

Advancing Sino-South African Education and Skill Development

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ABSTRACT

This paper is concerned with what is different about China's cooperation in education and training in Africa. China-Africa education cooperation goes back to the 1950s, first with few African countries, and when the rest African countries broke off the shackles of imperialism, they followed suit. Under the frame work of Forum on China Africa Cooperation (FOCAC), the cooperation has become more and more prosperous. Specifically, for South Africa, education has been esteemed as a major method to eradicate poverty and offer people possibilities to chase a better life both in China and South Africa. This paper examines different dimensions of China-Africa education cooperation with a focus on South Africa, and focus on what is different about China's cooperation in education and training in Africa.

Keywords: Africa, China, Chinese Companies, Education, Sino-South Cooperation, Skill Development, South Africa

INTRODUCTION

China and Africa have a long tradition of bilateral cooperation. The educational cooperation with Africa goes back to the 1950s, but this paper focuses particularly on the last two decades, and especially the period since the start of the formal Sino-African triennial conferences through the Forum for China-Africa Cooperation (FOCAC) in 2000. China is viewed as a major player in human resource cooperation with Africa. However, there has been a little examination of China's key role in skills transfer and education cooperation with Africa. Speaking of skills and education, education and skills are essential tools for achieving sustainable development. As such, numerous studies suggest that in a world where education is given top priority and skills freely flow between nations, economic expansion can originate from developed nations which transfer their superior skills to developing nations (Cheng, Qiu and Tan, 2005; Jones and Ruffin, 2008; Ruffin and Jones, 2007). Based on that, recognizing the transformation in the world and priorities in China-Africa cooperation, at the last

FOCAC summit meeting in Beijing in 2018, President Xi Jinping announced eight initiatives in collaboration with Africa for industrial promotion, infrastructure connectivity, trade facilitation, green development, capacity building healthcare, people-to-people exchange, and peace and security, delineating the blueprint for China-Africa relations in the new era and opening an ambitious chapter in Africa-China cooperation for the new era.

China will share development ideas and experiences with African nations without reserve, providing more options to allow them to independently choose their path of development. From 2019-2021, China will strengthen cooperation in high-end human resource development with Africa via the South-South Cooperation and Development Institute based on the real needs of African nations. China intends to coordinate resources to further deepen cooperation with Africa in human resources development, the focus being to train senior staff in all sectors, such as government officials, party cadres, experts and scholars and technicians. From 2019-2021, China promises to

provide 50,000 government scholarships and 50,000 training opportunities for Africa and invite 2,000 Africans to come to China for discussions and exchanges (FOCAC, 2018). China intends to continue to send young volunteers to African nations to strengthen the friendship and understanding between youth in Africa and China. On the other hand, African and Chinese leaders heavily emphasized on education and 'skills transfer' as the core of their relationship (FOCAC, 2018).

Both parties believed that through the exchange of knowledge, skills, resources and technical know-how, China and Africa can support each other in advancing education and skills development. Chinese investment in the continent is increasing remarkably but these statistics could upsurge if future forecasts of Chinese investments materialize. With that said, with China being the largest investor in Africa (Wagle and Pauldel, 2014), and African Union clearly articulate the need for an education and skills revolution, there is a strong case for greater collaboration and synergy of projects and initiatives for the purpose of delivering greater impact and building the basis for long-term prosperity. This is very important for African nation because despite the substantial growth of many African economies over the last decades with an estimated real output growth of 4.1 percent in 2019 (AfDB, 2018), several African nations are still struggling to transition to higher value-added economic activities as a result of the significant gap between demand and supply of skills required for the labour market of African nations transforming economies.

Economic diversification is thus key to solving Africa's problems, especially in the context of a challenging demographic structure. The first priority for African governments is to encourage a shift towards a labour-absorbing growth path. A second is to invest in human capital, particularly in the entrepreneurial skills of the youth, to facilitate the transition to a higher-productivity modern sector. A third is to attract foreign investment such as the Chinese investment which can open up opportunities for skilled labour.

As for South Africa and China cooperation, both nations have a long history of intercourse. In 2000, China and South Africa established a "partnership". In 2006, China and South Africa signed the "Outline of Cooperation on Deepening Strategic Partnership" and the cooperative relationship between the two sides

continued to advance. As Premier Wen Jiabao said during his visit to South Africa in June 2006, China and South Africa are both good friends of mutual trust and good partners of sincere cooperation, and the relationship between the two countries has a solid foundation. And it is also an opportunity for educational intercourse between China and South Africa. After the formal establishment of diplomatic relations between China and South Africa, bilateral relations have been deepened, especially in the economic and educational field. Speaking of education, undoubtedly, education plays an irreplaceable role in promoting national reconciliation and national development in South Africa. As a result, China and South Africa cooperation in the field of basic education that includes teacher training, academic exchanges and resource sharing, student exchanges, language and cultural teaching cooperation have been strengthened. As such, under the framework of China-South Africa Cooperation Forum, China-South Africa cooperation on education has achieved remarkable results.

