



United Nations  
Educational, Scientific and  
Cultural Organization  
联合国教育科学及文化组织



International Centre  
for Higher Education Innovation  
under the auspices of UNESCO  
联合国教科文组织高等教育创新中心

# ICT Promoting the Improvement of Education Quality: Experience and Practice

**Dr. HAN Wei**  
**Deputy Director, UNESCO-ICHEI**

**ICHEI is located on the campus of Southern University of Science and Technology (SUSTech) in Shenzhen.**



# Shenzhen

The Silicon Valley of China

The Paradise of Innovation



**Shenzhen is the first Special Economic Zone in China and a window for China's reform and opening up.**

**2017, Shenzhen GDP about 356.4 Billion USD**

**Hongkong GDP about 366.1 Billion USD**

Shenzhen has nurtured 6 world top 500 companies, including Ping An Group, HUAWEI, China Merchants Bank, Amer International Group, China Vanke Co., Ltd, and Tencent.



平安银行  
PINGAN BANK

Tencent 腾讯



Amer 正威国际

万科

# Shenzhen is the Chinese city that resembles the Silicon Valley most.

—— Business Week

More than **30,000** technology companies in Shenzhen

**3** companies with over 100 billion RMB of sales

**17** companies with over 10 billion RMB of sales

**157** companies with over 1 billion RMB of sales

**1,203** companies with over 0.1 billion RMB of sales

**1,216,300** professionals in various fields

**11,600** PCT patent applications, the highest in China

**58** billion RMB research investment, **4.2%** of GDP, on par with that of South Korea

More than **4,700** high-tech companies at the national level

Leading innovation in areas such as 4G technology, super materials, gene sequencing, 3D, new energy cars and so on.



## Four Pillar Industries

High tech  
industry

Financial  
industry

Logistics  
industry

Cultural  
industry

## Future industries



Intelligent equipment



Robot



Wearable equipment



Marine



Life science



Aeronautics

**SUSTech**

**New University**



**Research, Innovation and Entrepreneurship**

**China's higher education reform lab**

**Public Research University**

A large, light-colored stone monument with the university's name in Chinese characters, "南方科技大学", engraved on it. The monument is situated on a green lawn in front of a modern building. The background shows a clear blue sky with scattered white clouds and several palm trees.

