2019 Seminar on ICT Application in Higher Education for African Countries

Leveraging Information Management System to Strengthen Quality Higher Education

Outcomes Document

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2019 Seminar on ICT Application in Higher Education for African Countries
Leveraging Information Management System to Strengthen Quality Higher Education

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International Centre for Higher Education Innovation under the auspices of UNESCO
Center for Higher Education Research of Southern University of Science and Technology
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TABLE OF ACRONYMS AND ABBREVIATIONS

AI: artificial intelligence
BRI: The “Belt and Road” Initiative
CHER: Center for Higher Education Research
HE: higher education
HEIs: higher education institutions
ICT: Information and Communication Technology
IIOE: International Institute of Online Education
IMS: Information Management System
IoT: Internet of Things
IT: information technology
LMS: Learning Management System
OECD: The Organization for Economic Co-operation and Development
SDGs: Sustainable Development Goals
SUSTech: Southern University of Science and Technology
UAP: Unified Authentication Platform
UN: United Nations
UNESCO: United Nations Educational, Scientific and Cultural Organization
UNESCO-ICHEI: International Centre for Higher Education Innovation under the auspices of UNESCO
China is a developing country. In the 1950s, soon after its founding, China began to provide economic aid and technical assistance to the best of its ability to other developing countries in various forms, and gradually expanded the scope of such aid. Over the years, these aids help recipient countries to strengthen their self-development capacity, enrich and improve their peoples’ livelihood, and promote their economic growth and social progress in various forms. Through foreign aid, China has also consolidated friendly relations, along with economic and trade cooperation with other developing countries, promoted South-South cooperation and contributed to the common development of mankind. Adhering to equality and mutual benefit, stressing substantial results, and keeping pace with the times without imposing any political conditions on recipient countries, China’s foreign aid has emerged as a model with its own characteristics.

Specifically, the Human Resource Development Cooperation is a key form of such aid. Through multilateral and bilateral channels, it runs different kinds of seminars and training programmes for government officials, educators, scientists, and other professional personnel. Today, more than 10,000 participants from the fields of economy, environment, health care, education, agriculture and many more engage in these programmes each year.

Established in 2016, International Centre for Higher Education under the auspices of UNESCO (UNESCO-ICHEI) is a Category II centre with a mandate for higher education (HE), located in Shenzhen, China. Since its beginning, UNESCO-ICHEI has been committed to the promotion of ICT in HEIs, in line with UN’s SDG 4: Ensuring inclusive and equitable quality education and promote lifelong learning opportunities for all. It is believed that ICT plays a pivotal role in this process, providing Higher Education Institutions (HEIs) with opportunities to enhance the quality, expand the access, and improve the efficiency of HE.

UNESCO-ICHEI is proud to have joined hands with Center for Higher Education Research (CHER) at Southern University of Science and Technology (SUSTech) to plan, organize, and implement these seminars to contribute to such a great endeavour. Specifically, these seminars bear the objectives to promote the application of ICT in HE in developing countries. Through a series of workshops, seminars, lectures, field trips, and hands-on sessions, they provide a platform for policy-makers, faculty members, and technical personnel of HEIs to share and exchange experiences.

I believe that these seminars are of great significance. UNESCO-ICHEI is committed and will continue to support UNESCO member states with reinforcement of their HE systems by improving the ICT capacity of HEIs, enhancing access to HE, and assuring the quality of teaching.

Prof. Li Ming
Director of UNESCO-ICHEI
November 2019
ICT is one of the best methods to ensure higher education quality and equality.

Prof. SHEN Hong

Information and Communication Technology (ICT) plays an increasingly important role in all respects of our life, especially in higher education. Since its foundation, Center for Higher Education Research (CHER) of Southern University of Science and Technology (SUSTech) has been dedicated to promoting ICT application in HE. CHER aims to realize the harmony of HE teaching, management, governance, policy-making, technology, and self-competence.

Under the sponsorship of Ministry of Commerce of the People’s Republic of China, CHER has partnered with UNESCO-ICHIEI in launching a series of seminars on ICT application in HE for developing countries along the “Belt and Road” since 2017. Adopting Shenzhen’s hi-tech industrial advantages and the disciplinary features of SUSTech, these seminars aim to provide various ICT-themed courses for policy makers, educators and technical personnel from HEIs in Asian-Pacific and African countries, to show how ICT is used in HE and finally to strengthen quality HE in the countries.

“Internet +” is an engine for economic development. With ICT and Internet platforms used, the Internet will be deeply integrated with traditional industries, creating a new development ecology, and improving the level of integration and optimization of social resources. Dually boosted by Internet thinking and Internet technology, HE industry has undergone profound changes. On the other hand, ICT application has become a crucial indicator to measure the strength of a country, a region, an industry, and a unit. ICT application in HE has also become the inevitable means through which leapfrog development of colleges and universities is achieved, which is an important step forward in the modernization of education. It has also improved the traditional teaching mode, shifting the traditional mode centered on classroom teaching to the one highlighting modern educational technologies such as the online and multimedia teaching.

Diverse teaching modes and sharing e-learning resources are going to inspire students’ interest, self-learning and innovation ability, so as to improve the teaching quality. Besides, introducing information systems in the management of colleges and universities is a good way to impel office automation (OA), which formed an efficient and dynamic management mechanism.

China’s colleges and universities have made progress in ICT application, such as ICT infrastructure, digital resources, application systems and information assurance. Information management systems (IMS) are widely used in teaching affairs, student affairs, research and administration, etc. Southern University of Science and Technology (SUSTech) is rooted in Shenzhen City—“the Silicon Valley of China”\(^1\). It is renowned as a pilot university of China’s national comprehensive reform of HE. The role of SUSTech shows that its mission and goal, governance system, talent cultivation and academic discipline should be standing on a historical high. In the past eight years, SUSTech has been continuously exploring the approach of ICT utilization that fits itself, and has obtained experience in selecting, applying, optimizing and maintaining IMSs.

ICT is one of the best methods to ensure higher education quality and equality. It is hoped that the seminar will serve as a beginning to share and to exchange Chinese experience of ICT application in HE with HEI in Africa. It is also hoped that this Seminar will enable us to build long-term partnerships and facilitate close cooperation among higher education institutions (HEIs) in the region to enhance mutual understanding, deepen friendship, and ultimately improve the overall quality of HE.

