

# CHINA

## Introduction and context

China is the most populous country in the world, with more than 1.4 billion inhabitants (NBS, 2021) and the largest developing country in the world: its per capita GDP is below the global average and ranks around 63 in the world (IMF, 2021). In 2020, the eradication of extreme poverty for 30 million people in rural areas was an important milestone in China. Since then, living standards and educational equality and quality have improved greatly and higher education has entered the universalization stage with a gross enrolment rate of 51.6% (MOE, 2020a).

China has a state-run public education system which took its current shape between 1977 and 1980 and is managed by the State Council and local government at all levels. All citizens must attend school for at least nine years, which are funded by the Chinese Government and include 6 years of primary education, starting at age 6 or 7, and 3 years of junior secondary education for ages 12 to 15. After junior secondary school, there is an option to attend three years of senior high school or secondary vocational school, which completes the upper secondary education. Since 1982, the number of private primary and secondary schools has increased year by year and the number of enrolled students has grown to 17.7 million, accounting for 6.1 per cent of the student population in 2019 (MOE, 2020a).

China has different types of formal higher education: for-degree higher education, non-degree higher education, full-time and part-time higher education and open and distance education. According to data for 2019, there are 2,956 higher education institutions (HEIs) in China, of which 1,265 are universities offering Bachelor degrees and 1,423 identify as higher vocational education institutes. In addition, there are 268 adult HEIs including 45 open universities. The gross enrolment rate for higher education is 51.6 per cent and there are 2,858 college students for every 100,000 people. There are a further 757 non-government HEIs in China catering to a total of 7.08 million students, including 257 independent colleges and 1 college for adults (MOE, 2020a).

China's National Vocational Qualification Certificate System (NVQCS) was introduced in 1993 by the Ministry of Labour (now called the Ministry of Human Resources and Social Security (MHRSS)). National vocational qualification examination is an essential part of the Chinese labour employment system, which was introduced in 1993 by assessment agencies approved by the government. Accreditation of learning outcomes is granted following the assessment of skill levels or vocational qualifications provided by an institute; these assessments are based on vocational skill standards or qualification requirements established by the government. In January 2020, the *National Vocational Qualification Catalog* released by the Ministry of Human Resources and Social Security showed that there were 58 vocational qualifications including 23 for level evaluation, and 81 technical qualifications including 76 for level evaluation. On December 30, 2020, Premier Li Keqiang presided over an executive meeting of the State Council and decided to cancel the level evaluation qualifications step by step and implement socialized vocational and technical level recognition (MHRSS, 2020).

In June 2012, the Department of Vocational and Adult Education of the Ministry of Education entrusted the Open University of China (OUC) to carry out the project entitled Research and Practice of the National Continuing Education Learning Outcomes Accreditation, Accumulation and Transfer System. To this end, OUC established a learning outcome qualifications framework (LOQ), which, in the form of credit banks, aims to recognize, validate and transfer learning outcomes among vocational colleges, continuing and adult learning institutes and various non-academic training institutions.

In 2016, Guangdong Province established the *Guangdong Lifelong Education Qualifications Framework* to develop pluralistic 'growth pathways' by connecting various types of education and learning outcomes (Department of Education of Guangdong Province, 2016). It is the first standardized qualifications framework jointly

established by various government departments, educational institutions and industries in China. In March 2017, Guangdong Provincial Quality and Technical Supervision Bureau approved a *Guangdong Lifelong Education Qualifications Framework Level Standard*, which is China's first qualifications framework standard at provincial level.

In 2019, the Department of Vocational Education and Adult Education of the Ministry of Education commissioned the Central Institute for Vocational and Technical Education of the Ministry of Education to carry out the research work entitled *Research and Practice of National Qualifications Framework on Vocational Education*. After two years of effort, based on international comparison and experience acquired by OUC, Guangdong province, Chongqing municipality and Jiangsu province in implementing qualifications frameworks, learning outcome frameworks and vocational education and training qualifications frameworks, the research team proposed the *National Qualification Framework Level Standard* and the *National Qualification Framework Level Standard Manual*, comprising the qualifications framework levels and standards, Specification of Competency Standards (SCS), internal quality assurance mechanism, external quality review, outcome-based evaluation, credit accumulation, mutual recognition and transfer mechanism and credit bank system construction, etc. A three-in-one China lifelong learning qualifications framework system entitled *Qualifications Framework Standard + Learning Outcome Accreditation and Quality Assurance + Credit Bank System* was proposed as a basic system for lifelong learning, supported by big data, artificial intelligence and blockchain technology (Zhang, Xie and Zhang, 2021).