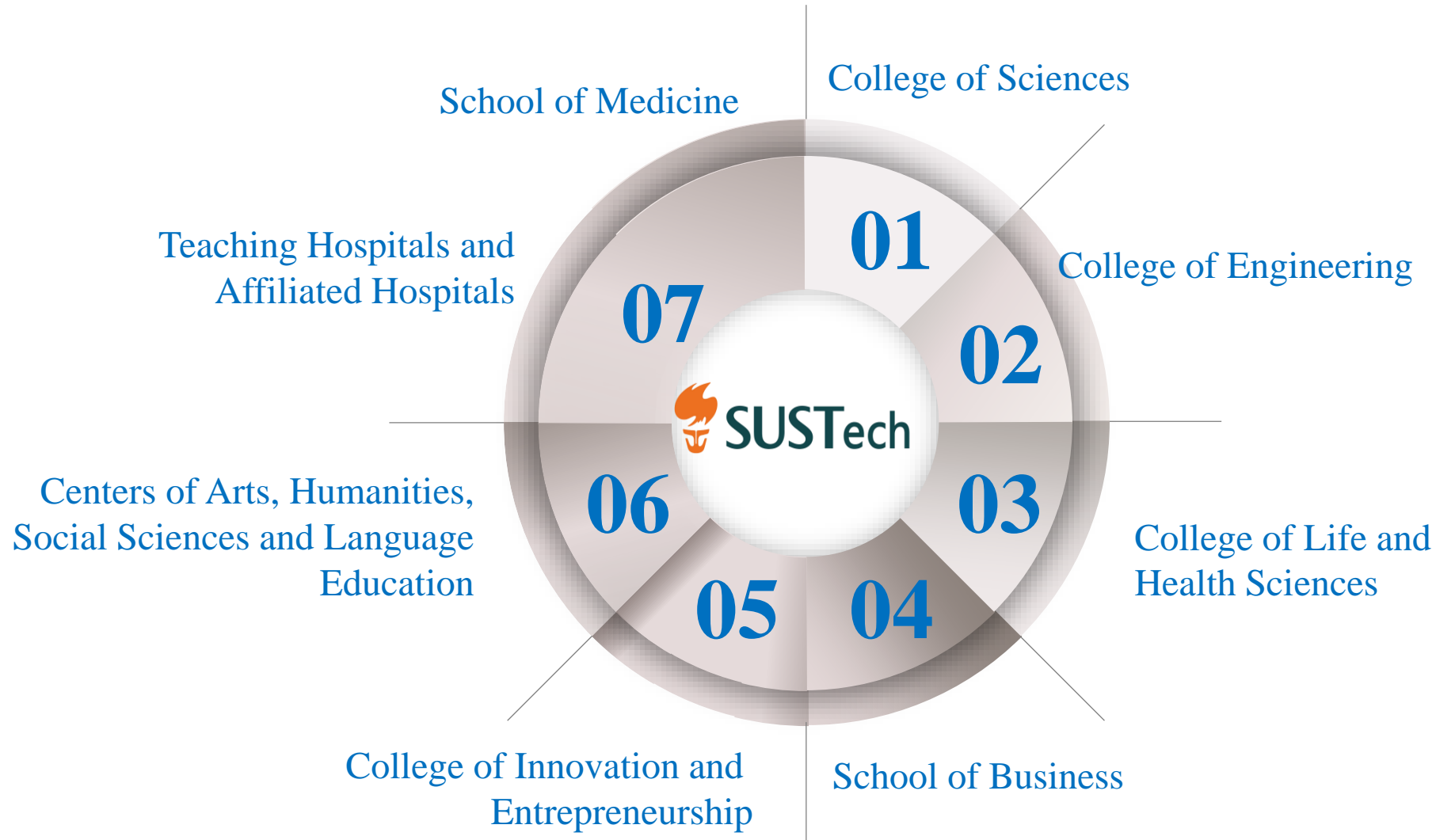
**南方科技大学**

**SUSTech**

**Southern University of  
Science and Technology**



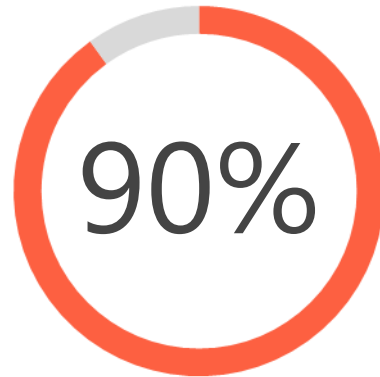
# Academic Structure



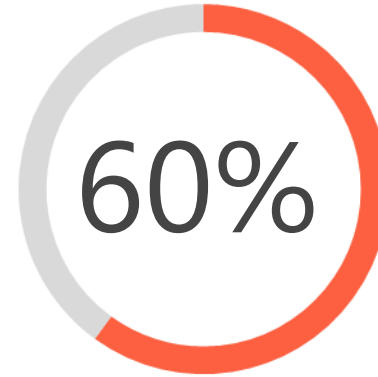
<b>Departments (14)</b>	<b>Degree Programs (26)</b>
Chemistry	Chemistry
Physics	Physics , Applied Physics
Mathematics	Mathematics & Applied Mathematics, Financial Mathematics, Statistics
Earth and Space Sciences	Geophysics
<b>Biology</b>	<b>Biological Sciences, Biotechnology, Bioinformatics, Biomedical Sciences</b>
Materials Science & Engineering	Materials Science & Engineering
Electrical & Electronic Engineering	Microelectronics Science, Optoelectronic Information Science and Engineering, Communications Engineering, Information Science & Engineering
Environmental Science & Engineering	Environmental Science & Engineering, Hydrology and Water Resources Engineering
Computer Science & Engineering	Computer Science & Technology
Mechanics & Aerospace Engineering	Theoretical and Applied Mechanics, Aerospace Engineering
Machinery & Energy Engineering	Mechanical Engineering
Biomedical Engineering	Biomedical Engineering
Ocean Science and Engineering	Ocean Science
<b>Finance</b>	<b>Finance, Financial Science and Engineering</b>



