability of education hub initiatives has high stakes attached to it.

Education Hubs Indicators: Are They Useful or Feasible?

The case study and emerging hub chapters illustrate that education hubs are at various stages of development. Some hubs are well established after a decade of operation; several are just underway and others may be nothing more than a statement of intention. To date, there are no objective indicators to determine the viability of education hubs. Education hub is a self-ascribed label conferred by the sponsor, usually a government agency. In light of accelerating competition in the international education market and the emergence of a knowledge economy, the use of the education hub label is becoming more popular. But, how does one determine when a hub is merely a branding exercise? How does one distinguish between rhetoric and reality? Is there a way to objectively assess whether a hub is viable and is actually a planned effort to develop a critical mass of foreign and local actors who are strategically working on crossborder education, training and knowledge initiatives. To date the answer is no. But it is an issue worth pursuing.

A fundamental question is the feasibility of developing a set of appropriate indicators customized for each type of education hub and all modes of crossborder activity. If robust customized indicators existed, it would be possible to assess the viability of hubs. While it may be a promising methodology, it is not very practical, at least in the short term. This chapter has already demonstrated that there is no reliable data available on many aspects of crossborder education activities. It will be a long time before education hub countries are able to gather data according to a common set of definitions and indicators. In some cases, even if the information was collected, it might not be publically available. This reality leads to the necessity of an alternative approach. The second approach involves using existing data from world organizations or national data banks on key variables related to education hub development. It is not an ideal way of developing and using indicators because they are not tailor made, but it is the only method available at this time.

But using data from national data banks can present several obstacles. The first challenge is the availability and comparability of data. Do national level data measure the same thing across countries? For instance, does each country define branch campus, brain drain, international student, tertiary education, research or innovation the same way? The answer is no. Secondly, not all countries have the capacity to even collect data at the national level. Thus, it is common to turn to international organizations such as UNESCO, World Bank and OECD which have large data banks. The challenge in using information from international organizations is that not all countries are included in their data sets due to differences in their mandate and membership. For example, UNESCO collects international student data but the numbers are not often comparable to OECD because of different parameters used to define international students. OECD has 31 members and focuses on the economically advanced countries while UNESCO includes about 200 developed and developing country members. Furthermore, it is often not possible to compare data from the same year or time period. These are some of the challenges but regardless of being an imperfect system it is currently the best alternative.

Another challenge relates to the relevance of data and whether it actually measures what it is intended to measure. This may seem like a strange comment, but when one is searching for relevant data for countries across several world regions, the lack of comparable data leads one to choose less than perfect indicators. This applies to the finding appropriate indicators for education hubs. For example, comprehensive data on the emigration rate of tertiary educated are pertinent to a talent hub and are available. If a country is experiencing a high rate of tertiary education emigration, it could suggest that the country's loss of human talent may necessitate recruiting and retaining educated international students for the talent or knowledge hub. Thus, a high emigration rate may indicate the need to become an education hub to attract talent. Conversely, it could indicate that the hub is not effective in retaining skilled workers. Another example related to the knowledge hub is the percentage of professional and technical workers of the labour force. Does a low percentage demonstrate the need to become a hub to attract skilled workforce or conversely does a high rate indicate that the hub is functioning effectively?

Thus, it is necessary to review worldwide data from international organizations and astutely select a number of variables which are appropriate for measuring the viability of a country's efforts to become an education hub. With the understanding that a variety of data sources need to be used and that no data set is perfect, Table 12.3 presents a list of proposed variables which have potential to be hub indicators. They are used for illustrative purposes and to stimulate a hard look at whether indicators are desirable and possible.

Important to note is that some data are qualitative (opinion oriented) data and others are quantitative. It is advisable to have both types. While each variable needs to stand alone, it is equally important to look at the collection of variables for each hub type and determine whether together they adequately estimate the viability of a hub.