Prof. SHEN Hong
Director of CHER
November 2019

\(^1\) Business Week.
Ministry of Commerce of the People’s Republic of China is a component of the State Council of the PRC, which is responsible for domestic and foreign trade and economic cooperation. As the organizer, the Ministry is carrying out human resources development cooperation with recipient countries by multilateral and bilateral ways, and is organizing various seminars, training programs and talents exchange programs for recipient countries at home and abroad.

The International Centre for Higher Education Innovation under the auspices of UNESCO (UNESCO-ICHEI) was approved at the 38th General Conference of United Nations Educational, Scientific, and Cultural Organization (UNESCO) on November 13th, 2015. It is the 10th UNESCO Category II Centre in Education in the world and the 1st Category II Centre in Higher Education in China. UNESCO-ICHEI has always adhered to the purpose and mission of UNESCO, and draws on the advantages of ICT industries in Shenzhen and China’s experience of popularizing higher education. Through four major functions of knowledge production, capacity building, technical support and information sharing, UNESCO-ICHEI devotes itself to narrowing the gap of higher education between developing and developed countries, and promotes quality and equity in higher education in countries in Asian-Pacific region and Africa.

Founded in June 2015, Center for Higher Education Research (CHER) is a teaching and research institute attached to the School of Humanities and Social Sciences of Southern University of Science and Technology (SUSTech). Meanwhile, it provides support to International Centre for Higher Education Innovation under the auspices of UNESCO (UNESCO-ICHEI). CHER intends to become a think tank for SUSTech’s position as “a world-class research university rooted in China”, through offering theories, policies, experiences and lessons learned from higher education institutions at home and abroad, and ultimately contribute to Shenzhen’s transition into a pilot demonstration area of socialism with Chinese characteristics, the development of Guangdong-HongKong-Macao Great Bay Area, Chinese higher education reform, and innovation development of the global higher education.

CHER provides general education courses for SUSTech’s undergraduate students. It has also collaborated with the University of Hong Kong in offering joint doctoral programme of majors in higher education and educational technology since 2016. Currently, it has a number of research interests, such as Big Data and Higher Education, ICT Development in Higher Education, and Internationalization of Higher Education. In the future, CHER will continue to contribute to the building of SUSTech into a world-class research university by admitting doctoral students, recruiting post-doctoral candidates, and bringing in talents globally.

CHER will join hands with UNESCO-ICHEI in building an international platform to share and integrate quality educational resources, as well as promote academic collaboration with countries along the Belt and Road Initiative.
UNESCO International Centre for Higher Education Innovation (UNESCO-ICHEI) expresses its sincere gratitude to the speakers for generously sharing their respective expertise in ICT Application in Higher Education, namely:

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- XuetangX
- iFLYTEK
- CIO
- XYLink
- Optics Valley
- FiberHome Technologies
- Shenzhen Xiongdi Technology Co., Ltd.

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Co-organized by UNESCO-ICHEI and CHER, "the 2019 Seminar on ICT Application in Higher Education for African Countries" with Information Management System as the focus, aims to enhance the ICT capacity of various stakeholders of HE. The Seminar sets out to help these countries to cultivate talents, improve the quality of universities, and promote equity in HE by tapping into Shenzhen’s strength in the ICT industry and sharing China’s experience of ICT application in HE. Specifically, the Seminar has the following three characteristics:

- **Diverse Participants**
  A total of 32 policy makers, university faculty members, and technical personnel from Djibouti, Egypt, Ethiopia, Gambia, Ghana, Kenya, Nigeria, Uganda, Tanzania and Zimbabwe completed the Seminar successfully. Specifically, 8 participants are officials from the Ministry of Education, 24 are faculty members, heads of ICT departments, and technical engineers of HEIs.

- **Enriched Teaching and Practices**
  To accommodate the actual needs of participants, the Seminar has divided the curriculum into three parts: common courses, general courses, and practice. It is believed that this curriculum has greatly improved participants’ understanding of ICT application in HE and expanded their expertise in related fields. It has also given them the opportunity to observe and learn from the experience and practices of ICT application in China’s HE.

- **Direct and Effective Partnership**
  Together, UNESCO-ICHEI and CHER have created a database of the participants who have participated in the Seminar. The database serves as a foundation, allowing UNESCO-ICHEI and CHER to build and foster a network of direct and effective partnership with relevant ministries, HEIs and organizations in respective countries for collaboration and exchange in the future.
Higher education can be seen as a focal point where knowledge and its application are met, which makes a great contribution to the economic growth and development through fostering innovation and building skills. As pointed out by the Organization for Economic Co-operation and Development (OECD), it "creates high-wage employment and enhancing productivity growth" and plays a crucial role in a country’s competitiveness. In light of this, leaders around the world are becoming increasingly aware of using HE to drive their economic development forward and "building an inclusive and diverse knowledge society".

Meanwhile, rapid advances in ICT have revolutionized the way businesses and industries are conducted and influenced the way people work, interact and function in society. The use of ICT has become common at home, at work, and in educational institutions and continues to grow exponentially. Consequently, numerous policies, cutting-edge research, and practices worldwide are looking into promoting the infusion of ICT into education and leveraging it to meet the twenty-first century life-long learning societal needs, making its integration an 'inevitable' one.

As this change is fundamental, instructional method needs to adopt and act on the call. Scholars and research institutes have suggested how the use of ICT can be helpful in education, as categorized in the following framework (Fig. 1.1).

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1. **Global Development of ICT in Higher Education**

Higher education can be seen as a focal point where knowledge and its application are met, which makes a great contribution to the economic growth and development through fostering innovation and building skills. As pointed out by the Organization for Economic Co-operation and Development (OECD), it "creates high-wage employment and enhancing productivity growth" and plays a crucial role in a country’s competitiveness. In light of this, leaders around the world are becoming increasingly aware of using HE to drive their economic development forward and "building an inclusive and diverse knowledge society".

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1. **Background**

   **Global Development of ICT in Higher Education**

   Higher education can be seen as a focal point where knowledge and its application are met, which makes a great contribution to the economic growth and development through fostering innovation and building skills. As pointed out by the Organization for Economic Co-operation and Development (OECD), it "creates high-wage employment and enhancing productivity growth" and plays a crucial role in a country’s competitiveness. In light of this, leaders around the world are becoming increasingly aware of using HE to drive their economic development forward and "building an inclusive and diverse knowledge society".

