Dominant recent trends impacting on jobs and labor markets - An Overview

Shanti Jagannathan\textsuperscript{a}, Sungsup Ra\textsuperscript{b} and Rupert Maclean\textsuperscript{c}

\textsuperscript{a}Asian Development Bank, Manila, Philippines; \textsuperscript{b}Human and Social Development Division, South Asia Regional Department, Asian Development Bank, Manila, Philippines; \textsuperscript{c}Department of Education, RMIT University, Melbourne, Australia

\section*{ABSTRACT}
This special double issue of the \textit{International Journal of Training Research} with the theme ‘emerging labor markets of the future—reimagining skills development and training’ contains 13 articles that provide a comprehensive overview of global and regional trends that impact on emerging jobs and labor markets of the future. With particular reference to Asia, the papers examine promising strategies in skills for jobs that address these trends. The articles provide a snapshot of the changing dynamics of labor markets of the future and the importance of reimagining not just the content of skills development and training but also the mechanisms by which they can be delivered to prepare a future-ready workforce. The key attributes possessed by such a globally relevant talent pool for the workforce of the future include basic digital skills and literacy; learnability skills; skills needed for greening economies; skills required for engaging in Industry 4.0 occupations; skills for next-generation infrastructure and services; skills for technology-infused manufacturing sectors; and broad-based soft skills that help to improve workplace effectiveness, such as skills for teamwork, problem-solving, creativity, and design-thinking. All these will have an important and far-reaching impact on future directions for technical and vocational education and training in the region that policy makers and practitioners need to take into account.

Global labor markets are undergoing major transformations, with changes to business and workforce profiles picking up even greater pace in recent years.

Reflecting the powerful waves of change occurring in labor markets globally, there has been a spate of analytical reports that have put the spotlight on skills and jobs of the future, like those from the Asian Development Bank (ADB), ILO, World Economic Forum (WEF) and the World Bank. The heightened preoccupation with forecasting changes to labor markets is being driven by the pervasive impact of disruptive technologies on economies and societies. While initially, this preoccupation was triggered by fears that new technologies such as artificial intelligence and robotics will displace people in the...
work place, it is now tempered with a more balanced view that loss of jobs will be accompanied by gains in increase in productivity, creation of new jobs and the combined application of technology and human skills. There is widespread interest on the importance of augmenting human capabilities and soft skills such as creativity, effort and initiative, critical thinking and design thinking and negotiation skills which contribute to complex problem-solving in the workplace. The World Economic Forum report on the Future of Jobs says ‘in order to harness the transformative potential of the Industry 4.0, business leaders across all industries and regions will increasingly be called upon to formulate a comprehensive workforce strategy ready to meet the challenges of this new era of accelerating change and innovation’. (World Economic Forum, 2018). As the nature of demand from the future workforce continues to change at a rapid rate, governments and institutions are under pressure to conceive new approaches and models for skills development to ensure decent jobs for a majority of working age populations. More investment in people and in skills and human capital development is crucial to prepare the youth of today to access jobs of tomorrow and to enable people in the existing workforce to remain active in labor markets.

The Asian Development Outlook—How Technology Affects Jobs (ADB, 2018), while drawing attention to concerns of job losses arising from disruptive new technologies, also highlights that the application of new technologies will boost productivity. While certain types of jobs may be displaced, there is evidence that higher output and productivity will create jobs, outweighing job displacement, especially through new occupations and industries that will arise to meet the new demand from producers and consumers. The report stresses the importance of investing in a skilled workforce and ensuring that workers are equipped with specialized skills required for working with new technologies. Investing in lifelong learning is also a key area of attention.

The World Bank’s flagship World Development Report on the Changing Nature of Work calls on countries "to invest in education and health with a fierce sense of urgency to harness the benefits of technology and to blunt its worst disruptions.’ (World Bank, 2019). The World Economic Forum report suggests that 65 percent of children entering primary school today may end up working in completely new job types that currently do not exist.