Hold PhD degree



Recruited from overseas



With work and/or education background in the world's top 100 universities



**Prof. Chen Xiaofei**  
University of Southern California  
Earth and Space Sciences



**Prof. Zhou Yongming**  
University of Wisconsin-Madison  
Center for Social Sciences

**Academic Leaders**



**Prof. Xu Zhenghe**  
University of Alberta  
College of Engineering



**Prof. Xia Zhihong**  
Northwestern University  
Mathematics



**Prof. Cheng Xin**  
Texas A&M University  
Material Sci & Eng



**Prof. Shan Xiaowen**  
Exa Corporation  
Mechanics & Aerospace Eng



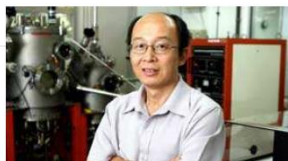
**Prof. Zheng Chunmiao**  
University of Alabama  
Environmental Sci & Eng



**Prof. Yao Xin**  
University of Birmingham  
Computer Sci and Eng



**Prof. He Jia**  
Chinese University of Hong Kong  
Finance



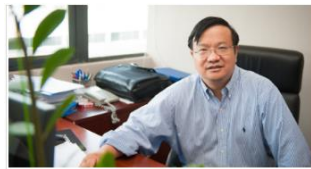
**Prof. Sun Xiaowei**  
Nanyang Technological University  
College of Engineering



**Prof. Xiao Guozhi**  
Rush University  
Biology



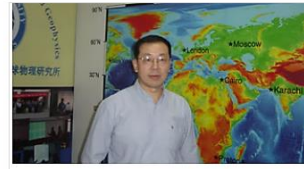
**Prof. He Jiaqing**  
Northwestern University  
Physics



**Prof. Zhang Xumu**  
State University of New Jersey  
Chemistry



**Prof. Rong Yiming**  
Worcester Polytechnic Institute  
Mechanical & Energy Eng



**Prof. Chen Yongshun**  
Oregon State University  
Ocean Science & Eng



**Dr. Brian Butler**  
University of Oregon  
Center for Language Education



**Prof. Bi Baoyi**  
Central China Normal University  
Art Center

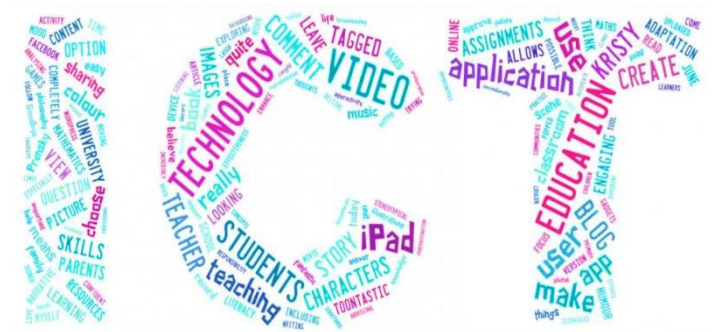
# ICHEI

ICT, Innovation and  
Higher Education

# Mission and Functions

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- Relying on the advantages of **Shenzhen's information and communication technology (ICT)** sector and drawing upon China's experience with the massification of its higher education, ICHEI aims to improve the quality of higher education and promote educational equity in developing countries.
- ICHEI has been carrying out higher education cooperative projects with countries along the **Maritime Silk Road**. ICHEI aims to provide **intellectual support and human resources** for local industrialization and informatization.
- ICHEI also conducts research on education in the countries along the Maritime Silk Road, aiming to become an influential **international think-tank**.