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Fig. 1.1 The Use of ICT in Shaping Education Grid

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In 2015, UNESCO held the first International Conference on ICT in Education in China and released Qingdao Declaration, which explores how ICT can play an effective role in promoting educational changes. Specifically, in HE, the infusion of ICT has four critical benefits. First, the steady increases in bandwidth and computing power have made it possible to conduct teaching and learning anytime and anywhere. Second, the increasing cloud services and data processing have enriched access to academic resources and opportunities. Third, the combination of data processing and cloud services have enabled tracking and evaluating related progress and performance in a timely fashion. Fourth, while ICT in HE arises as an opportunity to enhance its performance, it poses a challenge for HEIs to innovate, adjust and reform their management practices, so as to keep up with the rapidly changing needs.

2 ICT Application in China’s HEIs

ICT application in colleges and universities is in parallel with the rapid development of a country’s ICT development. In 1983, China communicated with foreign countries through computers and networks for the first time, which opened the gateway of China’s Internet development. China’s ICT development has undergone three phases:

Phase I (1993-1997):
Projects of “Golden Card”, “Golden Bridge” and “Golden Pass” were put forward;

Phase II (1997-2001):
With 350,000 Internet users, the amount of online computers in China has increased by 29 times. In the few years, the number of registered domain names under CN has increased by 29 times, the number of WWW sites increased by 176 times, and the international export bandwidth increased by 110 times;

Phase III (after 2001):
Network infrastructure, application platform, information industry, and information services have all enjoyed a high-speed development after 2001. According to The 44th China Statistical Report on Internet Development released by China Internet Network Information Center (CNNIC) in August 2019, by the end of June 2019, there were 854 million netizens in China. With the 61.2% of Internet penetration, the total of mobile phone users reached 8.47 billion, and 99.1% of them surf the Internet by mobile phones.

In recent years, ICT application in China’s HEIs has entered a key era. With the rapid development of computer, communication and Internet technologies, new concepts and technologies such as cloud computing, big data, and "Internet +" have also been widely used in colleges and universities, which has achieved remarkable effects. Utilization of information management systems (IMS), including office automation (OA), educational affairs, personnel, finance, file management and fixed asset management, are mainly based on the core business and operations of department. To some extent, IMS improved the management efficiency and service level of colleges and universities. The following image shows the current outcomes of the ICT application in China’s HEIs:
1.2 RATIONALE OF THE SEMINAR

Generally, developing countries have acquired achievements in ICT application in HEIs, however, there still exists unbalance which limits the sustainable development of ICT application. First, faculty staff don’t have strong concepts of using ICT, and they don’t pay much attention to the front-tier education thoughts, technology theories, information literacy, and ICT application skills. Second, with the lack of overall planning, each department develops its own IMS separately, which causes a waste of resources and “information isolation”. Third, many HEIs invest more in hardware infrastructure than software. With the unbalance, the utilization of equipment is quite low. Fourth, more technicians are needed.

Facing the countless information, it is a priority to share, to classify and to describe information uniformly and scientifically. According to University Information System Specification, HEIs in African countries need to build a standard for the collecting, processing, exchange and transmission of information in the following respects: infrastructure, application system, rules and standards, users and administration. It is essential for African HEIs to improve the ICT competence of policy-makers, teaching staff and technical experts in HEIs by capacity building seminars. In the future, more talents will have access to have quality education.

Accordingly, the 2019 Seminar aims to show Chinese cutting-edge combination of ICT and HE to the African participants by various activities such as lectures, workshop and field visits, which will motivate them to put forward action plan of ICT application for their own HEIs and their country.

In total, 32 participants of "2019 Seminar on ICT Application in Higher Education for African Countries" are from 10 African countries: Djibouti, Egypt, Ethiopia, Gambia, Ghana, Kenya, Nigeria, Uganda, Tanzania and Zimbabwe (in alphabetical order), including officials from the Ministry of Education, professors and lecturers from HEIs, heads of ICT faculty and departments, as well as ICT technicians.

As previously stated, various countries have become increasingly aware of the importance of ICT in HE and started to explore its potentials. The Seminar is a response to this trend, with the goal to facilitate participating countries in the better adoption of ICT in higher education. This process involves various stakeholders and requires the joint efforts of all. Only when all stakeholders in this field take a series of actions to enhance their capacities can we truly achieve our goal. Specifically, we have categorized these stakeholders into three groups, which are: policy makers, university faculty members, and technical personnel. Based on the UNESCO ICT Competency Framework for Teachers published in 2018, UNESCO-ICHEI has designed the seminar specifically for these three groups. These three groups and their respective objectives are as follows:

### Policy Makers:
- To enhance their awareness of the role of ICT in HE;
- To advance their understanding of Big Data and Cloud Computing in HE;
- To strengthen their capacity of ICT Application/Infusion related policy-making; and
- To help them gain new insights into ICT-enabled higher education ecosystems.

### University Faculty Members:
- To enhance their awareness of ICT in HE and apply accordingly in academic activities;
- To advance their understanding of Big Data and Cloud Computing in HE;
- To develop their capability to integrate Big Data and Cloud Computing into curriculum to optimize their teaching in accordance with their own needs and practices; and
- To improve their ability to critically identify and evaluate the use of ICT in educational settings.

### Technical Personnel:
- To raise their awareness of how ICT supports HE;
- To increase their knowledge and capacity of Big Data and Cloud Computing in HE; and
- To enhance their capability to contribute to the development and integration of ICT within their respective organizations/universities.

In addition, participants are different in terms of age and gender. The majority of them are under 40 years old. Thirteen participants are aged between 30 to 39; three of them are aged between 20 to 29; and nine are aged between 40 to 49. Only four out of the 32 participants are female. In the future, ICHEI hopes to increase the number of female participants.
2.2 OUTLINE OF THE SEMINAR

In addition to identifying the target participants, the design of the Seminar follows the task-oriented approach and is grouped by modules, so as to present a clear outline.

A Task-Oriented Approach

A task-oriented approach follows a sequence of certain stages, and is based around the completion of a central task. The Seminar has adopted this approach with the hope to reinforce learning objectives throughout the process.

Preparation Stage
- Collect literature regarding ICT application in the respective county/university;
- Collect literature regarding Information Management System in HE in the respective country/university

Preparation Stage
- Establish a working group by country/institute to foster collaborative learning;
- Submit group weekly reflective journals to showcase takeaways and learning from the activities;
- Discuss and analyze the significance and impacts of applying Big Data and Cloud Computing in HE;
- Devise a group proposal on how to integrate Big Data and Cloud Computing in HE;
- Devise a group proposal/action plan on how to integrate Big Data and Cloud Computing in HE.