*China's Thirteenth Five-Year Plan for National Economic and Social Development of the People's Republic of China* (hereinafter referred to as the *13th Five-Year Outline*) and *Education Modernization 2035* clearly proposed the establishment of a national qualifications framework, learning outcome accreditation and credit bank construction. The National Social Science Fund's National Qualifications Framework Research project was granted to conduct comprehensive and systematic research on the qualifications framework construction. This was completed on 26 July 2021. In 2021, the Chinese Service Center for Scholarly Exchange of the Ministry of Education completed a comparative research project on the degree systems and qualifications frameworks of China and foreign countries. Although China has made great efforts to develop and practise its NVQCS and QF, educational and economical inequalities persist across the country. Furthermore, several industry sectors still need to be modernized or integrated in the context of China's economic transformation. It is a challenge to stipulate a

nationwide standard or qualifications framework that can be applied in all regions and cities and across all industries and occupations.

Another challenge pertains to international comparability of qualifications. With the development of the economy and increasing globalization, more Chinese students are travelling abroad to study. According to the Organization for Economic Co-operation and Development (OECD) *Education Report 2020*, over 660,000 Chinese students studied abroad in 2019 (OECD, 2020). In addition, the export of labour has increased over the years: in 2000, an estimated 425,667 Chinese citizens emigrated for work; in 2019, this number rose to 992,000 (MOC, 2020:11). China therefore needs to build a unified qualification framework to strengthen the comparability of qualifications and promote international mobility, especially for the training of skilled talent serving the countries along the Belt and Road.

A third and final challenge applies to the mismatch between the labour market and technical and vocational education and training (TVET) providers. There is insufficient cooperation between TVET institutions and employers regarding workplace training, which is compulsory for students enrolled in higher vocational education institutes. There is also insufficient planning to meet the needs of the labour market. The coordination between labour supply and demand is also poor (OECD, 2020).

## Policy objectives

In 2010, China issued the *National Plan for Medium and Long-Term Education Reform and Development (2010–2020)*, wherein the Ministry of Education proposed establishing pathways of lifelong learning in the education and training system (MOE, 2010).

From an educational perspective, the government's aim was to:

- connect every level and form of education and learning and establish a way to measure learning outcomes;
  - enable the credits earned in continuing education to be accumulated and transferred so that the recognition and validation of different kinds of learning outcomes could be achieved;
  - ensure the comparability and transparency of learning outcomes;
  - facilitate equal access to quality education.
- From a social perspective, the aim was to:
- enhance the acceptance of qualifications by society and the labour market;
  - improve the quality of the labour force and the development of society and the economy;

- strengthen the international competitiveness of the labour force in response to the challenges of the knowledge economy;
- promote nationwide lifelong learning.
- From a personal perspective, the aim was to:
- provide more choices to meet various learning needs for personal and career development;
- respect the learning outcomes of learners from different learning settings (formal, non-formal and informal);
- establish self-directed learning pathways;
- improve individual competence.

The *13th Five-Year Outline*, promulgated in 2016, proposed a personal learning account and credit accumulative system to smooth the continuing education and lifelong learning channel, along with a national qualifications framework, and promoted credit transfer and mutual recognition of non-degree education learning outcomes and vocational skills levels. The plan also proposed the development of a national qualifications framework in China.

In 2019, China's *Education Modernization 2035* plan issued by the General Offices of CPC Central Committee and the State Council encouraged actors to 'establish an institutional environment for lifelong learning for all, establish a national qualifications framework, establish a sound national credit bank system and a learning outcome accreditation system' (The State Council of the People's Republic of China, 2019). The notice on the issuance of an Action Plan for the Improvement of Vocational Education Quality (2020-2023), the work of nine national departments including the Ministry of Education, proposed that actors 'promote the construction of a national qualifications framework and establish a mechanism for recognition, accumulation and transfer of learning achievements of all levels and types of education and training' (MOE, 2020c).

On 29 October 2020, the proposal of the Central Committee of the Chinese Communist Party on formulating the *Fourteenth Five-Year Plan for National Economic and Social Development and Long-Range Objectives Through the Year 2035*, approved by the Fifth Plenum of the 19th Central Committee, proposed to 'make use of the advantages of online education, improve the lifelong learning system, and build a learning society' (The State Council of the People's Republic of China, 2020). In 2021, the Fourteenth Five-Year Plan for National Economic and Social Development and the outline of the Long-Range Objectives Through the Year 2035 proposed to 'deepen integration of general and vocational education and realize mutual recognition and vertical circulation of vocational and technical education and general education' and 'unlock channels for mutual recognition and conversion of different types of learning outcomes' (The State Council of the People's Republic of China, 2021). The establishment of a qualifications framework for linking and communicating various learning outcomes has become a major strategy for building a lifelong learning system that serves the entire population of China.