The report by the Global Commission on the Future of Work established by ILO states that ‘Today’s skills will not match the jobs of tomorrow and newly acquired skills may quickly become obsolete. The greening of our economies will create millions of jobs as we adopt sustainable practices and clean technologies but other jobs will disappear as countries scale back their carbon- and resource-intensive industries.’ The report calls for the reshaping of business incentive structures for a more human-centered business and economic model that includes decent work encompassing environmental sustainability and equality, including gender equality. In line with the mandate of the ILO, the report recommends (1) increasing investment in people’s capabilities; (2) increasing investment in the institutions of work; and (3) increasing investment in decent and sustainable work.

These reports underscore the heightened need for investing adequately in human capital and skills development that anticipate job market trends and create a future-ready workforce. It has been estimated by the World Bank that about 80 percent of all jobs worldwide require some form of vocational skills (World Bank, 2017). Countries
throughout Asia increasingly believe that more needs to be done to explicitly promote effective learning for the world of work.

The potential negative impact of technology on employment can be mitigated by investments in higher order human capabilities. Workers undertaking routine/repetitive tasks at low skills are the most vulnerable to replacement. While such low skills and routine jobs may be lost, the widespread advent of new technologies provide opportunities to create new jobs, increase productivity, and deliver more effective public services. The WEF report estimates that 75 million jobs may be displaced by a shift in the division of labor between humans and machines, while 133 million new jobs may emerge that are more adapted to the new division of labor between humans, machines and algorithms (WEF, 2018). Through technology and innovation, better jobs in new sectors with new tasks can be generated that can be tapped by individuals with requisite skills. Economies need to create adequate number of quality jobs and invest in skills development for future occupations.

These concerns are the focus of this special double issue of the *International Journal of Training Research* IJTR, which presents 13 articles on significant issues related to emerging labor markets in Asia, and the importance of ‘reimagining skills development and training’ for employment and employability. These issues are characterized by both complexity and uncertainty due to the ‘major transformations’ and ‘ongoing structural changes’ taking place in the countries of the region. This calls for education and training systems to be flexible and agile, innovative and forward looking, in their responses to the issues that are both important and pressing. Rapid change is a distinctive characteristic of emerging markets and the patterns and trends in their human capital and labor forces. Where Europe took centuries to transition from its agricultural roots through industrial and digital transformations, to become an information society, the emerging markets of Asia have taken mere decades. For example, when writing about changes in the emerging labor market of People’s Republic of China less than twenty years ago, Zhang, Huang and Rozelle (2002) described ‘a massive flow of labor into the off-farm sector’ (p. 3). Today, papers on the labor market in the People’s Republic of China are apt to focus on the growth of private-sector jobs in urban areas, rising wages, urban labor shortages and a rural labor surplus (see, e.g. Song, 2017). Much the same changes are occurring in other emerging economies of Asia albeit at a slower pace.

**Re-imagining training & skills development for labor markets of the future**

This special issue explores a series of topics relating to skills development in the context changing dynamics of labor markets. An estimated 172 million people worldwide were unemployed in 2018 (ILO, 2019), with an unemployment rate of 5.0 percent. Global unemployment rate is expected to remain at roughly the same level during 2019 and 2020. The number of people unemployed is projected to increase by 1 million per year to reach 174 million by 2020 as a result of the expanding labor force. The World Bank estimates that in the next 10 years, the world will need to create more than 600 million jobs to avoid an increase in unemployment and to absorb youth entering the labor market (World Bank, 2018). In regions such as South Asia, countries face particular challenges to employ the growing number of youth who enter the labor market. Creating new jobs is not governments’ sole concern, however. Policymakers are also
focused on low rates of participation in the labor market of women and disadvantaged groups and high poverty rates among those who participate and have a job.