Preparation Stage
- Collect evidence and cases showcasing the outcomes of the Seminar
- Continue to stay tuned to the development of Big Data and Cloud Computing in higher education

2. Modules

The curriculum is divided into three modules by types.

[General Course] offers an overview of the Chinese culture, language and history by means of lectures and cultural activities.

[Professional Course] focus on development of ICT capacity building related to IMS through a series of seminars and lecturers;

[Practical Course] emphasize interaction and exchange regarding the case of IMS in practice through site visits and workshops. Together, these modules complement each other to offer participants a comprehensive overview of the topics of the Seminar.
2.3 IMPLEMENTATION AND RESULTS

The Seminar is highly appraised by the participants. The theme—Information Management System in Higher Education Institutions—is exactly what all participants are eager to learn. The seminar provides them a good chance to learn IMS so that they could work better in their own HEIs. With lectures, visits and practices, the Seminar can help participants to know the theory of cutting-edge technologies applied in HE and provides cases for them to better understand what they have learned during the seminar.

In order to know the performance of the participants and the effect of the seminar, we have collected comments from the participants in lectures, workshops, visits, and classroom interactions. For each weekend, we have organized a self-directed reflection meeting for them to share their ideas, as well as the finished course materials. Based on the feedbacks, we will make a consistent effort in designing the future seminars and inviting outstanding lecturers.

The Seminar was co-organized by the ICHEI and CHER. As the course provider, we have invited four experts to present courses about "IMS in China’s HE—take SUSTech as a case". The introduction and review are as follows:

1 Lectures

Lecture 1: Yesterday, Today, Tomorrow of Higher Education Massification in China

SHEN Hong, Director of Center for Higher Education Research, Southern University of Science and Technology

Professor Martin Trow, a notable educational sociologist, proposed a theory in the 1970s saying that Gross Enrolment Ratio (GER) is an important indicator for measuring the development of HE in a region. If GER is less than 15%, HE belongs to elite education stage. If GER is more than 15% and less than 50%, that means the HE development is in universal stage9. Since China’s reform and opening up in 1980s, HE in China has transformed from the stage of elite to mass. And if it’s higher that 50%, the HE development is in universal stage. Since China’s reform and opening up in 1980s, HE in China has transformed from the stage of elite to mass. Prof. SHEN introduced the HE massification in China to participants by introducing the gross enrollment rate, the enrollment, the number of HEIs and the scale of institutes, which have

greatly attracted participants. They shared their own thinking on China’s HE massification and wanted to explore more on China’s experience on massification. Prof. SHEN suggested that during the process of transforming from the stage of massification to universal, educators from all sides should give further thought to the following four aspects:

First, how can more people access higher education?
Second, how to make use of the investments?
Third, how to provide various financial aids to students?
Fourth, how to reform the curriculum schedule and teaching methods in order to improve education quality and competitiveness?

**Discussion**

"It’s an honor for me to take part in the Seminar, which helps me to have a good knowledge of ICT application in China’s HEIs. This lecture presented by Prof. SHEN is the last one. Her presentation is a summary of what we have seen and learnt during the past 19 days, we have a general idea about China’s HE. I’ve also studied Martin Trow’s theory of conceptualizing HE development. It’s an early warming theory based on the HE development in American and European countries. A recent statistic shows that the GER of HE in Uganda was about 4.8% in 2014 and no obvious growth in recent 5 years, which means HE in Uganda is and will be on the stage of elite for a long term. All educator should consider how to bring the education resources to more people for quality education. This Seminar encouraged me to better know about the great impulse of ICT in HE. For me, ICT is the best solution of entering the universal stage of HE.”

**Lecture 2: ICT Application in SUSTech**

SUN Qiaoyu, Deputy Director of Center for Network and Information, SUSTech

Center for Network and Information of SUSTech serves as the “central nervous system” for the whole campus. The lecture presents participants the ICT application in SUSTech from two aspects: ICT in departments and the building of information management system. During the early period of campus founding, the application of information system was totally blank. It was unrealistic to customize a set of information system suitable for SUSTech in a short period of time. In order to address the emergency, SUSTech bought ready-made systems and software, and purchased a large number of basic equipment. Departments can choose a system they need.

As SUSTech developed fast, all operating systems were isolated, and the departments focused more on management than on service. The existing systems lagged behind. SUSTech, different from the traditional HEIs, tried to explore ICT application that was suitable for its own development. There are three aspects to consider: first, the operating systems that cover students affairs, teaching and administration; second, the construction should take users’ experience into consideration; third, the ICT application is related to general users, approval users and operating departments. The ICT application in SUSTech is like a building. In order to construct this building, SUSTech assessed the original systems and classified the existing system. The priority is to offer third-party service (WeChat), a mobile service for approval. Secondly, users with only one account can login the 12 operating systems (Image 2.4).

**Discussion**

A participant from Nigeria shared his view of ICT application in Ahmadu Bello University (ABU). He mentioned that ICT is applied to information management in almost all of universities in Nigeria. ABU sets up optical fiber backbone network to ensure the Internet connections (1 Gbps). The multi-functional data center in ABU is responsible for faculties and students management, scholarship, salary, e-mail, computer training, video meeting etc. ABU also owns a distance learning center. He believed that the success of SUSTech’s IMS should be owed to the exploration, collaboration and talents. "The IMS in ABU is not as good as in SUSTech. So, we need to train our faculties, including managers, teachers, and technicians to improve their ICT capacity.”
SUSTech is characterized by its Credit System, Tutorial System and Residential College as well as Individualized Education, Elite Education, and Globalization, with the aim of cultivating innovation talents. The system for Office of Students Affairs has entered the stage of ICP application.

The mode of cultivation is the base for the construction of ICT application. Tracing back on the development of Student Information Management System (SIMS), we can find that at the early stage, we use the software of Microsoft Office to manage students information, which is not secure, flexible and accurate enough.

As the project of ICT application was initiated in 2015, the ICT construction was still in the exploration stage, which could not meet the needs of mainstream platforms SAP or ORACLE. Hence, SUSTech adopted BeX5, a Chinese platform, focusing on students’ basic information, tutor-student selection, course-selection confirmation, dormitory management etc. However, BeX5, with strict server requirement, and complicated in coding, was unable to separate operations.