Table 12.4 provides actual data for each of the six education hub countries. Given the aforementioned challenges of finding relevant and reliable data for cross-country comparison, it is not surprising that there is an incomplete data set. This presents limitations on interpreting the information, but the purpose of this discussion is to start a discussion on the desirability and practicalities of developing a set of indicators for education hubs.

A few words about the data source and year of data collection are necessary to understand the analysis of the three types of hubs presented in Table 12.4. The indicators for student hub are derived from different sources primarily UNESCO Statistics (2010), Observatory on Borderless Higher Education Reports (2009 and 2012) and national governments. The time period and source of data is included for each indicator. The indicators for the talent hub and the knowledge/innovation hub are sourced from the World Bank Knowledge Indicators (2010) and the World Economic Competitiveness Report (2009). These indicators are widely used and based on hard data as well as opinions of a cross section of private sector leaders within a country. The opinion data is expressed as a score between 1 and 7. The source and year of data collection is included for each indicator. The bibliographic references for the data sources are included at the bottom of the chart and include

Table 12.3 Proposed generic variables as potential indicators

Proposed variable/measure	Comments on source of data and intended purpose
Student hub	
Number of international students	Variety of data sources used which limits comparability. Indicates attractiveness of destination and programmes/providers
Estimated percent of world international student population	UNESCO – indicates competitiveness and absorptive capacity but data not available for all countries
Increase in international students 2003–2008	OBHE – indicates growth and success in recruiting international students but data not available for all countries
International students as part of total higher education population	UNESCO – indicates penetration of international students but not available for all countries
Number of foreign university branch campus	OBHE – indicates attractiveness as destination for HEIs to establish branch campus
Number of crossborder education programmes (i.e. twinning/franchise)	National sources. Indicates attractiveness for delivery of programmes but data not available for all countries
Talent hub	
Quality of the education system (1–7)	World Economic Forum Report – opinion data on perceived quality. Indicates attractiveness on a scale from 1 to 7
Public spending on education as % of GDP	UNESCO – could be used for all 3 types of hubs. Indicates budgetary priority given to education
Researchers in R&D/million people	World Bank – indicates availability of researchers
Extent of staff training (1–7)	World Economic Forum Report – indicates perception of availability of trained staff
Local research and training services (1–7)	World Economic Forum Report – indicates perception of availability of local training services
Share of unemployment with tertiary education	World Bank – indicates supply of locally tertiary educated
Brain drain (1–7)	World Bank – perception of extent of brain drain indicating potential skills shortage
Emigration rate of tertiary educated	World Bank – percent of tertiary educated leaving the country indicating potential skills shortage
Knowledge/innovation hub	
University-company research collaboration (1–7) 2009[a]	World Bank – indicates perception of potential for academic-private cooperation
Quality of scientific research institutes (1–7) 2009[a]	World Economic Forum Report – indicates perception of scientific research quality
Availability of scientists and engineers (1–7) 2009[a]	World Economic Forum Report – indicates perception of numbers of knowledge/innovation workers available
Prof and tech workers as % of labour force 2007[b]	World Bank – indicates availability of skilled force
Patents granted by USPTO, mil people, Ave 2003–2007[b]	World Bank – indicates success to date with innovation and inventions
Capacity for innovation (1–7) 2009[a]	World Economic Forum Report – indicates perception of capacity for innovation

[a]World Economic Forum (2009)
[b]World Bank (2010)
[c]OBHE (2009 and 2012)
[d]UNESCO (2009 and 2012)

Table 12.4 Comparison of variables/indicators for each hub type across six countries