## Levels, learning outcomes and qualifications

### Levels and use of learning outcomes in NVQCS

The NVQCS has five levels (see **Table 1**); occupational standards are key to the system. A certificate is proof that the holder has the knowledge and skills essential for the practice of the occupation in question and qualifies them to set up a business in China.

**Table 13. Levels and competence demands of NVQC**

LEVEL	NAME OF CERTIFICATE	COMPETENCE DEMAND
5	Primary worker certificate	Can complete regular work independently with basic skills.
4	Intermediate worker certificate	In addition to the requirements of Level 5, Level 4 certificate holders can also cooperate with other workers and carry out more complicated work with specialized skills in certain situations.
3	Advanced worker certificate	Can complete complex and irregular work with specialized skills and special competences skilfully; masters the key skills of his/her own occupation; can deal with and solve technical challenges independently; can make innovations in technology; can organize and supervise other workers; can train general staff.
2	Technician certificate	Can carry out complex work including irregular work with basic skills and specialized competence; can deal with workplace issues independently; can supervise other workers and assist training of general staff.
1	Senior technician certificate	Can complete complex and irregular work with specialized skills and special competence in every area of own occupation; masters the key operational skills of their own occupation skilfully; can deal with and solve difficult challenges independently; can make innovations in technology; can organize technical reform and innovation; can lead systematic training for specialized skills.

Source: MHRSS (2018).

**Table 2** illustrates the corresponding relationship between the NVQC and two other sub-frameworks.

- The NVQC is designed for specialized industries such as medicine and law, without which workers cannot be employed.

- The Qualification Certificate for Professional and Technical Personnel (QCPTP) has its own levels: junior, intermediate and senior.
- The Qualification Certificate for Skilled Workers (QCSW) is designed for manual labourer. In China, in contrast to other countries, 1 is the highest level and 5 is the lowest level.

**Table 14. Corresponding relationship of NVQC with QCPTP and QCSW**

LEVELS	NVQC	QCPTP	QCSW
5	Primary worker certificate	/	Primary worker certificate
4	Intermediate worker certificate	/	Intermediate worker certificate
3	Advanced worker certificate	Junior	/
2	Technician certificate	Intermediate	/
1	Senior technician certificate	Senior	/

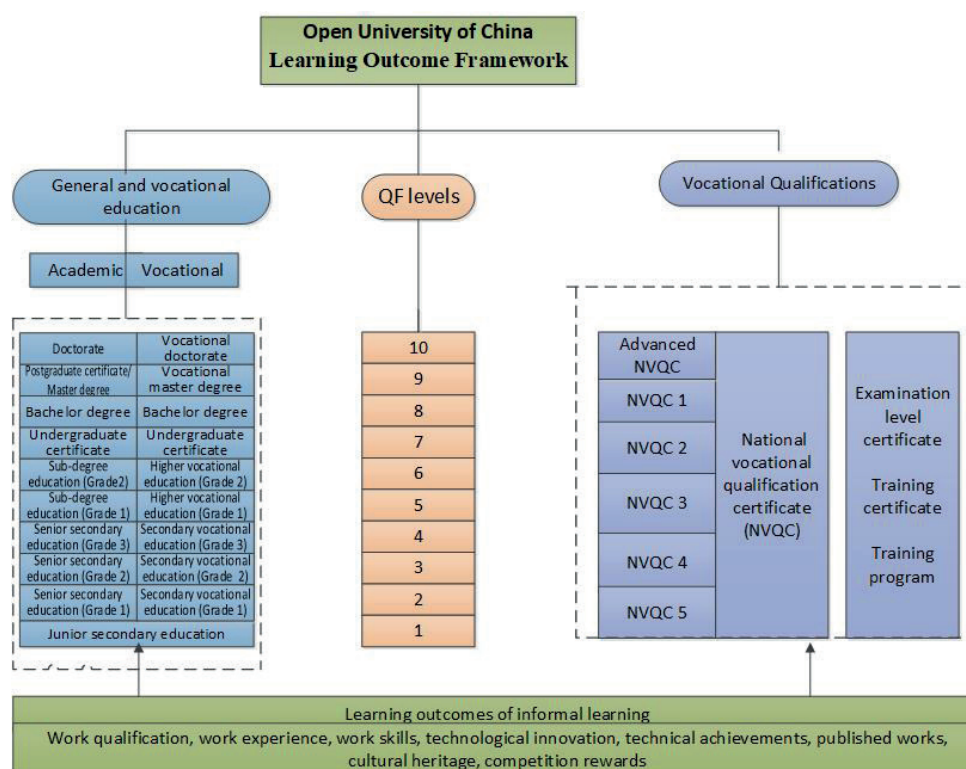
Source: MHRSS (2018).