First, the number of South Africa students coming to China studied by the Chinese government-funded or at their own expense has been increased year by year. Since the Chinese Government Scholarship Program has launched in 2003, this project has offered hundreds of South African students' full scholarships to study in China. By 2014, there were 1,783 South African students in total¹ (Ye Qin, 2017). In 2018, 32 South Africa students were granted Chinese government scholarships to study in China for bachelor's, master's and doctoral degrees in 17 fields² (Zhao et al., 2016). Second, the promotion of Chinese language and the construction of Confucius institutes in South Africa are developing rapidly. With the further development of Sino South Africa economic and trade relations, South Africa's demand for Chinese talents is also growing. According to statistics, by 2018, there were five Confucius Institutes in South Africa and more than 20 universities in China have established cooperative relations with South African universities, for example: Hunan University and

¹ Research on Cross - cultural Adaptation of Overseas Students in Colleges and Universities, Ye Qin

² Factors Affecting the Education Quality of Overseas Students in China and Strategies for Improvement, Demin Zhao, Jianlin Liu, Ruiyan Niu

South Africa's Stellen Bush University, Northeast Normal University and South Africa's Pretoria University, which were selected into the "China-Africa University 20+20 Cooperation Plan" within the framework of the China-Africa Cooperation Forum³ (Shizhou Lou,2014).

Chinese universities become a partnership with the universities in South Africa. In 2014 and 2015, China and South Africa held the "Year of China" and "Year of South Africa", which pushed the China and South African cultural exchanges to a climax. Under such a background, the Confucius Institutes have become an important cultural link between China and South Africa, and further promoting educational cooperation and exchanges between China and South Africa. Third, the education sector of Sino South Africa cooperation is expanding. In 2014, China and South Africa have reached five partnerships in the field of education: curriculum development, mathematics and science, teacher training, vocational education, basic education research and development⁴ (Sadoko and Shen,2013). With the increasing number of Chinese enterprises entering South Africa, the cooperation potential between China and South Africa in the field of vocational education and skilled personnel training is enormous. In 2018, the China-South Africa Vocational Education Alliance was formally established, dedicated to promoting the development of Vocational Education in both countries and to providing stronger talent support for enterprises (Chi Xiu, 2018).

This paper consists of four chapters, and the first chapter introduces the background and the current situation of the Sino-South African education and skill cooperation; the second chapter will talk about the degree of demand for skills in Africa with emphasis on South Africa. Chapter three analyzes how Chinese companies meet labor and skill needs in Africa with emphasis on South Africa. Chapter four discusses how Chinese companies make a contribution to education and skills development in South Africa and how to promote the cooperation experience to the whole world.

³ From aid to cooperation: an analysis based on the "20 + 20 cooperation program of Chinese and African universities", Shizhou Lou

⁴ China - Africa Education Cooperation Policy: What is Africa's Expectation for China - Africa Education Cooperation? SadokoApithy, Xiaolei Shen

CHINA-SOUTH AFRICA COOPERATION

Over the past decade, positive impacts which include the creation of 900 million non-agricultural jobs in developing countries has been more linked to fast changes in technology and greater reliance on intellectual abilities than on physical inputs or natural resources which has contributed to transformations in the world economy⁵. While at the same time, imbalances as a result of lack of skills resulted in a high rate of unemployment, especially among the youth in the developing countries including African countries⁶.

Notwithstanding African policymakers have continued to advocate for more job creation in the non-agricultural sector to boost urbanization and achieve middle-income status,⁷ Africa's transformation is occurring progressively amid low levels of human capital⁸, which have further translated into poor labor market outcomes and a problematic school-to-work transition⁹. This has affected both the economy and the young people, as skilled workers are required to drive a country's productivity, growth and international competitiveness. On the other hand, China's presence in Africa has been very significant as many if not most of china's major investment contains in it some components of human resource development. This includes both the investments undertaken by China's private sector as well as the state-owned enterprises, in areas like telecoms, roads, railways; construction, water development, and education; and they are the major capacity building components (King, 2010). China has also extended its assistance in the areas of health, cultural and tourism, through scholarships and training bridging the gap in the skill transfer in Africa.

Although the continent has been reliant on foreign assistance from the west, this has failed

⁵ McKinsey Global Institute, 2012.

⁶ UNDP (2015) Human Development Report 2015: Work for Human Development. UNDP.

⁷ BIAVASCHI, C., PIETERS J., EICHHORST, W. et al (2012) Youth Unemployment and Vocational Training, IZA DP 6890.

⁸ GARCIA, M. and FARES, J. (2008) Why is it important for Africa to invest in youth? In: Garcia, M. and Fares, J. (eds) Youth in Africa's Labor market. Washington DC, World Bank.

⁹ GARCIA, M. and FARES, J. (2008) The three pillars of policy: Lessons from international experience. In: Garcia, M. and Fares, J. (eds) Youth in Africa's Labor market. Washington DC, World Bank.

to meet up with the demand of many African countries to build up the necessary skills required to tackle numerous domestic challenges. China, as a latecomer, is offering scholarships to African students, including south Africans, to promote Africa's independent educational development by strengthening its capacity to build human and cultural resources. China's scholarships to African students include areas of sciences, humanities, engineering or technology, Chinese language and social sciences (Ehizuelen et al, 2017). The number of scholarships for Africans including south Africans has increased since the 3rd forum for China – Africa cooperation held in Beijing, 2006. Ehizuelen et al. (2017) added that the annual increase in China's scholarships to students from African countries has averaged 835 and in 2011, and a total of 6316 scholarships were given to students from African countries. Recently the number of African students in China is estimated at 50,000,¹⁰ this is in line with the promise made by President Xi Jinping when speaking during the sixth FOCAC forum held this year (2018) in Beijing, pledges to enhance development experiences by offering occupational training courses for African youth and training young talents in agricultural science, increasing the Chinese government scholarships from 30, 000 in 2015 to 50,000 in 2018 for Africa, inviting 2, 000 young people from Africa to visit China.