Variables/indicators	Malaysia	Hong Kong	Singapore	UAE	Qatar	Botswana
Student hub						
Number of international students Varied sources and dates	57,824 UNESCO (2009)	19,325 UNESCO (2010)	48,623 UNESCO (2010)	34,122 UNESCO (2009)	5,387 UNESCO (2010)	– –
Est. percent of world international student population 2009[a]	2%	0.2 %	2 %	–	–	–
Increase in international students 2003–2008[b]	100 %	–	46 %	–	–	–
International students as part of total higher edu pop 2008[a]	8–9 %	3–4 %	10 %	–	–	–
No. of foreign university branch campus 2012[b]	7	4	18	37	10	1
No. of crossborder programmes	3,218	1,251	1,120	–	–	–
Varied sources and dates	MQA (2010)	Education Bureau (2010)	UNESCO (2010)			
Talent hub						
Quality of education system (1–7) 2009[c]	4.8	4.6	6.2	4.9	5.5	3.7
Public spending on education as % of GDP 2007[a]	4.6 %	3.5 %	2.9 %	1.4 %	3.3 %	8.1 %
Researchers in R&D/ million people 2006[d]	502	2,090	5,712	–	–	–
Extent of staff training (1–7) 2008[d]	5.0	4.7	5.7	4.5	4.6	3.8
Local research and training services (1–7) 2008[d]	4.9	4.9	5.4	4.4	4.4	3.3
Share of unemployment with tertiary edu 2007[d]	25 %	17 %	43 %	22 %	–	–
Brain drain 2008[d]	4.5	5.0	5.0	5.8	5.5	3.7
Emigration rate of tertiary educated 2000[d]	10.4 %	28.7 %	15.2 %	1.2 %	2.9 %	2.1 %
Knowledge/innovation hub						
University-company research collaboration (1–7) 2008[d]	4.8	4.5	5.5	3.4	4.2	3.2

(continued)

Table 12.4 (continued)

Variables/indicators	Malaysia	Hong Kong	Singapore	UAE	Qatar	Botswana
Quality of scientific research institutions (1–7) 2009[c]	4.7	4.4	5.6	4.1	4.6	3.6
Availability of scientists and engineers (1–7) 2009[c]	4.7	4.0	5.2	4.7	5.2	3.5
Prof and tech workers as % of labour force 2007[d]	18.9 %	26.0 %	34.2 %	18.1 %	21 %	12.2 %
Patents granted by USPTO/mil people Ave 2003–2007[d]	4.3	9.1	104.2	1.07	0.99	–
Capacity for innovation (1–7) 2009[c]	4.1	3.4	4.4	3.5	2.5	2.6

[a]UNESCO (2010 and 2009)
[b]OBHE (2009 and 2012)
[c]World Economic Forum Report (2009)
[d]World Bank (2010)

the date of publication of the report. It is important to note that the year of data collection usually differs from the date of the report, hence the difference in dates within the table and the publication date of the reports listed below the table.

What does this data suggest in terms of the type of hub a country is or most likely to become and its viability? An analysis of these indicators closely aligns with and supports the comparative analysis presented in Chap. 11. For instance, the data in Table 12.4 suggests that Singapore already has some success in becoming a knowledge and innovation hub. Particularly noteworthy are the high number of patents and the large percent of the workforce represented by professional, technical and scientific workers. The Global School House project in Singapore has a long history of attracting prestigious institutions and the brightest of students (Sidhu et al 2007). Hence, the relatively large number of branch campuses and international students present in Singapore illustrate that there has been an evolution over the past years from attracting institutions and students for education purposes to more emphasis on attracting companies, scientists and universities for research, knowledge production and innovation.

Malaysia has been characterized as a student-oriented education hub in Chap. 11, and this is supported by the indicator data. The 100 % growth in international students, the large number of crossborder education programmes and the long history of branch campuses place it in the student hub category. The low number of researchers in R&D, compounded by the low percentage of professional and technical workers in the labour force, questions its capacity to become a knowledge and innovation hub, at least in the medium term. In addition, the moderately high percentage of unemployed tertiary education may jeopardize plans to attract and retain bright international students due to pressure from the domestic educated unemployed.

The data does not suggest that Malaysia is on a fast track to becoming a talent or knowledge/innovation hub but is better described as a student hub.