### Learning Outcome Framework of the Open University of China (LOFOUC)

LOFOUC consists of 10 qualification levels with 3 domain descriptors for learning outcomes: knowledge (factual, technical and theoretical), skills (cognitive, technical, communicative and

expressive) and competency (autonomy, judgment and responsibility for the application of knowledge and skills) (see **Figure 8**). OUC has established 75 learning outcome accreditation centres across the country, spanning 31 provinces and 24 industries.

**Figure 8. Learning Outcome Framework of the Open University of China**



Source: Open University of China Credit Bank, 2013

### Guangdong Lifelong Education Qualifications Framework (GDLEQF)

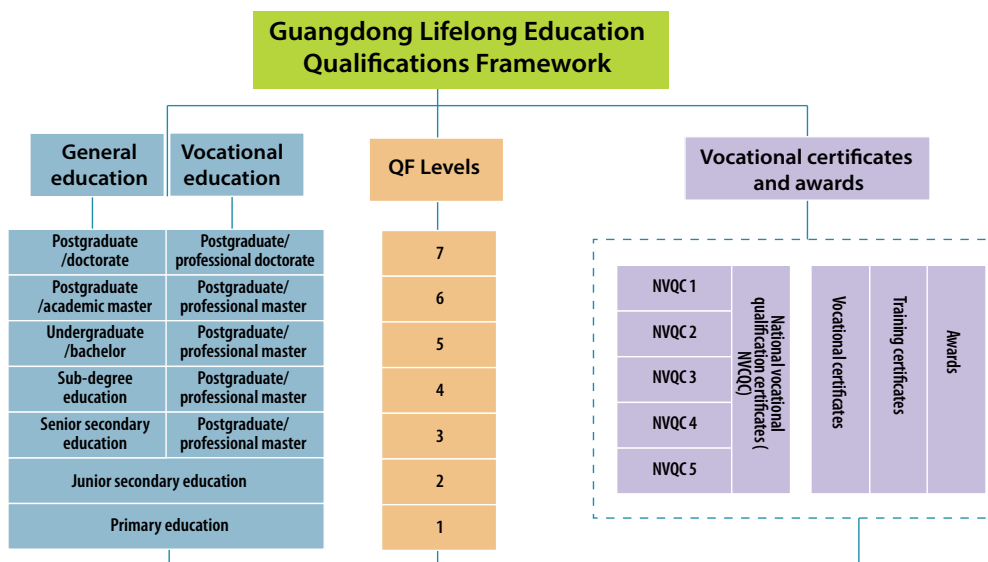
GDLEQF:

- divides learning outcomes into seven levels;
- clarifies the relationship between general education, vocational education, vocational training and awards;

- establishes the standards of each level from the three dimensions of knowledge, skills and competency (see **Figure 9**).

It is the first local standardized qualifications framework in China.

**Figure 9. Guangdong Lifelong Education Qualifications Framework**



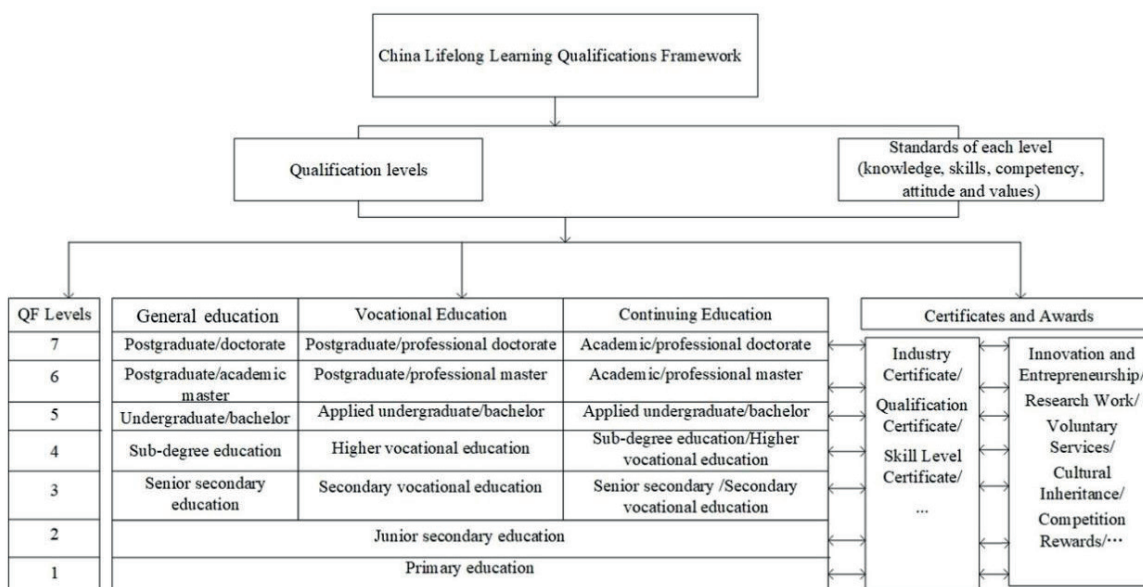
Source: Li, Zhao and Guan (2019, p. 63)