South Africa's scholarship cooperation with China took off in 2000, with the establishment of a bi-national commission between the two countries which heralded the signing of over 50 cooperation agreements in nuclear energy, science and technology, as well as in culture, education and tourism (King, 2010). China's relations with South Africa is quite different from the rest of African countries owing to some characteristics possessed by South Africa – like the presence of a Science and Technology Counsellor, the only one in the whole Africa, apart from Egypt; South Africa also has one of the only Education Counsellors in the whole continent, again apart from Egypt; South Africa is also unusual in being one of the few African countries to be in the process of setting up a development cooperation agency (South African Development Partnership Agency [SADPA]);

¹⁰ Victoria Breeze and Nathan Moore .2017 China has overtaken the US and UK as the top destination for Anglophone African students, Michigan State University

South Africa has the largest number of new Chinese residents on the continent with an estimate of over 300,000 (King, 2010). All these have made South Africa a favorable contender and one whose educational cooperation with China is not based on aid relation when compared to the number of Chinese students studying in South African universities.

In 2004, the first center for Chinese studies in Africa as well as South Africa was established at the University of Stellenbosch. This center, according to Kenneth King, has covered a great deal of China-Africa cooperation. For instance, like on infrastructure development, the relevance of Chinese agricultural technology for Africa, China's aid modalities in Africa, patterns of Chinese investment, aid and trade in specific countries, and most recently, an evaluation up to 2009 of the Forum on China Africa Cooperation which for the last ten years has been the key umbrella mechanism for China's engagement with the whole of Africa (King, 2010). South Africa unlike many African countries prides itself on the strong ownership of its policies in education and training. According to King (2010), major modalities of China's cooperation in education and training, such as the long-term scholarships and short-term training, are not as salient items of competition in South Africa as in countries such as Kenya or Ethiopia, as there is even more interest in Chinese students coming to study in South Africa than the other way round. This has also posited South African perception towards China as an investor or trade partner, rather than a global power as seen by other African countries (King, 2010). In 2015, 53 South African students won the Chinese government scholarship to pursue their studies at various universities on a full scholarship in China. Also this year, 2018, 32 students were also awarded scholarships by the Chinese government to pursue their studies in all Bachelor's, Master's and Doctor's programs within 17 academic majors on scholarships provided by the Chinese government. Nevertheless, there are also individual cities that have scholarship agreements with China as well as higher institutions, for instance, in 2014, the Free State province sent 239 students to China.

The total number of South African students in China is estimated at about 1,000 students, making up perhaps as much as a tenth of all Africans students studying in China. In the area of long term and short-term training for South Africans, in 2017, TEN (10) South

African students attended an international training exercise in China as part of a partnership between the South African government and Huawei, the Chinese multinational networking and Telecommunications Company. The students have been selected to attend the exercise in the capital Beijing and Shenzhen, the major financial center, as part of Huawei's annual Seeds of the Future. All these aims at strengthening Sino-South African education cooperation as well as meeting the huge demand for professional and skilled personnel.

According to (King, 2010, p.78), China is using five modalities in its relation with South Africa. Those modalities are the human resource dimensions of the FOCAC frameworks, the capacity building of South Africans in China, Confucius Institute's activities in South Africa, Stand-alone education project between China and South Africa and the enterprise-based training of South African in Chinese firms.

Even though the China-South Africa cooperation is very advanced, South Africa also benefits, like other African countries, from the many welfares of the Forum of China-Africa Cooperation (FOCAC). Regarding China and South Africa cooperation in higher education, it is also included in the China-Africa people to people exchange and cooperation through the joint research and exchange plan. This plan has the ambition to strengthen cooperation and exchanges between Chinese and African scholars and Think Tanks'. South Africa higher education is also a part of the 20+20 project which is a cooperation plan between Chinese and Africans educational institutions. This cooperation plan aims to bring more intensive one-to-one cooperation between 20 Chinese universities or vocational colleges and 20 African universities (King, 2010). Two South African universities are involved in this project. The University of Stellenbosch in South Africa is twined with Hunan University in China, and the University of Pretoria in South Africa is twined to Northeast Normal University in China.

China has a relationship with almost all African countries through the Pan-African framework of the FOCAC. But still, there are particularities in its cooperation with each African country by strong bilateralism (King, 2010, p.74). In term of particularities, China-South Africa cooperation has many. Even though China-South Africa diplomatic relation only started in 1998 (formally, South Africa had diplomatic relations with Taiwan from 1976), over the last 20 years this cooperation has been intense and

productive. China-South Africa cooperation, rather than being an aid relation, is more likely to be seen like symmetrical win-win cooperation between equals' countries (King, 2010, p.74). The symmetry of this cooperation can be seen in the establishment between the two countries of a bi-national commission in 2000 which 10 years later has already produced more than 50 cooperation agreements in various fields like education, science and technology, culture, etc. We can notice the importance of education and scientific cooperation through the presence of an Education Counselor and a Science and Technology counselor.