This special issue of the *International Journal of Training Research (IJTR)* takes stock of the most prominent and impactful trends in the global economy and reviews innovative approaches in and for the emerging labor markets of Asia. A number of articles presented in this issue of the *IJTR* suggest that TVET strategies and content may require radical transformation. This special issue examines the emerging characteristics of labor markets of the future and the implications on re-imagining skills development and training for employability, with particular reference to technical and vocational education and training. To do so, it examines the main global and regional trends impacting the changing nature of work, on the types of jobs being lost and types of new ones being created, and on the evolving nature of the labor market. It examines the impact of Industry 4.0, and rapidly emerging new technologies such robotics, and artificial intelligence, on work and job profiles. After providing an overview of trends in skills development for employability, the special issue examines noteworthy strategies in skills for jobs in developing and transition countries in the ASEAN region, and in India and the People’s Republic of China.

### Skills for an agile and adaptive workforce

The World Development Report 2019 identifies three types of skills that are increasingly important in labor markets: advanced cognitive skills such as complex problem-solving, socio-behavioral skills such as teamwork, and skill combinations that are predictive of adaptability such as reasoning and self-efficacy.

A key feature of preparing for future labor markets is to ensure that trained workers are agile and are able to adapt to changing needs. The WEF 2018 report suggests that, by 2022, the skills required to perform most jobs will have shifted significantly. Global average skills stability – the proportion of core skills required to perform a job that will remain the same – is expected to be about 58%. This means 42% of required workforce skills will need to be new or different over the 2018–2022 period.

### Enhancing skills development for formal and informal jobs

Labor markets in developing countries are characterized by high levels of informality. Skills development is an investment that can help workers to shift from low productivity employment in sectors such as agriculture to small and medium enterprises. In 2016, the level of informality of work on a global average was 61%. In low income countries, informality was as high as 90% whereas in upper middle income countries it was 53%. The level of informality also impacts wage employment. While the global average for wage employment was 52%, it was only 19% for low income countries compared to 59% for upper middle income countries (ILO, 2019). Opportunities for skilling and upskilling help workers to access more productive jobs and wage employment in line with changing labor market demands. Skills development helps to improve the quality of jobs in both formal and informal job markets. Increasing the quality of jobs is crucial to address working poverty. In 2018, more than one quarter of workers in low and middle-income countries were living in extreme or moderate poverty. Considerable progress has
been achieved in reducing the incidence of working poverty, especially in middle-income countries. However, quality employment is the key to help low-income countries to reduce poverty.

**Investing in skills in the world of robots and artificial intelligence**

The Industry 4.0 has profound implications for how we best prepare people for the changing world of work, particularly in the area of higher technical skills and Technical and Vocational Education and Training (TVET). For example, it is estimated that seventy-five percent of future jobs will involve science, technology, engineering and mathematics (STEM) knowledge and skills (Australian Industry Group [AIG], 2015). We will also increasingly need workers who have cross-cultural competencies, communication skills, and social, emotional and digital skills. In other words, we will need workers with *multiple intelligences*. The provision of such higher-order technical and social skills cannot be adequately satisfied by our present systems of technical and vocational education and training systems. The types of changes occurring will mean that increasing numbers of people will need new skills, and upskilling.

While there was much fear that automation and artificial intelligence will displace workers widely, recent reports increasingly acknowledge that new technologies may redefine but not necessarily diminish the roles of teachers and healthcare staff and workers in general (Pathways Commission, 2019). Technology can actually aid such that service providers perform fewer administrative tasks, and focus on human-centred and specialized tasks.

Given the all-pervasive spread of information technologies, it is critical to invest in digital literacy and digital skills among populations. While it is anticipated that automated protocols, machine learning decision algorithms, and treatment protocols will increasingly pervade health care systems, they still need to be supplemented with human intervention. Thus, the model is not of total automation, but a model in which humans and machines work together.