### Proposed China Lifelong Education Qualifications Framework and its system

In December 2020, after a two-year research project on the object of research on and application of the National Qualifications Framework, the Central

Institute for Vocational and Technical Education of the Ministry of Education introduced the China Lifelong Education Qualifications Framework and its system (See **Figure 10** and **Figure 11**).

**Figure 10. Proposed China Lifelong Learning Qualifications Framework**



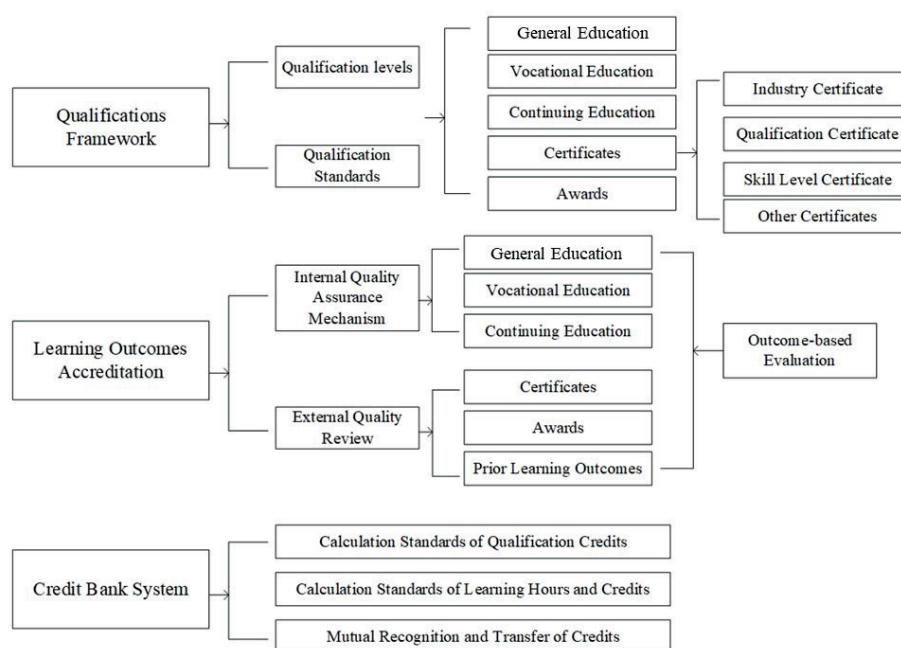
Source: Zhang et al. (2021, p. 59)

The classification of national qualifications is based on general education and is divided into seven levels from low to high: primary school, junior high school, senior high school, college, undergraduate, master and doctorate. Continuing education is divided into five levels: high school/secondary vocational/high school technical, junior college/higher vocational, applied undergraduate/bachelor, academic/professional master and academic/professional doctor. Vocational education is divided into five levels: secondary vocational/technical, higher vocational, applied undergraduate,

professional master and professional doctorate. Vocational training includes various qualification certificates, skill level certificates and training certificates. Various achievements include but are not limited to innovation and entrepreneurship, scientific research, social services, cultural heritage and competition awards. The national qualifications framework unifies general education, continuing education, vocational education, vocational training and various learning outcomes into a framework system, providing corresponding level standards for all levels of education and training.

### China Lifelong Education Qualifications Framework System

Figure 11. Proposed China Lifelong Education Qualifications Framework System



Source: Zhang et al. (2021, pp. 59,-60).

Based on the educational development principle of ‘practice-theory continuous circulation and continuous rise’ (Zhang et al, 2021) and the technology supported by big data, artificial intelligence and blockchain, the trinity innovation model of *Framework + Certification + Credit Bank* has been formed, which combines qualifications framework standards, learning outcome accreditation and the credit bank system. The National Qualifications Framework is the upper standard, the top-level designation of various learning outcome levels and standards and the parent standard of competency. Learning outcome accreditation based on the quality assurance mechanism ensures equivalence and fairness of mutual recognition of various learning achievements, as well as the quality of credits and social credibility. The credit bank is a platform

through which members of society accumulate and transfer qualifications and credits from learning outcomes, providing a smooth, open and flexible lifelong learning channel.