It has been proved that BeX5 was not fit for SUSTech. In 2017, SUSTech introduced EMAP, a Chinese fast integrated development platform. Besides, a complete kit of solutions is included, such as login, authority, data center, and data line. Several servers are used to decentralize resources. SUSTech has also developed and upgraded some applications, with over 30 applications available right now.

Participants from Ain Shams University (ASU) in Egypt introduced their SIMS, which is widely used in the Faculty of Pharmacy and the Faculty of Engineering. In 2018, a professional e-learning studio was established, which is in charge of recording video lectures/MOOCs, clinical sessions and 3D model imaging in the Faculty of Pharmacy. More than 120 Internet-connected PCs are included in the faculty library and mobile APP can also be used. Systems for the Faculty of Engineering include learning management system, students information system, information management system and other services.

Participants also mentioned that compared with SIMS in SUSTech, SIMS in ASU is only used in two faculties, which is not enough. They should be applied in more faculties and departments. Big Data analysis and security are key factors in a successful IMS. Meanwhile, the cutting-edge technology such as artificial intelligence (AI) should be introduced. They therefore planned to suggest adding diploma on big data and AI and optimizing graduate courses and adding diploma to their university. In terms of ICT enhancement, they planned to further activate the smart classroom on campus, encourage faculty to build more online/blended courses, work with IT department in the university on unifying and enhancing SIMS, and work with the administration on purchasing advanced equipment for course delivery in the labs and classrooms.
Lecture 4: Blackboard Learn Instructor Training

Ms. Sharon Xiao, program officer of Blackboard Learn
Ms. Hellen Zhan, Senior Engineer of Teaching Affairs Office, SUSTech

For the time being, Blackboard (Bb) is the main online teaching platform in SUSTech. In this practical training, the lecturers opened a virtual platform for participants and taught them how build an online courses on Bb.

Bb provides an online learning environment for teachers and students, where users can create courses, manage resources, communicate with each other, analyze data, assess and study (exams, tests and homework). It creates a space for students to take the initiative in learning, thus making an efficient learning environment. Bb is now the only teaching platform supporting millions of users. Over a thousand of universities, education institutes, and companies are using this platform.

### Discussion

A participant from University of Djibouti (UD) introduced the Moodle platform in her university and concluded the differences between Bb and Moodle with the lecturers as followed table:

<table>
<thead>
<tr>
<th>Areas</th>
<th>Blackboard</th>
<th>Moodle</th>
</tr>
</thead>
<tbody>
<tr>
<td>HEIs, training departments</td>
<td>Secondary schools, non-profit organizations, private company,</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Position</th>
<th>Learning management system</th>
<th>Course management system</th>
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</table>

<table>
<thead>
<tr>
<th>functions</th>
<th>Study; Content; Portfolio; K-12; Backup; Training</th>
<th>Work, assignment, chat, discuss, test, questionnaire, workshop, Wiki</th>
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</table>

<table>
<thead>
<tr>
<th>Interface</th>
<th>Clear</th>
<th>Incoherent</th>
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</table>

<table>
<thead>
<tr>
<th>Performance</th>
<th>Stable and reliable</th>
<th>Instable</th>
</tr>
</thead>
</table>

<table>
<thead>
<tr>
<th>Service team</th>
<th>Professional</th>
<th>Less professional</th>
</tr>
</thead>
</table>

<table>
<thead>
<tr>
<th>Update</th>
<th>Often</th>
<th>Seldom</th>
</tr>
</thead>
</table>

<table>
<thead>
<tr>
<th>Fees</th>
<th>Expensive</th>
<th>Free</th>
</tr>
</thead>
</table>

Fig. 2. 6 Comparison between Blackboard and Moodle
Towards the end of the Seminar, all participants were invited to complete a questionnaire to evaluate the implementation and results of the Seminar. The total score is 100 points and its three major categories are: Curriculum (45%), Management (35%) and Overall Performance (20%). Indicators of curriculum includes course content, quantity of lectures and trainers’ level, and so on; For the category of management, it mainly includes accommodation, airport transfer and catering services arrangement; lastly, for the overall performance, indicators focus on participants’ overall evaluation and their willingness to promote corporation between two countries.

A total of 32 questionnaires were distributed and all were successfully collected. In general, participants were very satisfied with the Seminar with average score of 81.10. The highest score of the questionnaire is 97. Participants are mostly satisfied with “Correlation between Study Tours and the Program Theme”, “Attitude of the Chinese Staff”, and “The Project for Promoting Cooperation Between the Two Countries”, with 4.43 points, 4.29 points, and 4.38 points individually. The least satisfying four indicators are “Translation Level”, “Accommodation”, “Communication Skills of the Chinese Staff”, and “Program Duration”, with 3.57 points, 3.62 points, 3.62 points, and 4.0 points respectively. On the basis of these feedbacks, more adjustment and efforts will be put on the future seminars in order to improve the whole quality of the Seminar.

## (1) Course

On the course module, the most satisfying sectors are “Correlation between Study Tours and the Program Theme” and “Arrangement for Study Tours or Internships”. It can be concluded that the study tours and courses complement each other. Participants said they have learned a lot from the meaningful Seminar.

## (2) Management

On the management module, the most satisfying parts are “Attitude of the Chinese Staff” and “Organization Skills of the Chinese Staff”. Participants highly praised Chinese people for their hard-working and efficiency and expressed their willingness to learn from Chinese people to promote development.
The closing ceremony of 2019 Seminars on ICT Application in Higher Education for Asian and European Countries and African Countries was successfully held on September 29, 2019 in SUSTech. This fruitful Seminar lasted for 21 days, during which all participants participated in customized high-level courses as well as travelled to Beijing and Wuhan for study visits to universities, companies and places of interest.

This Seminar introduced the ICT application in HE in China, especially theories and technical achievements of Information Management System in HEIs, which helped participants fully understand China’s experience in promoting HE development. At the same time, the Center will support the establishment of a communication platform between partner countries, help to build a sub-regional network of top HEIs in Asia and Europe in the field of information and communication technology, build the domestic and international expert database and promote industry-university collaboration between Chinese enterprises and local top HEIs.

After the Seminar, ICHEI will maintain contact and interaction with participants, tracking their development after returning to their countries through many methods such as WeChat group and e-mail. ICHEI has received feedback from business offices, the Ministry of Education and universities of different countries about the Seminar, in which these institutes highly appreciated the effect of the Seminar to improve ability of participants and HEIs, also thanked to the foreign-aid training program provided by the Ministry of Commerce of China and expressed their willingness to participate in similar programmes in the future.