Digital technologies can benefit education systems in the following ways: (1) enabling a more responsive learning system through data and feedback mechanisms; (2) enabling targeted and tailored interventions for people-at-risk and marginalized groups for delivery of education services through technology; (3) enabling personalized learning systems that support learners to continually make progress across the teaching and learning spectrum; (4) supporting educators to be more effective by taking care of routine tasks so that they can concentrate on higher order teaching tasks; and (5) enabling the provision of high quality education and training services to remote areas.

It is very evident that digitalization is gathering pace each year. It is predicted that global Internet Protocol (IP) traffic will grow at a compound annual growth rate (CAGR) of 26 percent from 2017 to 2022. Traffic from wireless and mobile devices is expected to account for 71 percent of total IP traffic by 2022 whereas wired devices will account for only 29 percent. Mobile data traffic is projected to increase sevenfold between 2017 and 2022 at a CAGR of 46 percent. Hence it has become crucial to invest in digital skills in the workforce – digital skills are now considered an essential and foundational skill to participate in labor markets of tomorrow.
A major revamp of lifelong learning and skills development

Training and skills development have remained oriented predominantly to early stage work requirements. As global developments continue to challenge many established principles of the functioning of labor markets, it is crucial to build an effective system for lifelong learning (LLL) that addresses the needs for skills development across the entire work life cycle. The Global Commission on the Future of Work has recommended LLL to be a universal entitlement.

As economies and labor markets develop further, lifelong learning needs to become the new normal rather than ‘top up’ to mainstream skills development. This is for 3 reasons: (1) as disruptive technologies have an all-pervasive influence on labor markets by changing occupational profiles, there is need to invest in LLL to enable workers that are likely to be displaced; to remain in the labor market; this is particularly true for workers in low skill jobs to upskill themselves; (2) as labor markets evolve to generate completely new occupations and sectors, LLL systems will help the workforce to be agile and adaptive; and (3) as economies grapple with aging societies and the problem of youth unemployment (which in many countries is 4–5 times higher than average unemployment rate), LLL mechanisms will help the young and old to remain relevant in the labor force.

WEF 2019 report suggests that in order to truly rise to the challenge of formulating a winning workforce strategy for the Industry 4.0, businesses will need to recognize human capital investment as an asset rather than a liability. This is particularly imperative because there is a virtuous cycle between new technologies and upskilling. New technology adoption drives business growth, new job creation and augmentation of existing jobs, provided it can fully leverage the talents of a motivated and agile workforce who are equipped with future-proof skills to take advantage of new opportunities through continuous retraining and upskilling (WEF, 2018).

Implications of learning flexibility for the changing world of work

The world of work is changing very rapidly. These changes are occurring because of a move from the Industrial Age to the Information Age, with an increasing stress on preparing knowledge workers, and a blurring of the distinction between academic and more practical, vocational types of learning and work. The challenges created by these changes are far reaching for individuals, business firms, government and society in general, and have resulted in a quest by education providers to bridging academic and vocational learning.

As a result of fast changing workplaces it has become essential to make a distinction between education and training for employment and education and training for employability: between preparing a trained recruit, and a trainable recruit for the workforce. In the early stages of the industrial era, it was realistic to provide a specific set of skills that an individual would need and use for much of their working life, where he or she would be certified upon leaving formal education and training as having the required skills to be an accountant, an engineer or electrician. An employer would generally be satisfied with the skills sets acquired by the individual during the period of education and training, and could set the person to productive work immediately. Nowadays, the skills
sets of jobs are complex and changing so rapidly, with altogether new types of jobs being created, that employers find that formal education and training can no longer adequately, and in a timely way, keep up with changing workforce demands. In the three to four years of education and training it takes to produce a technician or professional, the characteristics and skills set of the occupation they are planning to enter may have changed greatly.