### Institutional arrangements and stakeholder involvement

Since China’s national qualifications framework has not yet been officially released, the qualifications framework construction is still at the OUC and local level, focusing on the implementation of vocational education and training, which adopts a government-led, credit bank operation and multi-party participation model. The management office is generally affiliated with OUC and involves various stakeholders including government departments,

educational institutions, training centres, industries and enterprises.

OUC is a university directly under the leadership of the Ministry of Education (MOE), including headquarter, 45 provincial branches and 14 industry colleges. It covers both urban and rural areas and serves the whole nation as a community for lifelong learning (OUC, 2021). Through the Credit Bank, OUC has cooperated with 18 higher vocational colleges and research institutions, 23 industries and 2 companies to develop learning outcome accreditation units and has established a corresponding relationship with 20 professional and academic OUC programmes, to promote mutual recognition and connection of corporate training certificates and courses with OUC degree courses<sup>205</sup>.

Guangdong's Provincial Department of Education, Provincial Department of Human Resources and Social Security, Provincial Development and Reform Commission, Provincial Economic and Information Technology Commission, Provincial Civil Affairs Department, Provincial Department of Finance, Provincial Quality and Technical Supervision Bureau, Provincial Education Examination Institute and Provincial Department of Education have coordinated with educational research institutes, relevant universities, industry enterprises, education and training institutions, research centres and other organizations to promote the operation of Guangdong Credit Bank by establishing credit bank management committees, expert committees, credit bank management centres and creating special funds. In 2018, Article 15 of the Regulations on Vocational Education of Guangdong Province proposed to 'build a lifelong education qualifications framework system for mutual recognition of general education, vocational education and performance achievements'. The legal status of the qualifications framework has therefore been established in Guangdong in the form of regulations (Li, 2020; Zhao, 2020).

Shanghai Lifelong Education Credit Bank is managed by the Shanghai Municipal Education Commission, although Shanghai Open University controls operations. The expert committee is the credit bank's advisory body. Shanghai Lifelong Education Credit Bank has 68 branches located in all of the city's colleges and universities and provides various credit bank services to students. Of these, 19 branches spanning all of the city's districts have been developed to conduct credit bank business

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205. Based on the author's telephone interview with Ran Wang, director of OUC Credit Bank, on June 26, 2021.

for social learners and to form a credit bank service system for the whole city (Guo and Chen, 2020).

Chongqing Lifelong Learning Credit Bank is responsible for the Chongqing Education Commission, which established the Credit Bank Management Committee and its premises to coordinate and lead the work of the credit banks. The Credit Bank Management Center was set up in Chongqing Open University to be responsible for credit bank operations (CLLCB, 2015). There are 72 cooperative alliance institutions and stakeholders including open universities, industry colleges, higher vocational education colleges, universities, secondary vocational colleges and industry representatives<sup>206</sup>.

The Management Committee of Jiangsu Lifelong Education Credit Bank is the leading institution for the construction and management of credit banks. It is composed of leaders and experts from Jiangsu Provincial Department of Education, as well as government departments and higher education institution representatives. The Credit Bank office under the management committee is responsible for operations, which are managed directly by the Social Education Division of Jiangsu Provincial Department of Education. The management committee has entrusted Jiangsu Open University to be responsible for the daily operations and maintenance of the Jiangsu Lifelong Education Credit Bank network platform (Zhang X., 2020). At present, there are 211 cooperative alliance institutions and stakeholders, including open universities, universities, higher vocational colleges, technical schools, social training institutions, industry societies and corporate schools<sup>207</sup>.

### **Recognizing and validating non-formal and informal learning and learning pathways**

As of December 2019 there were 41 credit banks across China; these included lifelong learning credit banks, alliance credit banks, adult college credit banks, vocational college credit banks and corporate credit banks (Jiangsu Lifelong Education Credit Bank Management Center, 2020). To bridge formal education, non-formal education and informal learning, some credit banks associated with open universities, such as the Open University of China, Guangdong Open University, Shanghai Open

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206. Based on the author's telephone interview with Nanzhong Wu, director of Chongqing Lifelong Learning Credit Bank, on June 26, 2021.

207. Based on the author's telephone interview with Xuan Zhang, director of Jiangsu Lifelong Education Credit Bank, on June 26, 2021.

University, Jiangsu Open University and Chongqing Open University, have implemented pathways for the recognition, validation and accreditation (RVA) of learning outcomes.