In addition, after returning to their countries, the participants also established close relationship with the Chinese Economic and Commercial Counsellor’s Office located in their countries and actively participated in some cultural activities held by the offices. Participants said that the seminar provided opportunities to understand China and hoped to learn more about China in the future.
3.1 Harnessing China’s “Belt and Road” Initiative

The “Belt and Road” Initiative (BRI) is an epoch-making concept for international cooperation proposed by China’s President Xi Jinping to enhance both China’s development and its cooperation with global partners. BRI embodies the agreement and action reached by China and other partner countries, proving platform and opportunities to multi-party cooperation and international development. The collaboration in education is an important component of BRI and it should be based on the needs of all parties and should promote strategic and win-win cooperation. As a form of education activities, the Seminar insists on knowledge sharing, technology sharing and concept sharing. It is a real “granting people to fish” and achieving sustainable development is of even greater significance. As a Chinese saying goes, “It is better to help people learn how to fish than to just give them fish”, the Seminar aims at achieving sustainable development that is significant for all parties.

A. The “Belt and Road” Initiative and Egypt

Ancient Egypt, one of the four ancient civilizations, has a long history and splendid culture. In 1953, the Republic of Egypt was established. Since then, agriculture, tourism and industry in the country have developed rapidly. Based on the long-term cooperation and friendship between Egypt and China, the BRI further promotes broader cooperation between the two countries on various projects, such as Suez Canal economic corridor, Suez Canal ports and economic zones, the power transmission project signed by POWERCHINA and the Ministry of Electricity and Renewable Energy of Egypt, the strategic construction project of CBD of the new administrative capital of Egypt. On the other hand, HE in Egypt develops well. Universities like Ain Shams University, American University in Cairo, Cairo University and Alexandria University have a good reputation. In addition, the civil communications between Egypt and China in HE is frequent, and students from both countries can gain a lot of exchange opportunities.

B. ICT Application in Higher Education in Egypt

At Ain Shams University, ICT has been widely applied. The university has established relatively sound Learning Management System (LMS) and Information Management System (IMS), which facilitates teaching process and campus life. There are many ICT applications in medical education. Students can study in modern laboratories and professional e-learning studio. The functions of the studio include MOOCs, 3D model imaging, online courses, summative exam platform and virtual microscopy platform.

C. Ideas for ICT Application in Higher Education in Egypt

- There are national and international standards followed by Chinese universities when it comes to online education.
- A successful IMS should be inclusive and includes course management, student data and learning process management, faculty administration and employee management. Also, big data analysis and security is the key factor in the construction of IMS.
- AI should be a key component in higher education, either in education quality control or in curriculum management.
- To activate the smart classroom on campus and to encourage faculties to build more online courses.
- To collaborate with UNESCO-ICHEI in the International Institute of Online Education (IIOE) project.

D. Djibouti

A. The “Belt and Road” Initiative and Djibouti

Djibouti is located in the west bank of the Gulf of Aden in northeastern Africa and is strategically positioned in one of the world’s busiest shipping lanes, with access to the Red Sea and the Indian Ocean. However, the economic development of Djibouti is relatively slow and the infrastructure is insufficient. In 2013, China Merchants Group and other Chinese-funded enterprises took advantage of the BRI and signed an agreement with Djibouti to build an International Free Trade Zone. The zone was successfully opened in mid-2018 and will increase employment as well as boost trade among countries in East Africa. Due to the construction of zone, local employees of some relevant institutions have more understanding of China and are more willing to study in HEIs in China.
As a young university established in 2006, University of Djibouti embraces information and communication technology. The current application in the university is the E-campus platform and Moodle platform. The former one is used for students, teachers, staff and departments information management, while the latter one is used to offer online courses and online testing for students.

The Seminar has established mutual trust among UNESCO-ICHEI/CHER and the Ministry of Education and partner universities in Asia and Europe, laying the foundation for further cooperation in the future. The Center believes that many countries have already carried out many fruitful work in the field of HEICT applications, but for sustainable development, these countries should strengthen exchanges and learning, and on this basis, explore their own development model. Therefore, the Center will work to establish a partnership network for the application of information and communication technologies in higher education, aiming to create a platform for regular communication and learning, and to support and promote the application of information and communication technology innovation in HE.

Members of the network include: members of the Ministry of Commerce’s foreign aid seminars; the Ministry of Education, universities, and related enterprises of the Asia-Europe cooperation countries; China’s embassies and business offices in the above-mentioned countries; HE and information and communication technology related Chinese enterprises; relevant departments of UNESCO headquarters and regional and national offices in Asia and Europe. The Center will continue to host the foreign aid training courses of the Ministry of Commerce, as well as hold international conferences, forums, seminars for HE innovations, and push the news and reports through emails and WeChat group information to keep the network active and give full play to the network. The enthusiasm of members, mutual exchanges, and opportunities for cooperation.

The Center also compiled all the course materials, photos and videos of the seminar, recorded and edited all the courses in the Seminar, and produced them into an electronic course library to be included in the video library of the Center. Its institutions are free to use for a long time after the Seminar. The Center has established a database of trainees, collected information on the units and contact information of all trainees, and used the trainees as the Center’s human resources.
3.3 BUILDING SMART CLASSROOM

With the generous support from Weidong Cloud Education (Qingdao) and CreateView Science Education (Guangzhou), UNESCO-ICHEI has joined hands with SUSTech in forming partnership with 12 countries around the globe (5 in Asia and 7 in Africa) to establish the “Smart Classroom” Project. The 7 African universities are as follows: University of Djibouti (Djibouti), Ain Shams University (Egypt), Addis Ababa University (Ethiopia), The University of The Gambia (The Gambia), University of Nairobi (Kenya), Ahmadu Bello University (Nigeria), and Makerere University (Uganda). Currently, the Smart Classroom in Pakistan has been up and running, the remaining four projects will be finalized in the due months and ready for training and other teaching activities.

The smart classrooms in each university will be used as the pioneer research platform of application of ICT in HE in the respective country and shall turn in activity reports to ICHEI annually and participate in the “Asia and Africa Regional Network Symposium on Higher Education Smart Learning Ecosystem” that is to be organized by ICHEI once for a year to share their experience and best practice and receive the latest updates on application of ICT in HE. ICHEI and Weidong will provide each university with continuous technical support, e.g., resource updates, fault resolution and capacity building. Members of smart classrooms will also take the role of trainers to provide guidance for each department/faculty to the use of smart classroom. Weidong will also fully support the follow-up of equipment maintenance and upgrade of smart classroom.