Nowhere is this more graphically evident than through a comparison of the number and titles of certificates and diplomas being awarded by post-secondary institutions and the number, titles and job descriptions of the positions vacant and sought in the classified advertisements of newspapers or on websites. For these reasons, employers are looking more and more for trainable recruits, and less for trained recruits, who may be trained in the ways of an occupation that have recently been superseded. A specific case in point: Goldman and Sachs, the investment firm put out an advertisement in a developing country for investment managers (Maclean, 2017). Of the hundreds who applied, only eight were chosen, and only three of these had formal advanced education in business or finance. The determining skills sets sought were not those of accounting or mathematics, but of flexibility, quickness to learn (trainability), persuasive communication, and teamwork. In other words the emphasis was on individuals with what are called 21st Century Soft Skills.

The implied framework is therefore one where education provides more generic employability skills, whereas training (whether in-house, sub-contracted, or free standing) provides specific employment skills. This applies not just to technical skills, but also to mental and social skills, and to work-conducive attitudinal sets, which are often called values. As part of these developments there is also an increasing emphasis on learning rather than teaching, and on skills development for citizenship and life, as well as for work and employability.

**Overview of the contents of this special issue**

This special issue of the *International Journal of Training Research* consists of 13 articles contributed by eminent researchers, policy makers and practitioners working in the area of technical and vocational and training, and applied learning, in, or with reference to, the Asia region. Some of the contributors are employed in the Asian Development Bank in Manila, while others are with the Commonwealth of Learning, and the International Labor Organization. There are also contributors from leading academic institutions in Korea, Germany, Hong Kong, Australia and Pakistan; and from employment and industry related institutes in India and Palestine.

The issue is divided up into two sections.

Section 1 consists of 7 articles which examine global and regional trends impacting jobs and labor markets.

Yasuyuki Sawada, *Chief Economist and Director General, Economic Research and Regional Cooperation Department, Asian Development Bank*, examines growing infrastructure investments and the impact on jobs of the future. In essence the author argues that as investments in infrastructure increasingly address the integration of technology and sustainability principles, the nature of jobs and skill requirements is also changing. The
article reviews changing dynamics of infrastructure investments and how developing countries can reap employment creation benefits.

In their article on the rise of technology and the impact on skills, Sungsup Ra (Director, South Asia Human and Social Development Division, ADB), Unika Shrestha (South Asia Human and Social Development Division, ADB), Sameer Khatiwada (Southeast Asia Human and Social Development Division, ADB), Seung Won Yoon and Kibum Kwon (both in the Department of Higher Education and Learning Technologies, Texas A&M University – Commerce) examine how the onset of the fourth industrial revolution will result in far-reaching changes in jobs and labor markets by altering the range of skills demanded. They argue that although there are fears that robotics and artificial intelligence will displace jobs, there are indications that these very technologies can help to stream a large proportion of the workforce into higher value chains. However, this requires nurturing the ability to learn, unlearn and relearn among the current and future workforce. The authors propose a learning society in which learning is continuous and takes place beyond formal education systems.

Sungsup Ra, Director, South Asia Human and Social Development Division, Mahfuzuddin Ahmed, former Technical Advisor, Agriculture, Rural Development, and Food Security Unit, ADB and Paul S. Teng, Managing Director and Dean, National Institute of Education International, Singapore examine food security, high-tech agriculture, education and skills development for jobs and entrepreneurship. To meet the future food demand, quantum leap in food production and disruptive change in agricultural and food systems are needed. They argue that the infusion of technology and high value chains in agriculture can help to raise sector productivity; and they explore how appropriate investments can best be made to foster education and skills development that facilitate the use of technology and promote a new breed of agropreneurs.

Changing the TVET paradigm for lifelong learning through new models for skills development, is examined by Asha Kanwar, President & CEO, with Alexis Carr and K.Balasubramnian, all of whom are at the Commonwealth of Learning, Canada. They argue that technology is changing the nature of jobs and that since many of the jobs of the future do not yet exist, there is an urgent need for skilling and re-skilling citizens for employment and entrepreneurship. To achieve this with speed and at a suitable scale they argue that a paradigm shift is required. They then go on to explore the options in this regard.