The Credit Bank of Open University of China, based on the OUCQF, developed an online learning achievement accreditation platform and a mutual recognition alliance for learning outcomes. The credit bank model led by OUC mainly includes two basic elements: a standard system based on the qualifications framework and the recognition, accumulation and transfer of various achievements at all levels based on these standard and rules. The main goals are to connect various qualifications smoothly, formulate corresponding standards in various fields according to the qualifications framework, design standardized certificate systems, build curriculum systems, guide resource construction, standardize education and training and promote the conversion of various types of learning outcomes at all levels<sup>208</sup>.

The Shanghai Municipal Education Commission established the Shanghai Lifelong Education Credit Bank (SLECB) and its branches in 2012 in accordance with the administrative divisions of Shanghai. The district government is responsible for personnel, equipment, configuration and operating expenses of each district credit bank branch. Its 68 outlets serve students in all colleges and universities in the city. There are 19 branches in all districts of the city dedicated to credit bank services for learners. SLECB has established a series of systems and mechanisms for the transfer of various learning outcomes. As of 30 April 2020, Shanghai Lifelong Education Credit Bank has opened personal learning accounts for 3.85 million learners, accumulated more than 77.34 million learning achievements and managed deposits associated with the city's universities, self-study exams, national vocational qualifications, senior citizen education, enterprise training and other types of learning achievements (Guo and Chen, 2020).

Guangdong Lifelong Education Credit Bank is based on GDLEQF, having established the qualifications framework levels and standards, an organizational system, a standard system, an institutional system and a credit transfer service system. As of 31 December 2020, Guangdong Lifelong Education Credit Bank has established lifelong learning files for more than 850,000 learners and saved more than 14 million learning outcomes. Occupational standards based on industry capabilities formed the basis

for pilot work on the development of qualification level standards within the automotive industry (post-market) and the machinery manufacturing industry. The development and testing of these two standards have distinct regional characteristics and standardization features. In December 2020, the standards were released in the form of group standards on National Information Platform for Group Standards, providing uniform competence standards for learners, practitioners, education and training institutions and employers in these two industries (Li, 2020).

Since the promulgation of Administrative Measures for Lifelong Education Credit Banks in Jiangsu Province in December 2013, the Jiangsu Lifelong Education Credit Bank has established alliances with Jiangsu Open University and the City Vocational College of Jiangsu to implement learning outcomes accreditation and transfer. Based on the meta-standards designed by the learning achievement framework, the credit bank has determined specific learning outcome levels, vocational competence certificates and certified vocational and social training courses (Zhang X., 2020).

Chongqing Open University has established a vocational and training qualifications framework and developed corresponding Specifications of Competence Standards (SCS) for rail transit and software engineering, bridging the gap between vocational education and talent training. Based on the vocational and education qualifications framework and driven by new-generation information technologies such as big data and artificial intelligence, Chongqing Lifelong Learning Credit Bank has established a big data analysis model that matches the requirements of vocational positions to the curriculum system, along with vertical connection and mutual recognition mechanisms for learning outcomes in the credit bank (Zhang, Wu and Zhou, 2020).

Chengdu Open University and the University of Electronic Science and Technology jointly developed an educational resource sharing platform based on blockchain technology and trialled its operation in the credit bank. A learning outcome bank based on blockchain technology could solve the trust problem in mutual recognition and credit exchange in the form of alliance agreement. It could also provide technical support to prevent tampering with credits and ensure that tracing is possible (Zhou, Chen and Ye, 2019).

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208. Based on the author's telephone interview with Wang Ran, Director of China Development Bank Credit Bank, on June 26, 2021.



## NQF implementation and impact

### Vocational qualifications implementation and reform

In the last decade, China's Ministry of Human Resources and Social Security has published a series of policies that regulate vocational qualifications assessments. Local labour and personnel bureaus have also set out corresponding methods of vocational qualifications implementation.

The 1+X Vocational Certificate System (1 refers to an academic certificate, X represents a number of vocational skill level certificates), first implemented in 2019, issues vocational certificates to students with high-quality technical skills (MOE, 2020b). The certificate recognizes academic achievements as well as vocational and technical skills, increasing learners' chances of finding employment and entrepreneurship opportunities.