**“Based on Asia-Pacific,  
covering Africa and  
visioning the global”**



**Asia-Pacific countries:** Cambodia, Sri Lanka, Pakistan, UAE, Indonesia, Myanmar.

**African and Middle East countries:** Ethiopia, Djibouti, Egypt, Uganda, Namibia, South Africa, Gambia.

The Centre will expand programmes in the **Central and Eastern European** countries, which include Hungary, Serbia, Latvia, Romania, etc.

# Innovation—Integration of Resources

## RESOURCES

### Platforms



### Universities and Think-Tank

Human Resources

Professional Knowledge

Successful Experience

### Private sectors

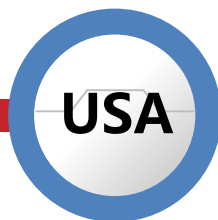


## Public-Private Partnership ( PPP )

- Reduce cost of ICT infrastructure.
- Improve carrying capacity of higher education institutions.
- The localized talents training in enterprises' overseas market.

## Integrate China's quality ICT resources.

- Three Internet giants in China (Baidu, Alibaba and Tencent, “BAT”)
- China has the largest Internet users in the world.





# ICHEI's Partnership Network

- International organization
- Universities and Think Tanks
- Enterprises
- Government



# ICT Promoting the Improvement of Education Quality: Experience and Practice

# The potential of ICT in shortening the educational gap

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“

The spread of ICT and global interconnection has great potential for accelerating human progress, shortening digital divide and developing knowledge society.

**ALL-ACCESS  
WORLD**”

## **To access resources and information easily.**

ICT can help students and teachers (including in underdeveloped and remote areas) to access information, online certification, and learning guidance by providing quality, cheap and accessible higher education resources.

## **The connection between individual and organization.**

Connection can enhance interaction and communication among students, educators and institutes to ensure common learning, cooperative projects, product prototyping and innovation.

## **Effective forces and resources benefit the improvement of efficiency.**

Improving productivity of teachers and expanding scope of teaching coverage by expanding the availability of information and using email, SMS and online learning platforms to ensure instant communication. At the same time, educators can analyze collected data by professional tools to formulate personalized learning courses.

# OUR

# WAY

**Promoting connection and resource accessibility  
by building platforms**

**Promoting education sustainable development  
through ICT capacity building**

**Think tank**

**Set up UNESCO-Shenzhen Funds-in-Trust**

# NO1

Promoting connection and resource accessibility

by **building platforms**

Royal University of Phnom  
Penh (Cambodia)

University of Djibouti  
(Djibouti)

University of Colombo (Sri  
Lanka)

Ain Shams University  
(Egypt)

University of Engineering  
and Technology, Lahore  
(Pakistan)

Addis Ababa University of  
Ethiopia (Ethiopia)

## Weidong Smart Classroom

The major functions of the Smart Classroom will be to enable partner universities to build a comprehensive Learning Management System (LMS), expand their educational resources, as well as to establish a recording and broadcasting system for their academic programmes across campuses.

# SUSTech-HUAWEI Authorized Information and Network Academy

HAINA solution is the ICT technology education plan to the world. It adopts the popular model of school enterprise cooperation, relying on the technology and market leading advantages of HUAWEI in the field of ICT.



# MOOC Center

The MOOC Center can provide support for making online courses and training. MOOC Center can meet the needs of making MOOC, recording educational classical courses, camous studio, meetings and activities, microteaching and recording real-time training courses.