Hong Kong has made low to moderate progress in becoming a student hub even though it first made the announcement in 2004. Table 12.4 shows that the number of international students is low and represents only 3–4 % of total higher education enrolments which is less than half of its neighbour hub competitors Singapore (10 %) and Malaysia (8–9 %). Hong Kong's efforts to attract students from source countries other than the mainland have met with limited success. Since 2012, it has developed incentives and a plan to attract foreign institutions to set up a branch campus and revised immigration policies for foreign students to counterbalance the high emigration rate of tertiary educated. Any plans to position itself as a knowledge/innovation hub may be unrealistic given the relatively low number of patents, the low perception of its capacity for innovation and lack of available scientists and researchers. On the other hand, the high emigration rate of tertiary employed shows why they need to recruit, train and retain bright nonlocal students to strengthen their talent pool.

Given that it hosts the largest number of branch campuses of any country in the world, UAE is well positioned to serve as a student or talent hub based on the high number of expatriate families and students. In UAE 22 % of the unemployed have a tertiary level education but due to cultural traditions this group is not likely to be a source of skilled workers, and thus UAE looks to the rest of the region and beyond for talent. The indicators show a low rate of patents, low capacity for innovation and moderate university/company research collaboration, and less than 20 % of the workforce are professional or technical workers. This points to the fact that it may be several years before it is operating as knowledge/innovation hub. The data appears to support the general opinion that UAE is a student hub but is clearly focused on becoming a talent hub by recruiting and training expatriate and international students. It has long-term aspirations to be a knowledge hub.

Both the Botswana case study and the crosscutting analysis in Chap. 11 indicate that Botswana is a student-oriented education hub. The lack of data for the student hub indicators is problematic and illustrates the challenges of developing robust conclusions based on indicator data. The perception of a low-quality education system may present some challenges for Botswana, but its high public spending on education as percentage of GDP (8.1 %) is testimony to their strong commitment to become a centre of excellence in education and training. The low ranking of its capacity for innovation coupled with minimal university/company collaboration and limited availability of scientists and engineers supports the decision to be a student and gradually a talent hub instead of a knowledge/innovation hub.

The data regarding student hub indicators for Qatar is weak and so few conclusions can be drawn about this hub category. But Qatar sees itself as a talent hub and aspires to be a knowledge/innovation hub, and in this regard the indicator data has more relevance. The positive perception of the quality of its education system, the

availability of local research and training services as well as the availability of staff training present Qatar as a country where serious effort is paid to human resource development. This is consistent with its vision and national priorities. Qatar is also increasing its efforts to improve the research culture and capacity. The small number of patents and relatively low perception of its capacity for innovation show that this is an area where more effort is needed even if the country is perceived as having the scientists and engineers available.

More research and analysis is required to develop an improved set of relevant and reliable indicators to assess the different types of hubs and their viability. The current set of indicators remains a starting point. Overall, the indicator data provide a profile for each country hub which is in line with the information presented in the case study chapters and the comparative analysis in Chap. 11.

Questions for Further Reflection and Research on Education Hubs

While the analytical framework, case studies and comparative analysis have shed new light on the emerging phenomenon of education hubs, they also stimulate new questions and ideas. A myriad of issues arise from the previous chapters, and they warrant further reflection and examination by researchers, policy makers, hub sponsors and participating institutions. Issues vary by the type of hub and include regulatory, policy and operational questions as well as larger concerns about results, impact, benefits and risks. The following section provides an overview of some topics which are worthy of further investigation given the growing interest and development of education hubs.

Student Hubs

Procedures to select, license and accredit foreign education providers are critical to maintaining quality and public confidence in student hubs. What are the most appropriate mechanisms to assure and improve the quality of education and training programmes in education free zones and more broadly in hubs? Interaction between local and foreign institutions is important in modernizing, internationalizing and generally improving the quality of the domestic higher education systems. What are the obstacles and facilitators to building close collaboration between local and foreign institutions in hub countries, zones or cities? When given a choice, why do local or expatriate students choose international education and training providers situated in education cities or zones? What are the key advantages and disadvantages for students studying in an education city or zone where co-location of higher education providers is the norm?