Akiko Sakamoto, Senior Skills and Employability Specialist, International Labor Organization, writes on reconceptualising skills development for achieving inclusive growth and the horizon of a new generation of skills policy. She argues that while Asia and the Pacific region is known as being an economic success story, for many, strong growth has unfortunately not been translated into inclusive growth since, in the region, nearly half of the workers are in vulnerable employment, as own-account workers, or unpaid family workers. The quality of jobs in the region also poses a serious challenge to achieving the region’s aspiration of inclusive growth. She suggests that skills development has always been regarded as a key element in meeting this challenge and promoting equitable development.

Thomas Schröder, Chair of International Cooperation in Education and TVET Systems; and Director of Institute of General and Vocational Education, Technical University of Dortmund, Germany, outlines a regional approach for the development of TVET systems in the light of Industry 4.0 by examining the work of the Regional Association of Vocational and Technical Education in Asia. He discusses changes in the labor market with reference
to industrial development and describes perspectives for a set of competencies as an overall objective for TVET. In order to achieve this objective, he argues that a praxis-oriented approach in vocational didactics, its implementation in various learning venues, and its alignment with outcome-oriented qualification frameworks, is a precondition. He provides a case study of the Regional Association of Vocational and Technical Education in Asia (RAVTE), a network of universities in East- and Southeast Asia, which is enhancing the development of TVET systems in the ASEAN region and beyond.

Having provided in Section 1 an overview of key issues and concerns, Section 2 showcases promising strategies in skills for jobs in specific countries in Asia which address the recent trends identified earlier.

Jong-Wha Lee, Korea University, Jong-Suk Han, Korea Institute of Public Finance and Eunbi Song, Korea University discuss the Korean experience regarding the role and challenges in skills development and training policies. They explore whether skills development and training programs have been effective in developing workers’ skills in Korea and provide an overview of the evolution of skills development policies in Korea during the period of rapid economic growth. Using a sample of Korean participants in the Program for the International Assessment of Adults Competencies (PIAAC) survey, they estimate the skill production function to examine possible contributions that job-training makes in workers’ skills development; and explore to what extent skills development systems have met industry demands in what is a rapidly changing technological environment.

Dilip Chenoy, Secretary General, and Shobha Mishra Ghosh, Assistant Secretary General, Federation of Indian Chambers of Commerce and Industry, India, examine skills development for spurring the manufacturing sector and the role of New-Age skills for the ‘Make in India’ initiative. The authors argue that given the limitations of absorbing a growing labor force in the service sector in India – especially the unskilled and semi-skilled - the focus needs to be on spurring manufacturing growth to take advantage of this large pool of manpower. They examine the Make in India movement which has a grand vision of creating many additional jobs by 2021, an ambitious program designed to turn the subcontinent into a global manufacturing hub and increase jobs by providing a fresh impetus to the economy.

In their article on International policies and experiences for TVET in the People’s Republic of China, Gerard A. Postiglione and Min Tang, The University of Hong Kong, China SAR, identify eight difficulties faced by TVET in one of People’s Republic of China’s poorest provinces. They then refer to selected international cases that offer best practices for how to address these eight difficulties. The three selected international cases, from Germany, Japan and the United States, are global economic leaders with successful TVET systems.

Margarita Pavlova, Director of the UNESCO-UNEVOC Centre for Hong Kong, the Education University of Hong Kong, examines emerging environmental industries and the impact on required skills and TVET systems in Hong Kong, Malaysia and India. She analyzes recent trends in Hong Kong, Malaysia and India in terms of environmental policies and labour market implications. She then reports on most effective practices in TVET across the analyzed countries and suggests an evidence-based framework to support the development of specific roadmaps relevant to different contexts.
Randa Hilal, Director of National TVET Authority, Palestine, examines TVET and decent work in Palestine through an economic and social development lens, reviewing the lessons learnt and implications for countries in Asia. The paper illustrates the effect of TVET on marginalized communities, highlighting the importance of investing in TVET within such communities, and demonstrates how the case and experience of Palestine, from various perspectives, can be of value to countries in Asia.