This project will provide instruction for ICT application from design to implementation in the selected universities in the project countries. It will introduce Smart Classroom to the university education system, promote advanced learning and sensing, as well as cooperation and participation. It will also develop cooperative research among teachers and students, lifting the activeness of academic activities. The aim of this project is to enable university administrators, teachers, students and technicians to make permanent change on ICT application behavior so as to provide solid foundation for ICT-driven HE innovation.

3.4 INITIATING IIOE

Based on the “Smart Classroom” project, UNESCO-ICHEI is planning to officially launch a new project titled “International Institute of Online Education” focusing on teacher capacity building. In response to the aim of UNESCO Education 2030 — to “ensure inclusive and equitable quality education and promote lifelong learning opportunities for all”, IIOE is committed to helping partner HEIs in developing countries in Africa and Asia-Pacific to enhance the quality and efficiency HE, and to make more people have the access to quality HE. In details, the mission of IIOE are:

- Developing teachers’ ICT application capacity;
- Building the competence of conducting blended learning and online learning;
- Providing online courses to help teachers, especially female teachers, to have professional development.

IIOE is a sharing and open learning resources platform, which is a collecting of a large number of high-quality online course resources. The curriculum of IIOE includes:

- Discipline-related courses: focusing on Cloud Computing, Big Data, Internet of Things, Artificial Intelligence, Block Chain and other frontier disciplines.
- Technical and vocational related courses: focusing on Technical and Vocational Education and Training (TVET) and enterprise certification. The majors are Cloud Computing, Big Data, AI, Storage, Routing & Switching, Security, WLAN and IoT, etc.
- Teacher professional development courses: focusing on train teacher’s capacity of ICT application in teaching, which include how to develop online courses, how to carry out blended teaching and learning, and how to use modern methods and tools in teaching.
IIOE highlights gender equality. It encourages more female learners to strengthen the teaching and learning capacity by online courses on the platform. During the first phase of the project, the beneficiaries will be the teachers from ICHEI’s 12 partner universities in Cambodia, Djibouti, Egypt, Ethiopia, the Gambia, Indonesia, Kenya, Mongolia, Nigeria, Pakistan, Sri Lanka, and Uganda, as well as 8 member countries of UNESCO-Shenzhen Funds-in-Trust, including Côte d’Ivoire, Malawi, Mali, Namibia, Niger, Senegal, Togo and Zambia. Meanwhile, IIOE is open to other developing countries and embracing more universities to join.

Considering the constraints of some developing countries’ network, IIOE adopts cloud-based approach to data transmission based on cloud server to ensure that the partner HEIs can effectively obtain and use the resources on IIOE. According to the geographical location of the partner HEIs, network nodes are deployed in Hong Kong, Asia Pacific and Africa to realize the technical connections. More importantly, IIOE designed related terms to fully respect and protect the copyright and the privacy of both users and course providers.

IIOE is developed based on the framework of the BRI of talent cultivation and establishment of mechanisms for cooperative development across countries that draws on the Silk Road Spirit of “peace and cooperation, openness and inclusiveness, mutual learning and mutual benefit”.

APPENDIX 1

STAFF PROFILE

Harry WANG  Programme Officer
Harry graduated from Guangdong University of Foreign Studies with a master’s degree in interpreting, and Xi’an International Studies University with a bachelor’s degree in CFA. Since joining UNESCO-ICHEI, he has worked on various projects, including Smart Classroom, Shenzhen-Funds-in-Trust, and others.

Fenny PENG  Administrative Assistant
Fenny is an administrative assistant at the Center for Higher Education Research (CHER), Southern University of Science and Technology (SUSTech). Interested in English transition, she studied English Translation for her master’s degree at South China Normal University from 2017 to 2019. She has taken an active part in teaching activities organized by school and thus experienced a lot in English teaching. She graduated with a bachelor degree in English at Guangdong University of Technology in 2015. She owns a certificate for TEM-8 and passed the CATTI Level 2 in translation.

Sherry DUAN  Chief of Training and Development Office
Sherry holds a master’s degree in International Educational Development Teachers College, Columbia University in the city of New York, and a bachelor’s degree in English Language and Education (Honours) from the Education University of Hong Kong. Prior to joining UNESCO-ICHEI, she has worked in various higher education institutions and non-profit organizations in both New York and Hong Kong, including Columbia University, Mayor’s Office of New York City, Education Development Center, United Nations, and Institute of International Education.