Always on the level of higher education cooperation, South Africa has a great concern about what China is doing in all part of Africa. South Africa has opened the first Centre for Chinese Studies (CCA) in Africa since 2004 at Stellenbosch University. For the study of China and East Asia on the African continent, CCS serves as the most perceptible and distinguished point of reference. Their policy-relevant analysis is centered on academic standards. CCS also used to conduct a commissioned analysis of China-related research for government, academia, business, NGO communities... The focus of CCS is China's engagement in Africa through infrastructure development, the transfer and impact of Chinese agricultural technologies in Africa, the characteristics of Chinese aid in Africa, Chinese investment structure, China-Africa trade relations, the evolution of China-Africa relations through FOCAC framework (King, 2010). Globally, the CCS use to conduct research focusing on the impact of China-Africa cooperation in political, economic, social and environmental levels. CCS of Stellenbosch University has already published various academic papers concerning China-Africa relationship. The CCA provides valuable information for researchers interested in the evolution of China-Africa cooperation.

The education cooperation and especially higher education cooperation doesn't refer to an aid relation, but win-win cooperation. In fact, the importance of the China-South Africa higher education cooperation is more a reference to the fact that historically, significant numbers of Chinese students could be found in South Africa. Generally, higher education cooperation between China and African countries is characterized by the huge number of African students who have the opportunity to receive instruction in Chinese universities. But the quality of South African universities is good

enough to attract Chinese students. Someone can ask himself which factor can explain the good level of South Africa University.

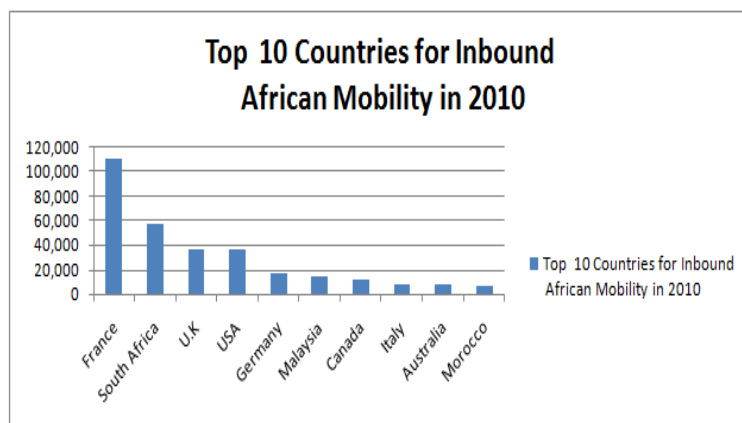
For a long time, social inequalities were perceptible in all spheres of South African society. This phenomenon was the result of the exclusion of blacks and women inherited from colonialism and apartheid. Unfortunately, higher education was no exception to this reality. According to Badat (2010, p.2), “*Social, political and economic discrimination and inequalities of a class, race, gender, institutional and spatial nature profoundly shaped, and continue to shape South African higher education*”. Aware of this challenge, the new South African democratic government implemented strategies in 1994 to reconfigure higher education. Post-1994, they have been initiatives focused on the transformation of higher education in South Africa. These initiatives have touched on various issues such as policies and their implementation, funding for higher education, academic structure and programs, quality of teaching, the promulgation of new laws and regulations, major restructuring, reconfiguration higher education and institutions, etc.

All these reforms have contributed effectively to the transformation and development of higher education in South Africa. Efforts made in that direction for 24 years have led to considerable progress in the configuration and the quality of higher education in South Africa. Indeed, according to Shanghai Ranking 2018, South Africa has the best higher education of the continent, with 4 universities ranked among the 500 best in the world. These four universities are University of the Witwatersrand, University of Cape Town, Stellenbosch University and the University of Pretoria. It should be noted that apart from South Africa in the African

continent, only Egypt has a university ranked among the top 500 in the world (Cairo University). According to Shanghai Ranking, South Africa is also the only African country that has always had between 3 and 5 universities among the top 500 in the world for the past 14 years. These performances are because for the past 24 years when Mandela became President of South Africa, the country has prided itself on the strong ownership of its policies in education and training (King, 2010).

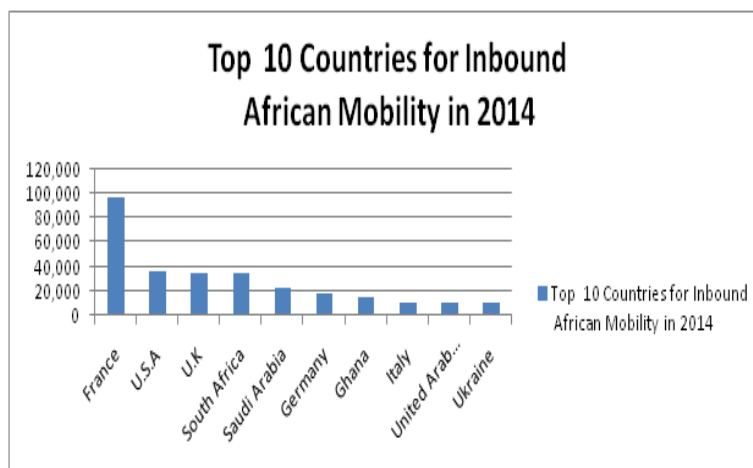
The mobility offered by China to African students is a key modality of China's African aid. It is also one of the oldest forms of cooperation between China and Africa (Procopio, 2014, p.562; King, 2013). It should be noted that the advent of the Forum of China-Africa Cooperation (FOCAC) has improved the mobility of African students to China (King, 2013; King, 2010). Indeed, the scholar claims that since the establishment of the FOCAC, the phenomenon of negative racial issues between Chinese and African students is progressively disappearing. And he believes that the new attitudes of both groups may be endorsed to the growth of China's economy and significant investment in China-Africa collaboration through higher education institutions throughout the past two decades. Even if the precise figures are not revealed, this fact is confirmed by the analysis of student exchanges between China and South Africa, which reveals that there is almost a balance between the number of Chinese students who choose South African universities and the number of South African students who choose to study in Chinese universities. South-African universities are not only highly attractive for Chinese students, but also for other African students.