# NO2

Promoting education sustainable development by

# ICT capacity building

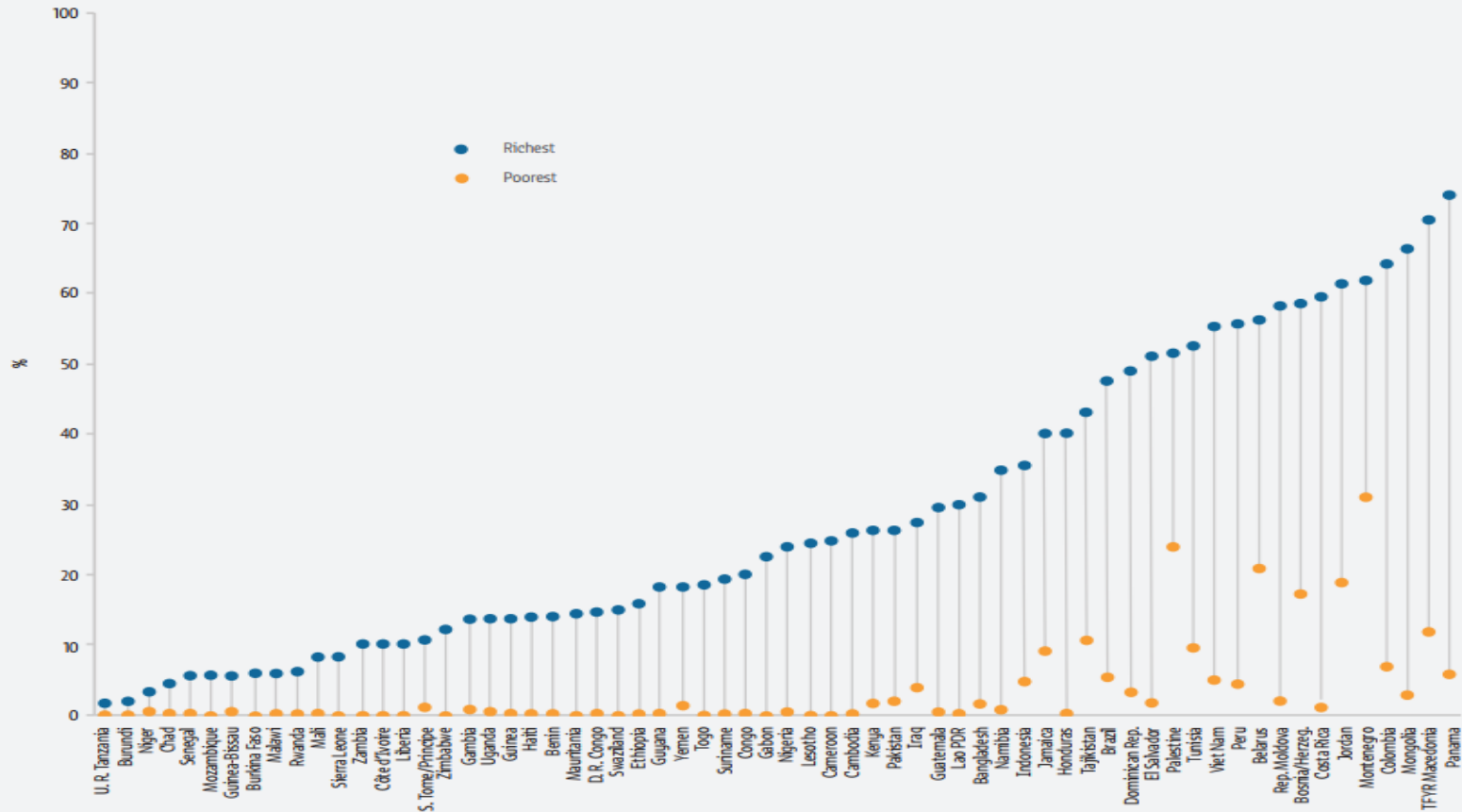


# Capacity Building

- **The shortage of ICT talents.**
- **Keep pace with Industry 4.0, practical training.**
- **Custom-made training.**

# The shortage of ICT talents

**FIGURE 10:**  
The poorest have hardly any post-secondary education opportunities in low and middle income countries  
Post-secondary education attendance rate by wealth, selected countries, 2010–2015



Source: GEM Report team calculations based on household surveys.