Sahar LI  Intern
Sahar is currently working as an intern in UNESCO-ICHEI. She is responsible for some general affairs in UNESCO-ICHEI. With the background in Arabic language and culture, she studied in Egypt during 2014-2015. She will obtain her master degree of interpreting between Chinese and Arabic in Shanghai International Studies University in 2020.
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<td>09:30-12:00</td>
<td>Registration</td>
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<td>Global Challenge Governance: Time for Big Modelling?</td>
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<td>--Prof. Georgios Theodoropoulos, Department of Computer Science</td>
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<td>and Engineering, Southern University of Science and Technology</td>
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<td>Student Cafeteria</td>
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<td>- Ms. Zhimei He, Director of Bureau of Commerce, the Shenzhen Municipality</td>
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<td>- Mr. Xiangdong FAN, Vice President of APIETC Shenzhen</td>
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<td>- Prof. Ming Li, Director of UNESCO-ICHEI</td>
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<td>- Mr. Qareya Mohammed SM, Representative from Asian and Europe Countries</td>
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<td>- Mr. Kiganda Daniel, Representative from African Countries</td>
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<td>Student Cafeteria</td>
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<td>Common Course</td>
<td>SUSTech</td>
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<td>09:30-12:00</td>
<td>Common Course</td>
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<td>Chinese Language and Culture</td>
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<td>Lunch Break</td>
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<td>Common Course</td>
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<td>Day 5</td>
<td>Sep. 14</td>
<td>09:30-12:00</td>
<td>Self-directed Reflection</td>
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<td>Day 6</td>
<td>Sep. 15</td>
<td>09:30-12:00</td>
<td>Departure for Beijing (By Air)</td>
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<td>An Overview of the ICT Development in Higher Education in China</td>
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<td>--Prof. Li ZHENG, Department of Computer Science and Technology</td>
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<td>09:30-12:00</td>
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<td>14:00-17:00</td>
<td>Specialized Course, The Development of Educational Information, Dr. Chunlin LI, SUSTech</td>
</tr>
<tr>
<td>Day 15</td>
<td>Sep. 24</td>
<td>09:30-12:00</td>
<td>Specialized Course, Informatization of SUSTech, Mr. Qiaoyu SUN, SUSTech</td>
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<td>12:30-14:00</td>
<td>Lunch Break</td>
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<td></td>
<td>14:00-17:00</td>
<td>Specialized Course, Efficient and Secure Big-data Computing Systems, Prof. Hemin CUI, University of Hong Kong</td>
</tr>
<tr>
<td>Day 16</td>
<td>Sep. 25</td>
<td>09:00-10:30</td>
<td>Site Visit, Information Center</td>
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<td></td>
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<td>11:00-12:30</td>
<td>Common Course, IIOE and QA Workshop, Prof. Cher Ping Lim, University of Hong Kong/SUSTech</td>
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<td>12:30-14:00</td>
<td>Lunch Break</td>
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<tr>
<td>Day 17</td>
<td>Sep. 26</td>
<td>09:30-12:00</td>
<td>Specialized Course, AI Education in China, Mr. Li XIA, Post-doc research fellow at Guangdong Innovative Post-doctorate Laboratory</td>
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<td>12:30-14:00</td>
<td>Lunch Break</td>
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<td>14:00-17:00</td>
<td>Study Tour, Shenzhen GTA Education Tech Ltd.</td>
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<tr>
<td>Day 18</td>
<td>Sep. 27</td>
<td>09:30-12:00</td>
<td>Specialized Course, Study Tour, Shenzhen Xiongdi Technology Co., Ltd.</td>
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<td>12:30-14:00</td>
<td>Lunch Break</td>
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<td></td>
<td>14:00-17:00</td>
<td>Study Tour, Huawei</td>
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<tr>
<td>Day 19</td>
<td>Sep. 28</td>
<td>09:30-12:00</td>
<td>Self-directed Reflection and Preparation for Output Showcase</td>
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<td>12:30-14:00</td>
<td>Lunch Break</td>
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<tr>
<td></td>
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<td>14:00-17:00</td>
<td>Showcase of Output</td>
</tr>
<tr>
<td>Day 20</td>
<td>Sep. 29</td>
<td>09:30-12:00</td>
<td>Specialized Course, Yesterday, Today, Tomorrow of Higher Education Massification in China, Prof. Hong SHEN, Director, Center of Higher Education Research (CHER), SUSTech</td>
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<td>12:30-14:00</td>
<td>Lunch Break</td>
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<td></td>
<td>14:00-16:00</td>
<td>Closing Ceremony</td>
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<td>Address: Mr. Xiangdong FAN, Vice President of APIETC Shenzhen, Prof. Hong SHEN, Director, Center of Higher Education Research (CHER), SUSTech, Prof. Ming Li, Director of UNESCO-ICHEI, Ms. Thinn Thu Naing, Representative from Asian and Europe Countries, Mr. Muazu Muhammed Bashir, Representative from African Countries</td>
</tr>
<tr>
<td>Day 21</td>
<td>Sep. 30</td>
<td>Whole Day</td>
<td>Departure from Shenzhen (By Air)</td>
</tr>
<tr>
<td>Day 21</td>
<td>Sep. 30</td>
<td>Whole Day</td>
<td>Departure from Shenzhen (By Air)</td>
</tr>
</tbody>
</table>

**Day 14 Specialized Course**

- **Blackboard Learn Instructor Training**
  - Ms. Hanshu ZHAN, Senior Engineer of Teaching Affairs Office, SUSTech
  - Ms. Xinlian XIAO, program officer of Blackboard Learn

**Day 15 Specialized Course**

- **Informatization of SUSTech**
  - Mr. Qiaoyu SUN, Deputy Director of Network Information Centre, SUSTech

**Day 16 Specialized Course**

- **Efficient and Secure Big-data Computing Systems**
  - Prof. Hemin CUI, the University of Hong Kong

**Day 18 Specialized Course**

- **AI Education in China**
  - Mr. Li XIA, Post-doc research fellow at Guangdong Innovative Post-doctorate Laboratory

**Day 19**

- **Self-directed Reflection and Preparation for Output Showcase**

**Day 20**

- **Yesterday, Today, Tomorrow of Higher Education Massification in China**
  - Prof. Hong SHEN, Director, Center of Higher Education Research (CHER), SUSTech

**Day 21**

- **Exploration and Practice for College Student Information Management System—Take SUSTech as an Example**
  - Ms. Lianjun WANG, IT Project Manager, Students Affairs Department, SUSTech

**Day 22**

- **AI Education in China**
  - Mr. Li XIA, Post-doc research fellow at Guangdong Innovative Post-doctorate Laboratory

**Day 23**

- **Efficient and Secure Big-data Computing Systems**
  - Prof. Hemin CUI, the University of Hong Kong

**Day 24**

- **Self-directed Reflection and Preparation for Output Showcase**

**Day 25**

- **Yesterday, Today, Tomorrow of Higher Education Massification in China**
  - Prof. Hong SHEN, Director, Center of Higher Education Research (CHER), SUSTech

**Day 26**

- **Exploration and Practice for College Student Information Management System—Take SUSTech as an Example**
  - Ms. Lianjun WANG, IT Project Manager, Students Affairs Department, SUSTech

**Day 27**

- **AI Education in China**
  - Mr. Li XIA, Post-doc research fellow at Guangdong Innovative Post-doctorate Laboratory

**Day 28**

- **Efficient and Secure Big-data Computing Systems**
  - Prof. Hemin CUI, the University of Hong Kong

**Day 29**

- **Self-directed Reflection and Preparation for Output Showcase**

**Day 30**

- **Closing Ceremony**
  - Address: Mr. Xiangdong FAN, Vice President of APIETC Shenzhen, Prof. Hong SHEN, Director, Center of Higher Education Research (CHER), SUSTech, Prof. Ming Li, Director of UNESCO-ICHEI, Ms. Thinn Thu Naing, Representative from Asian and Europe Countries, Mr. Muazu Muhammed Bashir, Representative from African Countries
  - Completion of the Seminar certificate Group Photo

**Day 31**

- **Departure from Shenzhen (By Air)**
  - Hong Feng Hotel
APPENDIX 3
SCHOOL ENROLLMENT, TERTIARY (% GROSS) IN PARTICIPANT COUNTRIES

Source: World Bank Open Data