Chart 1



Source UNESCO Institute for Statistics

Chart 2



Source UNESCO Institute for Statistics

These two charts are showing how South Africa higher education institutions are attractive to other African students. This fact constitutes a commentary on the quality of South African universities. Even if the trend has evolved considerably since 2010, South Africa higher education institutions remain the most attractive among African universities.

The high level of South Africa key university makes South African students not so impressed by the scholarship offered by the Chinese government. And the exchange of student by China and South-Africa is almost balanced because there is as much interest in Chinese students going to study in South Africa. Especially in term of educational and scientific cooperation, the China-South Africa collaboration appears much more to be of genuine win-win collaboration rather than an aid relationship. For that reason, some scholars like (King, 2010), stated that it is not easy to classify China-South Africa education cooperation because South Africa is characterized as not aid-dependent country. Especially in term of education, South Africa uses to look critically at all offers of development assistance, to be sure that it fits their educational policies.

South Africa's performances in higher education are growing continuously. According to the American National Science Foundation's ranking index, in 2016, South Africa and two other African countries (Egypt and Tunisia) reached the top 50 global producers of peer-reviewed science and engineering publication. The classification was based on the papers published in peer-reviewed journals in 2013, and *Science and Engineering Indicator 2016* positioned South Africa in the 35th rank with

9,854 peer reviewed papers. It seems normal to have South-African on the top of African Countries in term of higher education, because it is the African country which had the highest budget for research and development. South Africa spent US\$4.9 billion in research and development in 2012, which was 0.8 percent of its GDP.

Despite South Africa's ever-increasing performance in higher education over the last two decades, the academic crisis of 2016 and 2017 has hugely disrupted the stability of the country's higher education system. In fact, following the prolonged student strikes following the announcement of the government's decision to increase university fees by 8 percent in order to reinforce the funding of university institutions, waves of protest prolonged, which contributed to weakening the balance of the university system. Obviously, because some reputable campuses shut down during the period of troubles, numbers of international students in South African research institutions have seen their research ability weakened.

For many reasons, a huge number of students from across Africa want to study in universities abroad. Some estimations report that more than 5.8 percent of African students enrolled in universities abroad. So, the outbound mobility of Africans student is higher than other region's students. According to UNESCO, the numbers of African students studying abroad is on a generally increasing trend, rising from 239,179 students in 2000 to 373,303 students in 2013. Because of the changing trends of African outbound mobility, many among those African international students are choosing Chinese

universities. According to the Chinese Ministry of Education (2015), during the last decade, the number of African students studying in Chinese universities has increased drastically from 2,757 in 2005 to 49,792 in 2015. Among those students, many have obtained a scholarship from the Chinese Government and Confucius Institute. But because China does not provide detailed information and statistic about the distribution of those students by countries (different African countries), it is quite difficult to provide detail about the number of South African student studying in China.

As stated by Lin Songtian, Chinese ambassador to South Africa During a send-off event held in Pretoria this year, “people-to-people exchange has become an important part of bilateral comprehensive strategic partnership”, “our cooperation in education, culture, science and technology, health, youth and women continues to expand and prosper, greatly enhancing the mutual understanding and friendship between our two peoples”.

SKILLS DEMAND IN SOUTH AFRICA

The genesis of South Africa skills policy is intricately connected to the nation’s history as an Apartheid nation, the legacy this presented in the labour market, and the efforts of post-1994 to ameliorate the iniquities of “*Bantu*” education. However, skills are not about the scare and critical skills, which imply some form of advanced qualification in a ‘high skills’ environment. Certainly, one of the critical tenets of Andre Kraak’s work (2004, 2005), has been that the emphasis on ‘high skills’ is not sufficient in a developing economy such as South Africa. The author added that emphasizing low skilled strategies should be viewed in a positive light, particularly with respect to addressing unemployment and stimulating labor-intensive forms of production (Kraak, 2004: 212). Additionally, the exclusive emphasis on the ‘high skills’ strategy ignores the tough conditions and constraints that developing economies face in their attempts to move up the value chain (Kraak, 2004: 213). Consequently, we should think of “skills shortages” as comprising everything from the most advanced qualifications to the most elementary, and “skills development” as something that may be required for diverse people at dissimilar stages of their life cycle, or over the business cycle, or both.