“

The chairman of the African Union Committee, Nkosazana Dlamini Zuma, pointed out that

“there are more than

**200,000,000**

**young people**  
**aged 15 to 24**

**in Africa**, and the

youth population is the comparative advantage of Africa, and we must transform them into demographic dividends.”

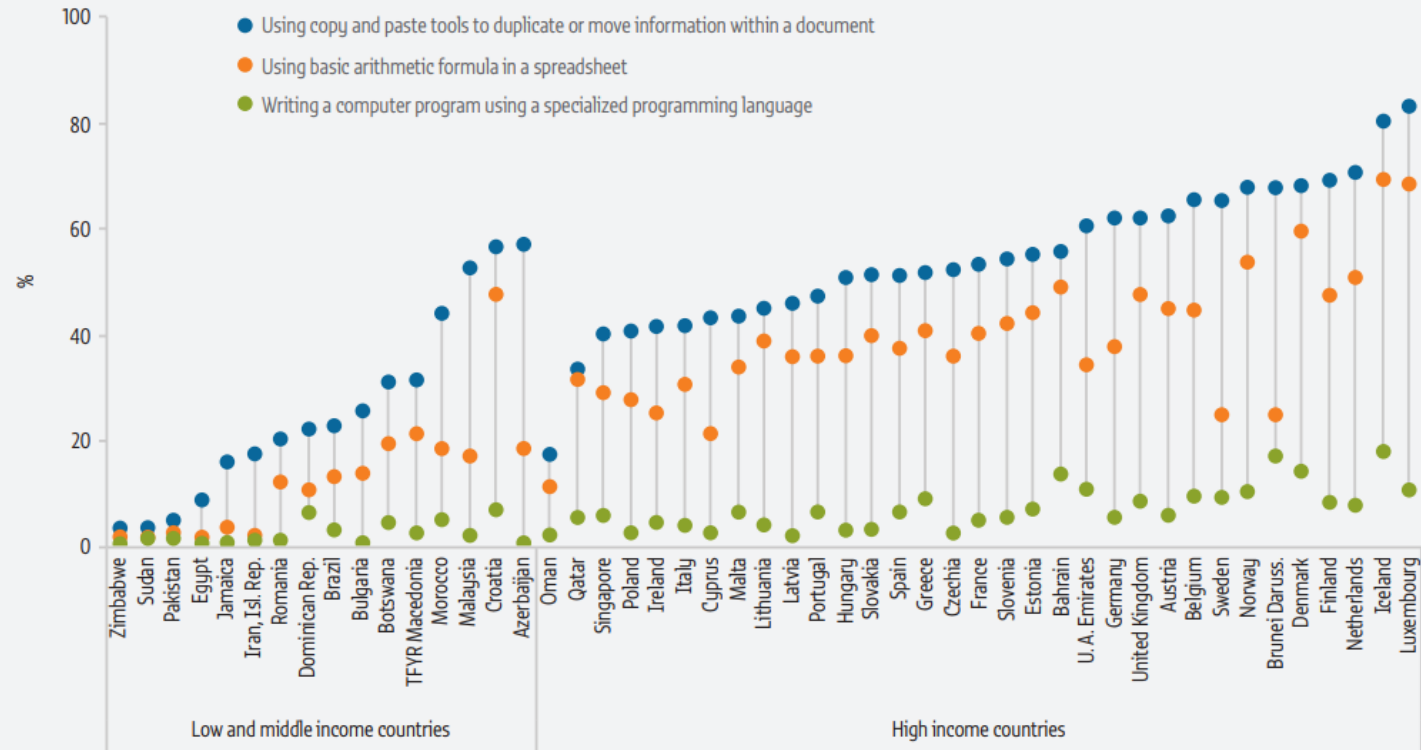
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Source: 2017 GER

**FIGURE 11:**

**The diffusion of basic ICT skills is very limited in low and middle income countries**

Percentage of adults who had carried out a computer-related activity in the past three months, selected countries, 2014–2016



Source: International Telecommunications Union database.