### Lifelong education QF implementation

Learning outcome accreditation based on the LOFOUC has been applied in various industries. At the end of 2020, the Alliance for the Mutual Recognition of Learning Outcomes of the National Open University Credit Bank had grown to 41 members and established 75 learning outcome certification sub-centres (authentication points) across the country, spanning 30 provinces, municipalities and regions and 25 industries. It had also provided accreditation services for more than 450,000 people and issued 29 different certificates in education, postal services, housekeeping, construction, property management, logistics and supply chain, business services, information technology industry, culture, environmental protection, the petroleum and chemical industry and electronics, among other industries. To support the 1+X certificate system, the Ministry of Education recently entrusted Open University of China to establish a national vocational education credit bank platform. All students participating in the X certificate pilot can establish personal learning accounts in the credit bank. As of 30 June 2021, the national vocational education credit bank platform has established 1.01 million personal learning accounts for students applying for X-certificate training and has stored 710,000 X-certificate results for all students who passed the exam. There are 4,915 pilot colleges and 300 training programmes involved. All evaluation organizations have established institutional accounts<sup>209</sup>.

Based on international standards, the Guangdong Lifelong Education Credit Bank has established a framework for lifelong education qualifications in Guangdong Province, providing certification services for 93,000 people with learning outcomes. The Ministry of Human Resources and Social Security of Guangdong has launched the "one test and three certificates" trial for the mutual recognition of vocational qualifications in Guangdong, Hong Kong and Macao. Candidates can obtain national vocational qualification certificates, Hong Kong professional competence assessment certificates and international professional standards alliances in hair and beauty. Approximately 1,600 citizens of Guangdong have obtained the certificate (Li, Zhao and Guan, 2019).

Shanghai Lifelong Education Credit Bank is led by the Shanghai Education Commission and managed and operated by Shanghai Open University. Its services are mainly dedicated to learners of secondary vocational, college/higher vocational and undergraduate level education. The credit bank has certified learning achievements for 91,000 people and converted qualifications from colleges, universities and self-study examinations. Within the Integration of Academic Certificate and Vocational Qualification Certificate project co-managed by the Shanghai Municipal Education Commission and the Shanghai Municipal Bureau of Human Resources and Social Security, more than 16,000 students with academic education have passed the credit transfer and obtained the corresponding national vocational qualification certificates (Zhang W.Y., 2020).

Jiangsu Lifelong Education Credit Bank (JLECB) has compiled a learning achievement framework that is consistent with the levels and standards of GDLEQF. JLECB provides a basis for mutual recognition of the achievements of general education, vocational education and training. At present, 97,000 students have been certified for learning achievements and 2,702 students have passed the credit transfer between different learning outcomes (Zhang X., 2020).

Chongqing Lifelong Learning Credit Bank (CLLCB) has established about 400,000 lifelong learning accounts and has registered and certified more than 1.7 million learning outcomes (Zhang and Xie, 2020). The credit bank established a big data platform which matches the requirements of vocational education qualifications and vocational education training programmes with corporate job requirements to solve the disconnect between vocational education programmes and corporate job talent requirements. On 9 February 2021, Chongqing Specifications on Competence Standards was launched on the Internet of Things.

209. Based on the author's telephone interview with Wang Ran, Director of China Development Bank Credit Bank, on June 26, 2021.

## Important lessons and future plans

Efforts by the Chinese Government to establish a unified qualifications framework have shown that:

- although some local QFs have been established, a national QF is urgently needed to meet international QF standards and key indicators;
- national QFs should include formal, non-formal and informal learning outcomes;
- various government units, educational institutions, industries and companies must be involved in the establishment and implementation of national QFs.

It has been a priority of the Chinese Government to develop a comprehensive national qualifications framework that covers all types of education and learning at all levels and promotes local educational development and the international comparability of qualifications. After several years' trials, the rich experiences from vocational education, vocational training, continuing education and general education are now taking shape with big data, artificial intelligence and blockchain as forms of technical support. The Chinese model of a qualifications framework with learning outcome accreditation and credit banks is committed to providing all members of society with an open, flexible and high-quality lifelong learning system and environment.

### Abbreviations

HEI	Higher education institution	TVET	Technical vocational education and training
IMF	International Monetary Fund	NVQC	National Vocational Qualification Certificate
MHRSS	Ministry of Human Resources and Social Security	OECD	Organization for Economic Co-operation and Development
MOE	Ministry of Education of the People's Republic of China	LOFOUC	Learning Outcome Framework of Open University of China
NVQCS	National Vocational Qualification Certificate System	OUC	Open University of China
QCPTP	Qualification Certificate for Professional and Technical Personnel	GDLEQF	Guangdong Lifelong Education Qualifications Framework
QCSW	Qualification Certificate for Skilled Workers	SCLGOPAD	State Council Leading Group Office of Poverty Alleviation and Development
RVA	Recognition, validation and accreditation	CLLCB	Chongqing Lifelong Learning Credit Bank

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