With that said, Borat and Lundall (2002, 36) assert that 35 percent of all firms surveyed (894) identified “inadequate skills” as the most vital

reason why they were dissatisfied with firm productivity, while 19 percent of firms thought it the second most vital reason. By sector, 24 percent of manufacturing firms identified inadequate skills as the most important reason why they were dissatisfied with firm productivity, while in the service sector, 39 percent of firms thought it the most important factor (Bhorat and Lundall, 2002, 37). In the service sector, this was by far the biggest constraint to productivity improvements.

However, this was not the case in the manufacturing sector, where the dominant reason for dissatisfaction amongst manufacturing firms was “poor employee motivation” (31 percent) and “trade union disruption” (25 percent) (Bhorat and Lundall, 2002, 36). Borat and Lundall (2002) also disaggregated the above outcomes of the size of the company, where it became clear that there was a sequential ordering in the priority of skills shortage by size category. Amongst the largest firms with employment figures greater than 200, 65 percent of firms surveyed thought skills to be a problem; amongst firms with between 100-199 employees, 30 percent thought skills were a problem; amongst companies with between 50-99 employees, 5 percent thought skills to be a problem, and amongst those with less than 50 employees, 1 percent thought skills to be a problem (Bhorat and Lundall, 2002, 38).

While specific occupational skills shortages were not examined in the study, the importance of these outcomes was to add considerable nuance to the idea that skills shortages were ubiquitous. Akoojee and McGrath (2007;424) provide additional reasons for skills shortage in South Africa, namely the Apartheid system, where skills were profoundly racialized and gendered, which left Black, particularly female Black South Africans in complete denial of access to skills development. Much later in 2009, Breier and Erasmus (2009) concurred by placing the blame on skills shortage on an education system that still suffers from decades of neglect and dysfunction from Apartheid when Black people were educationally underprivileged. They also point to the insufficient education system that does not generate the necessary skills needed for the country’s economy. In essence, Breier and Erasmus are of the opinion that both the quantity and quality of education provided to the majority of South Africans in the past lacked substance. The immigration of South African skilled professionals to other parts of the world

such as the USA, the UK, Australia, New Zealand, and Canada is also mentioned as a contributing factor. Crush and McDonald (2002:1) confirm that many South African skilled professionals migrated to other parts of the world during the advent of the new political dispensation, as they feared the effects of Affirmative Action policies, crime and violence, and other policies that have also worked against the country's skills shortage.

Various studies (Alam & Hoque, 2010:535; Crush & McDonald, 2002:1; and Fourier (2006:44-45) relate skills shortage in South Africa to the rise of migration of skilled professionals and other forces. Some of these forces include internal and external factors. However, Kline (2003:108) classifies these forces as push and pull factors. According to Garbayo and Maben (2009:1), push factors are generally present in giving countries, while pull factors pertain to receiving countries. Rasool et al. (2012: 12) add racial differentiation and job security to the list of internal and external factors respectively. Alam and Hoque (2010:535) and Fourier (2006:44-45) argued that the above factors have somehow contributed to a reduction of skills in South Africa owing to the fact that many skilled professionals are lured by better working conditions and career development opportunities, which are presented to them in developed nations. Furthermore, Crush and McDonald (2002:1) argue that both push and pull factors also lead to depletion or loss of intellectual and technical personnel, with a negative outcome that impacts the economic and social growth of a country.

CHINA'S CONTRIBUTION TO EDUCATION AND SKILLS DEVELOPMENT IN SOUTH AFRICA

With the gradual promotion of the national strategies such as the Belt and Road Construction and forging the Concept of a Community of Shared Future for Mankind, the relationship between China and Africa is becoming more compact and harmonious. China contributes much on constructing a joint union of China and Africa, especially for South Africa. This chapter will introduce China's contribution to education and skills development in South Africa from three subjects – the Chinese government, universities and enterprises. The Chinese government plays a dominant role in the advancement of educational aid for South Africa and gives

guidance for Chinese universities and enterprise to support Education of South Africa. Chinese universities are the bridges for transferring useful and practical knowledge into South Africa, meanwhile, Chinese firms are the main force to provide more job opportunities and accelerate the economic development of South Africa.

Constructing Chinese Teaching Institutions — Confucius Institutes

South Africa is the most powerful African country with the strongest comprehensive strength and an important fulcrum country for China to promote strategic relations. Under the framework of the China-Africa Cooperation Forum and the BRICS countries, the educational and cultural exchanges between China and South Africa have shown strong vitality. The Confucius Institutes, as a crucial way of Chinese teaching institutions, have received more and more attention as an organization for Chinese promotion, personnel exchange, cultural contact and collision, and a normalized humanities communication platform. There are five Confucius Institutes and three Confucius Classrooms in South Africa, occupying the largest number of Confucius Institutes in Africa.¹¹

The construction of Confucius Institutes helps South African people learn more about Chinese and Chinese culture which create a large number of jobs, promoting the employment rate of South Africa to some extent. There are many studies on Confucius Institutes as a language promotion platform.¹² Many domestic South African people learn Chinese in the Confucius Institutes, and then find a job of Chinese companies which open in South Africa coasting on their obtainment of Chinese. For individuals, language learning maximizes their personal gains. They get higher salaries and better welfare while working in Chinese private or public enterprises, so that they have enough time and money to afford and take care of their families. By the end of 2017, China's investment in South Africa totaled more than 25 billion US

¹¹Niu Changsong. An Analysis on Development Features of South African Confucius Institutes and Its Influencing Factors[J].International and Comparative Education, 2017, (9):49-54.