In developing countries, this figure is only 40%, while in the least developed countries (LDC), this figure is as low as 15%.

## Keep pace with Industry 4.0, practical training.

TRAINING	THEME
2016, RUPP, Cambodia Training	<b>Basic ICT, STEM, MOOC</b>
2017, African Countries Training	<b>ICT in Higher Education Innovation</b>
2017, Asian Countries Training	<b>ICT in Higher Education Innovation</b>
2018, African Countries Training	<b>Big Data and Cloud Computing</b>
2018, Asian and European Countries Training	<b>MOOC and Online Learning</b>
2018, Chad Training	<b>Educational Informationization</b>

# 2017 Seminar on ICT in Higher Education Innovation for Asian and African Countries



# Workshop on

# Higher Education Information and Communication Technology: Capacity Building



NO3

Think Tank

## Facilitate Pakistan to establish a Literacy Centre

Mr. TANG Qian, Former Education Assistant Director General of UNESCO called this cooperation as “**the model for South-South cooperation**”.





# Holding international conferences, issuing regional declarations and consensus.



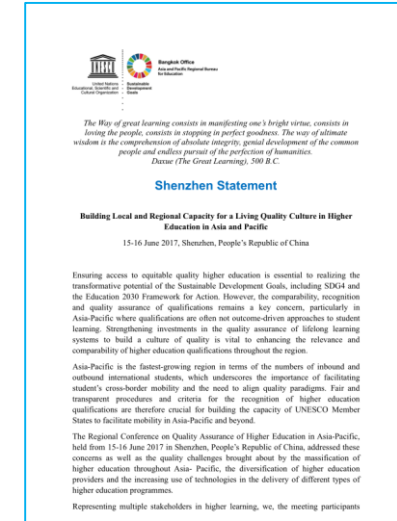
**International Meeting on Innovation and Entrepreneurship Education**