The article on emerging smart community concept and micro-grid technology provides a case study of lagging skills development in Pakistan. Shakil R. Sheikh, Muzzamil Ghaffar Air University, Islamabad, Pakistan, argue that despite the current progress and ambitious future goals set by the government, Pakistan faces many challenges, foremost amongst these being poverty and unemployment. More than 60% of the population of Pakistan is under 30 years of age, and so there is a dire need for training the burgeoning youth population to provide them with the skills needed for useful and gainful employment.

The 13 articles presented in this special issue of the International Journal of Training Research provide an overview of global and regional trends impacting on emerging jobs and labour markets of the future with particular reference to Asia, and examine promising strategies in skills for jobs which address these trends in specific countries in the Asia region. It is argued that all of these have an important and far reaching impact on future directions for TVET in the region.

Disclosure statement

No potential conflict of interest was reported by the authors. This piece is written in the personal capacity of the authors.

Notes on contributors

Shanti Jagannathan has worked in development cooperation in education and training for over 25 years. She has worked with the European Union and a research think tank on international economic relations. She is currently Principal Education Specialist at Asian Development Bank. Email id: shanti.jagannathan@gmail.com

Sungsup Ra has worked in development in a broad range of areas including education and TVET for over 25 years. He has the unique experience of having worked with private, public and academic institutions such as Samsung, Korean National Pension, and leading universities in Korea and Japan. He is currently Director of South Asia Human and Social Development Division and Chair of the Education Sector Group at Asian Development Bank. Email id: sungsupra@yahoo.com

Rupert Maclean has worked internationally in TVET for some 25 years, mainly with UNESCO. He has recently held academic positions in TVET in Qatar, Australia, and Hong Kong. He was Foundation Director of the UNESCO-UNEVOC International Centre for TVET in Bonn. Rupert Maclean has worked internationally in TVET for some 25 years, mainly with UNESCO. He has recently held academic positions in TVET in Qatar, Australia, and Hong Kong. He was Foundation Director of the UNESCO-UNEVOC International Centre for TVET in Bonn. Germany. Email id: rupert.maclean@hotmail.com
References

Asian Development Bank. (2018). Asian development outlook 2018– How technology affects jobs. Manila. Retrieved from https://www.adb.org/sites/default/files/publication/411666/ado2018.pdf

Australian Industry Group (AIG). (2015). Progressing STEM skills in Australia. Retrieved from http://cdn.aigroup.com.au/Reports/2015/14571_STEM_Skills_Report_Final_.pdf

ILO. (2019). Work for a brighter future. Geneva: Global Commission on the Future of Work.

Maclean, R. (Ed). (2017). Life in schools and classrooms. Dordrecht: Springer.

Pathways Commission. 2019. Positive disruption: Health and education in a digital age. Retrieved from https://bsg-pathwaysstoprosperity.s3.eu-west-2.amazonaws.com/BLAJ6993-Positive-Disruption-Report-190613-WEB.pdf

Song, Y. (2017). Six central features of the Chinese labor market: A literature survey. International Labor Review, 156(2), 213–242.

World Bank. (2017, October 10). Understanding poverty: Skills development [Development topics]. Retrieved from https://www.worldbank.org/en/topic/skillsdevelopment

World Bank. (2018, April 24). Understanding poverty: Labor markets [Development topics]. Retrieved from https://www.worldbank.org/en/topic/labormarkets#1

World Bank. (2019). World development report 2019: The changing nature of work. Washington, DC. doi:10.1596/978-1-4648-1328-3

World Economic Forum. (2018). The future of jobs report 2018. Geneva: Centre for the New Economy and Society.

Zhang, L., Huang, J., & Rozelle, S. (2002). Employment, emerging labor markets, and the role of education in rural china. China Economic Review, 13(2–3), 313–328.