¹²LianDaxiang & Wang Luan & Liu Xiaoou. Education and Economic Impact of Confucius Institute [J]. Tsinghua Journal of Education, 2017, 38(1): 38-45.

dollars, creating more than 400,000 jobs for the local. ¹³Therefore, it is not difficult for us to know that the opening of Chinese Confucius Institutions in South Africa creates a large amount of job opportunities for South Africa and the economy of South Africa is developing rapidly.

Besides, Chinese, as a common language, can effectively reduce transaction costs and increase business activities for promoting economic cooperation between China and local companies in South Africa. If there is a common language between different countries, the trade between them can be increased by 43% additionally. If the common language is Chinese, the better effect will emerge that there will be an additional 95% increase. Cultural communication is the same as it. When closer cultural communication between two countries, it can effectively reduce the gap between countries and enhance their exchanges, trust and consensus, thereby reducing transaction costs in trade and promoting trade and economy between the two countries. Moreover, more direct investment from China will be attracted to South Africa and more capitals are flowed into South Africa because of the construction of Chinese Confucius Institutes in South Africa. The total trade volume is prone to be increased, based on the effectively advancing communicative efficiency and constant trust of both parties. South Africa is China's largest destination for Africa's investment. By the end of 2017, China's investment in South Africa totaled more than 25 billion US dollars. ¹⁴

Cooperating With Universities to Cultivate Technical Workers

Universities in China cooperate with those universities in South Africa together to cultivate those students to become more skilled. It is a kind of direct docking between two universities in cultivating students, mainly concentrating on the science and technologies to help promote the economic development and modernization of South Africa.

Take Changzhou College of Information Technology as an example. It is known that there is a cooperative program between Changzhou

College of Information Technology and the South African Higher Education Department to carry out international student training programs. The South African Republic Higher Education Department project team is combined by seven undergraduate colleges and 10 vocational and technical universities in South Africa, selecting a total of 90 undergraduates and some other students to the Changzhou College of Information Technology. They conduct a one-year study, mainly majoring in electrical and mechanical engineering, electrical automation, software engineering and network communication engineering. The studying period of one batch of international students is often from March this year to February next year. The vocational training is divided into two sections: the professional knowledge and professional core competency training is carried out in Changzhou College of Information Technology in the pre-stage, mainly based on real training project-oriented teaching; In the latter stage, an internship at a cooperative company in the Changzhou College of Information Technology provides real job training. ¹⁵

In this way, the students not only get the theory learning in the university, but also practice the skills in the daily working situation, which helps them combine theoretical knowledge and practice to grasp the core skill better. Through the innovative practice of the talent training system, it effectively solves the problem that the classroom teaching is out of touch with the actual application, and it is difficult for students to meet the needs of professional positions. It also effectively solves the problem which is about the lack a long-term mechanism for multi-dimensional coordination and the lack of top-level design and difficult application of professional teaching resources, trying to establish professional adjustment and management mechanism that actively adapts to economic development and changes in the talent market.

Cultivating Skilled Employees by Chinese Enterprises

South Africa was a big agricultural country, and the base of the light industry was very weak. Most of the light industrial goods rely on

¹³Renming Daily. Thanks to Chinese companies for their contributions on South African manufacturing [OL].https://baijiahao.baidu.com/s?id=1604684422281362592&wfr=spider&for=pc_

¹⁴Renming Daily. Thanks to Chinese companies for their contributions on South African manufacturing [OL].https://baijiahao.baidu.com/s?id=1604684422281362592&wfr=spider&for=pc_

¹⁵China Net of Finance and Economics. Software professionals are so refined - focusing on that Changzhou College of Information Technology won the first prize of national level teaching achievements for two consecutive sessions. http://sh.qihoo.com/pc/96dc720c205bc6b16?cota=1&refer_scene=so_1&sign=360_e39369d1.

imports, which are not only expensive, but also often in short supply. But now, South Africa is the most industrialized country in Africa and mostly expected to be the hub of African manufacturing. In recent years, a large number of Chinese companies have come to South Africa to invest, especially in manufacturing, making a positive contribution to the development of South Africa's manufacturing industry. For example, their light industrial manufacturing covers a wide range of fields including clothing, shoes, hats, textiles, small household appliances, stationery, kitchen and toilet products, hardware products, and agricultural equipment. These enterprises not only fill the vacancies of South African industry, but also brought tangible benefits to the production and life of the South African people. In addition to direct investment, Chinese enterprises also provide aid for South Africa mainly from several aspects – sponsoring fundamental teaching equipment, recruiting and training workers and providing intern programs.

Sponsoring Fundamental Teaching Equipment and Skills

China and South Africa have strong economic complementarities. China has abundant capitals and technical experience, while South Africa has a good infrastructure and investment environment in Africa. Hence, Chinese enterprises provide fundamental teaching equipment and skills to support the development of the industry of South Africa. For instance, running on the Addis Ababa Djibouti Railway is electric locomotives to carry goods to other areas in South Africa, which are produced by CRRC Zhuzhou Electric Locomotive Company Limited. Nowadays, there are more and more electric locomotives made in China running on the African continent. With the help of China, African-made locomotives have also begun to ride on this vast continent. As of April 2019, CRRC Zhuzhou Machinery Co., Ltd. has independently produced nearly 300 locomotives and put them into use in South Africa which transported 200 million tons of cargo, supporting the development of the electric locomotive industry in South African.