Talent Hubs

To gauge the effectiveness of talent hub efforts, it is important to monitor the employment trends of graduates from education hub education providers. What policies and strategies help to retain and employ graduates in priority economic sectors of the receiving country? What impact do policies attracting high level scholars and scientists have on local qualified personnel? Talent-oriented education hubs are focused on recruiting, training and retaining local and international students, workers, professionals, researchers and scientists. In 15 years, will they be seen as positive or negative agents of the brain train/circulation phenomenon?

Knowledge/Innovation Hubs

International partnerships in research and innovation are a perquisite for successful knowledge and innovation hubs involved in crossborder projects. What is the impact of international or regional trade, intellectual property, patent and copyright laws on these collaborative projects? What policies and regulations need to be in place at the national or subnational level to ensure compliance and protect the interest of all parties? What are the similarities and differences between knowledge hubs in general (as described by the World Bank) and education hubs with a knowledge/innovation orientation?

Results, Impact, Benefits and Risks

Education hubs promise benefits for the sponsors, investors, providers, companies and stakeholders. How can the results and ultimate impact of education hubs be reliably assessed and measured? Do education hubs reflect, enhance or counterbalance the increasing commercialization of the internationalization of higher education? One objective of education hubs is to increase status and geopolitical influence in the region and beyond. How are a country's education hub strategies and accomplishments perceived by regional neighbours and others? Do education hubs have a positive or negative influence on regionalization in general (economic, cultural and political) and regionalization of higher education in particular?

Investment, Regulations and Sustainability

Some hubs are more than 15 years old and others are in their first 2 years of development. What political, planning, policy and management factors contribute to the sustainability of education hub endeavours? To date, country level hubs have been

dependent on sizeable public investment. How do governments assess the contribution and results of education hubs and justify the substantial level of public financing? Is it foreseeable that private investors will undertake the establishment of a totally private education hub zone? The analysis shows a large number of different government policy sectors involved in country level education hubs. Each sector brings its own agenda and expectations. What mechanisms or processes are needed to ensure that a set of common objectives are set and constructively managed?

Relationships Within Education Hubs

A critical element of education hubs is the interaction between local and foreign actors. What are the perceptions and nature of relationships (collaboration, competition, resentment, acceptance, indifference) among local employers, industries, higher education institutions and the foreign education and training providers, R&D companies and knowledge industries? What levers are necessary and effective to encourage a productive interaction? Education hubs, especially student and talent, bring together a critical mass of students, trainees and professionals seeking further education. Are education hubs a way to increase intercultural understanding and skills, or are they a tool for foreign cultural and language dominance?

National Innovation Systems

The National Innovation Systems (NIS) approach builds on the recognition that technology, information flows and linkages among people, companies and institutions are critical to the innovation process. As governments increasingly seek to put universities to work as instruments for knowledge-based economic development and change (Mowery and Sampat 2004), how do the development of education hubs fit into the broader development of national innovation systems?

In conclusion, it is both fascinating and at times bewildering to imagine the evolution of education hubs over the next decade. If the pace of change continues at the same rate as the last 10 years, there are bound to be fundamental transformations of the education hub phenomenon. Will one model of education hub dominate? Will the demand for international education continue to be strong enough to support student-type hubs which rely on physical mobility or will student hubs become virtual entities? What role will massive open online courses (MOOCs) play? Is the term education hub anything more than a branding exercise or marketing strategy? Will talent hubs serve as a powerful and sustainable strategy for brain gain? Will education hubs evolve into strong and effective agents of soft power? Education hubs are not static entities; they evolve in reactive and proactive ways to external exigencies, unintended consequences and new opportunities. Are binational or multinational hubs on the horizon? Will education cities become commonplace and

ubiquitous? In Chap. 2, education hubs were positioned as the third generation of crossborder education. Will education hubs morph into a fourth generation or be replaced by a new crossborder education development such as edu-glomerates? These kinds of questions and speculation have no immediate answers. But they serve to stimulate more lateral thinking about the future of crossborder education and stress the need for careful but imaginative monitoring of the potential and impact of education hubs.

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