**Regional Conference on Quality Assurance of Higher Education in Asia-Pacific**

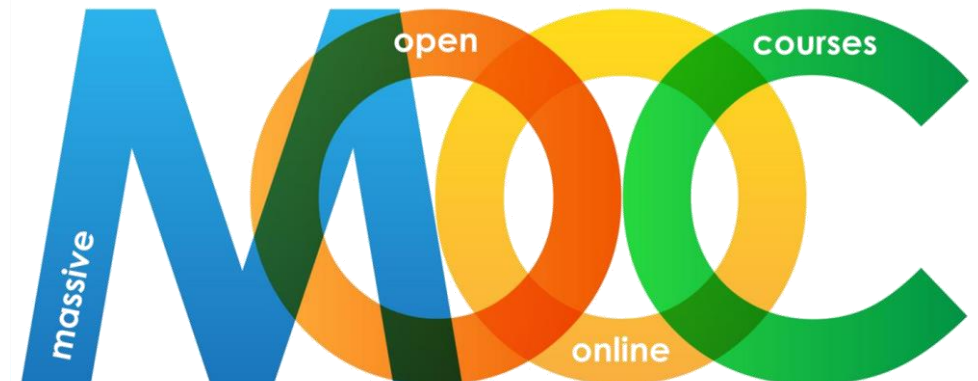


**Shenzhen Consensus: ICT driven Innovation  
Shenzhen Statement: Quality Assurance**



## Welcome to join 2018 Seminar on MOOC

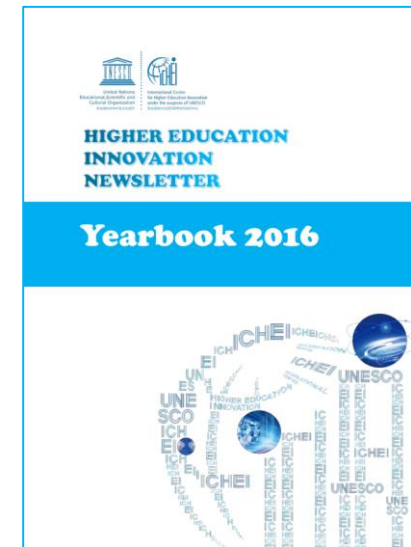
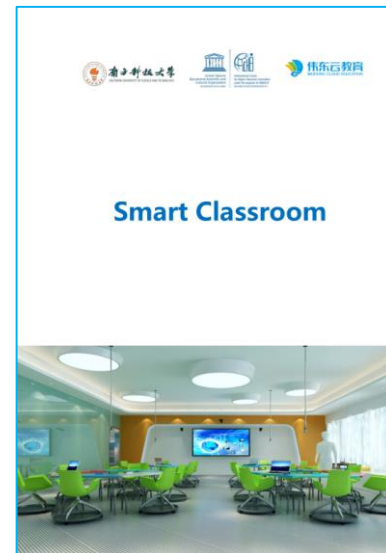
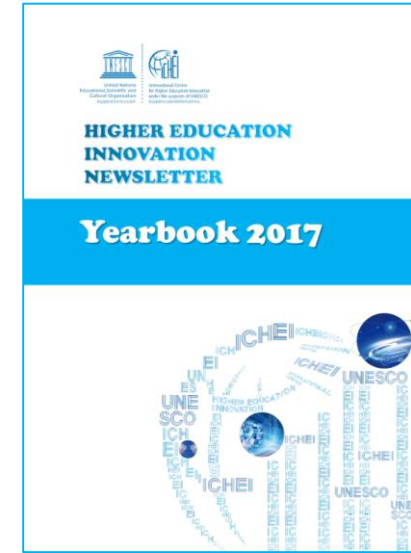
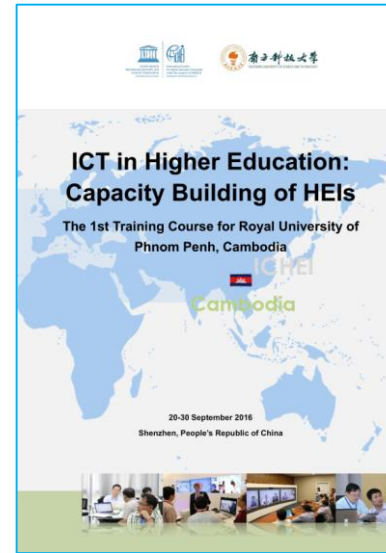
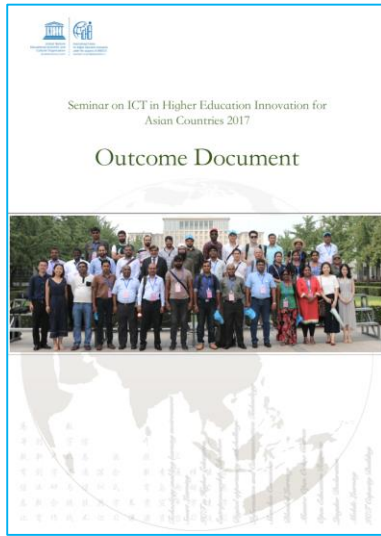
June 11-13.  
Shenzhen, China



# Providing consultancy report for the China-Africa Think Tank Forum



# Publications



# NO4

## UNESCO-Shenzhen

## Funds-in-Trust

The **Shenzhen Government** made a contribution into the UNESCO/Shenzhen Government Funds-in-Trust for a total amount of **USD 2,000,000** to enable UNESCO to provide assistance to Member States for the implementation of programs and projects agreed upon by the parties.

The Asia-Pacific Programme focusing on **ICT application in Sri Lanka and Cambodia**. (**25%** of the Fund)

The Africa Programme focusing on the **quality assurance of higher education in 10 African countries** (Niger, Togo, Côte d'Ivoire, Mali, Zambia, Egypt, Gambia, Malawi, Namibia, Senegal) . (**75%** of the Fund)





**INTERNATIONAL CENTRE FOR HIGHER EDUCATION INNOVATION  
UNDER THE AUSPICES OF UNESCO**

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