In order to improve the localization rate, the company carried out large-scale transference of technology and provided technical assistance for South Africa, including more than 7,000 drawings of Accessories and technical documents of locomotives to local suppliers, and provided more than 2,000 sets of tools. The

technology transference not only improved the loading efficiency of CRRC Zhuzhou Machinery Co., but also expanded the influence of CRRC in the rail transit field in South Africa. At the same time, it promoted the development of related industries in South Africa to some extent.

Recruiting and Training Workers

Many Chinese companies recruit a large number of graduates and workers of South Africa as employees, giving skill training opportunities and cultivating plans for them. In this way, we can really get the important core skills and learn how to produce. Then, South African has hope for developing and creating more value for the whole country and all people. CRRC Zhuzhou Electric Locomotive Company Limited taught the relevant technology of designing and manufacturing locomotives to local engineers in South Africa, and regularly sent excellent local staff to China for training. In addition, Chinese companies are also committed to bringing advanced concepts and cutting-edge information technology to South Africa to help transform South Africa's local manufacturing industry into digitalization. Huawei, a Chinese communications company, is an example. Huawei's first ICT Innovation Experience Center in Johannesburg, South Africa, brought cloud computing, big data, mobile and social technologies to South Africa, allowing South Africans to experience many high-tech products, such as first-hand Internet of Things, robotics, 3D printing, virtual reality and so on. Huawei's first ICT Innovation Experience Center also provides a technology incubation platform for local SMEs and builds open laboratories for several universities in South Africa, including Johannesburg University and some other universities in South Africa. Apart from it, this center actively implements the "5-year-old training program" to train local talents and provide assistance for the digitalization of South African manufacturing.¹⁶ These measures spread the skills and promote the technological development in South Africa.

Partnering with Universities to Help Cultivate Skillful Employees

The relationship between school and business is extremely close in South Africa. With the rapid steps of economic globalization, many Chinese companies are set up in South Africa as one of

¹⁶Renming Daily. Thanks to Chinese companies for their contributions on South African manufacturing [OL]. https://baijiahao.baidu.com/s?id=1604684422281362592&wfr=spider&for=pc_

the ways to invest, so they need a large number of local skilled labors to help produce and create. Universities in South Africa pay much attention to the cultivation of students' practical application ability for meeting Chinese enterprises' demands on skilled employees. The teaching and practice are closely combined to help cultivate excellent employees to meet the demands of the society. Besides, there is a curriculum committee, and employers are invited to join the committee to set courses according to the needs of enterprises. Many cooperative research projects established by enterprises are directly reflected in the curriculums of the university. Therefore, those students that universities cultivate have strong adaptability to technical work in their working situation. The school also regards "cultivating students with the skills and qualities of entrepreneurs" as one of the important educational goals. These students are promising with good employment prospects after graduation. Universities of Science and Technology should closely integrate with the needs of enterprises in terms of professional settings, reflecting the need of universities and colleges to adapt to the market and cultivating talents for the society.

For instance, the Durban University of Technology, founded in 2002, originally owned the Durban Institute of Technology, which specializes in business management, corporate management, cost and management accounting, financial information systems, food and beverage management, food and consumerism, horticulture, information technology, building technology, biotechnology and so on. In addition, the real cases of students' hands-on experiments are included in the textbook selection and curriculum setting to improve students' practical ability and social adaptability. At the same time, the research direction and research plan of the Durban University of Technology are directly involved in the production and operation activities of enterprises. Graduates of this university can not only become good employees, but also can be a good employer for SMEs.¹⁷ From the above statement, it is not difficult for us to learn that these majors set by the university are combining the practical application with courses in the university. What can be clearly shown that it is reasonable and rational that universities of Science and

¹⁷Hu Xiaoling. South African occupational classification and applied technology talent training system [J]. *Journal of World Education*, 2015, (24): 59-64.

Technology pay attention to the combination of practical application and curriculum learning.

CONCLUSION

Best practice transfer is the transfer of 'solutions' to development problems from one country of the South to another. We have the impression from this South Africa study that China is on a learning curve as far as its delivery of assistance at the country level is concerned. At the same time, South Africa has attached great importance to relations with China. The country will strengthen bilateral high-level visits and people-to-people exchanges at all levels, enhance mutual understanding and friendship, promote the bilateral ties and Africa-China relations. To conclude, this paper focuses on the necessity of Sino-South Africa cooperation in the perspective of technology demands, and through educational cooperation, the skill gap will be narrowed, so as to promote the living standards of the people. What we have demonstrated is China's contribution to education and skills development in South Africa from three aspects – the Chinese government, Chinese universities and Chinese enterprises. China helps provide facilities as a way of direct investment and cultivate skilled persons to promote the educational, economic and social development of South Africa. Later, China is prone to cooperating more local universities or companies and putting more into the education and skills development in South Africa, making progress on training talents together and marching forward for a brighter future hand in hand.

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