



Smart Classroom

Smart Classroom Overview

The Smart Classroom Project (SCR) is one of the flagship projects of the International Centre for Higher Education Innovation under the auspices of UNESCO (UNESCO-ICHEI). The SCR project aims to enhance the infrastructural facilities of UNESCO-ICHEI's partner Higher Education Institutions (HEIs) in Asian and African countries, strengthen their capacity of designing and implementing online and blended teaching and learning (OBTL), and accelerate the digital transformation of their higher education systems. The Smart Classroom consists of both hardware and software components, such as an interactive touch panel, student terminal(laptops, all-in-ones or cloud desktops), a server, an uninterruptible power supply (UPS) unit, a recording and broadcasting system, a wireless visualiser, wireless microphones, and network switches and related accessories. Besides, SCR is also powered by the inbuilt Learning Management System (LMS) that provides support for learning analytics, which creates SCR facility as a user-friendly, smart and interactive learning environment.

Through public-private partnerships (PPP) with leading Chinese educational technology enterprises, UNESCO-ICHEI has been able to donate and establish smart classrooms at partner HEIs. The Smart Classroom is a digital learning environment that integrates emerging information and communications technology (ICT) domain, such as Big Data, Cloud Computing, the Internet of Things (IoT), Computer Vision and Artificial Intelligence to support multimedia teaching and learning, localised curriculum design, cross-campus resource-sharing, learning analytics, administration and management, among other requirements for realising the digital transformation of HEIs. Each Smart Classroom facility can accommodate 50 students for lectures, seminars, training, forums, workshops, among other functions.

Functions of SCR

 **Create a shared digital learning environment for teachers and students to realise ICT-driven innovative teaching and management.**

SCR facilitates teacher-student interactions and collaborations through the interactive touch panel, display terminals, and the LMS. The SCR LMS also supports learning analytics for teachers to monitor and evaluate students' learning outcomes and generate data analysis report to inform differentiated instructions for each student.

 **Narrow the gaps in educational resources for HEIs in developing countries to propel the transition to online education.**

The LMS and learning analytics system of SCR enhances HEIs' capacity to design and implement OBTL. Teachers can record, edit and upload their video lectures at the SCR, enabling more teachers to develop online courses with localised curriculum, and thus expanding the access to quality education resources and the opportunities for lifelong learning.

 **Connect the global HEI networks to facilitate knowledge production and resource sharing.**

The Smart Classroom Project provides hardware support for partner HEIs in Asia and Africa. At the same time, the International Institute of Online Education (IIOE) creates a global HEI network and platform for collaborative research and educational resource sharing. Higher education professionals can also share their successful experiences of curriculum design, research and development, and digital management with international HEIs, opening up a new path to higher education digital transformation for developing countries.



Project Implementation Overview

UNESCO-ICHEI has developed an implementation plan of SCR through multi-stakeholder partnerships with the Southern University of Science and Technology (SUSTech), partner HEIs, and enterprises. Based on the existing conditions of partner HEIs and the strengths of each stakeholder, UNESCO-ICHEI aims to ensure smooth implementation of each project and integrate SCR into the teaching and learning at partner HEIs:

✓ UNESCO-ICHEI: Context Analysis and Partnership Facilitation

- Conduct in-depth context analysis of project countries and their higher education systems to select potential partner HEIs.
- Lead the multi-stakeholder partnerships with SUSTech, enterprises and partner HEIs to ensure successful implementation of SCR.
- Monitor and evaluate SCR usage, facilitate communication between partner HEIs and enterprises to address any related issues, and generate annual reports on SCR usage.

✓ SUSTech: Technical Support and Disciplinary Collaboration

- As a leading flagship university under the backdrop of higher education reform in China, SUSTech highly values international HEI cooperation and provides technical support for joint knowledge production and resource sharing, SCR maintenance, and international research collaboration among partner HEIs.

✓ Partner Enterprises: Philanthropic Support and Capacity Building

- Guide the construction of SCR venue at partner HEIs to meet the basic requirements for operating a smart classroom.
- Provide equipment, operation manuals and training materials of SCR, and ship all equipment to the custom border of partner HEIs.
- Support installation and configuration of SCR equipment and provide operation training to teachers, administrators, and IT staff at partner HEIs.

✓ Partner HEIs: Project Implementation and Independent Operation

- Construct the indoor venues for SCR based on specified requirements, including necessary classroom facilities, such as tables, chairs, lighting, podiums, circuits, internet connectivity, among others.
- Complete custom clearance for all SCR equipment and transport them from the custom border to the campus.
- Assist UNESCO-ICHEI and partner enterprises while installing SCR equipment, and organise relevant personnel to participate in operation training.
- Independently use and maintain SCR and collaborate with UNESCO-ICHEI on monitoring and evaluating the SCR usage.
- Share related M&E data with UNESCO-ICHEI for further research and impact evaluation.

Impacts of SCR: Cases in Pakistan and Egypt



University of Engineering and Technology Lahore (UET Lahore): Suspending Classes without Suspending Learning

UET Lahore is a public university in Pakistan, ranked fourth by QS ranking in the country, consists of 7 faculties, 50 departments, 23 specialised research centres and four campuses, accommodating more than 11,000 students and more than 800 teachers in total.

The Smart Classroom at UET Lahore, implemented in July 2019, is the first SCR project implemented by UNESCO-ICHEI. Since then, more than 80 hours of lectures have been recorded at the Smart Classroom, and it has been in use for almost 700 hours. Teachers at UET Lahore have recorded 24 Computer Science lectures at the SCR, providing learning content for undergraduate and graduate students during the COVID-19 pandemic. SCR also supported academic exchange during the pandemic, in which UET Lahore organised three academic seminars on Blockchain Technology, the Internet of Things (IoT) Security and Machine Learning. Furthermore, UET Lahore also implemented the National Vocational Training Programme with SCR, including courses on Artificial Intelligence, Data Science and Computer Vision.



Ain Shams University (ASU): Supportive Leadership for Quality and Inclusive Education

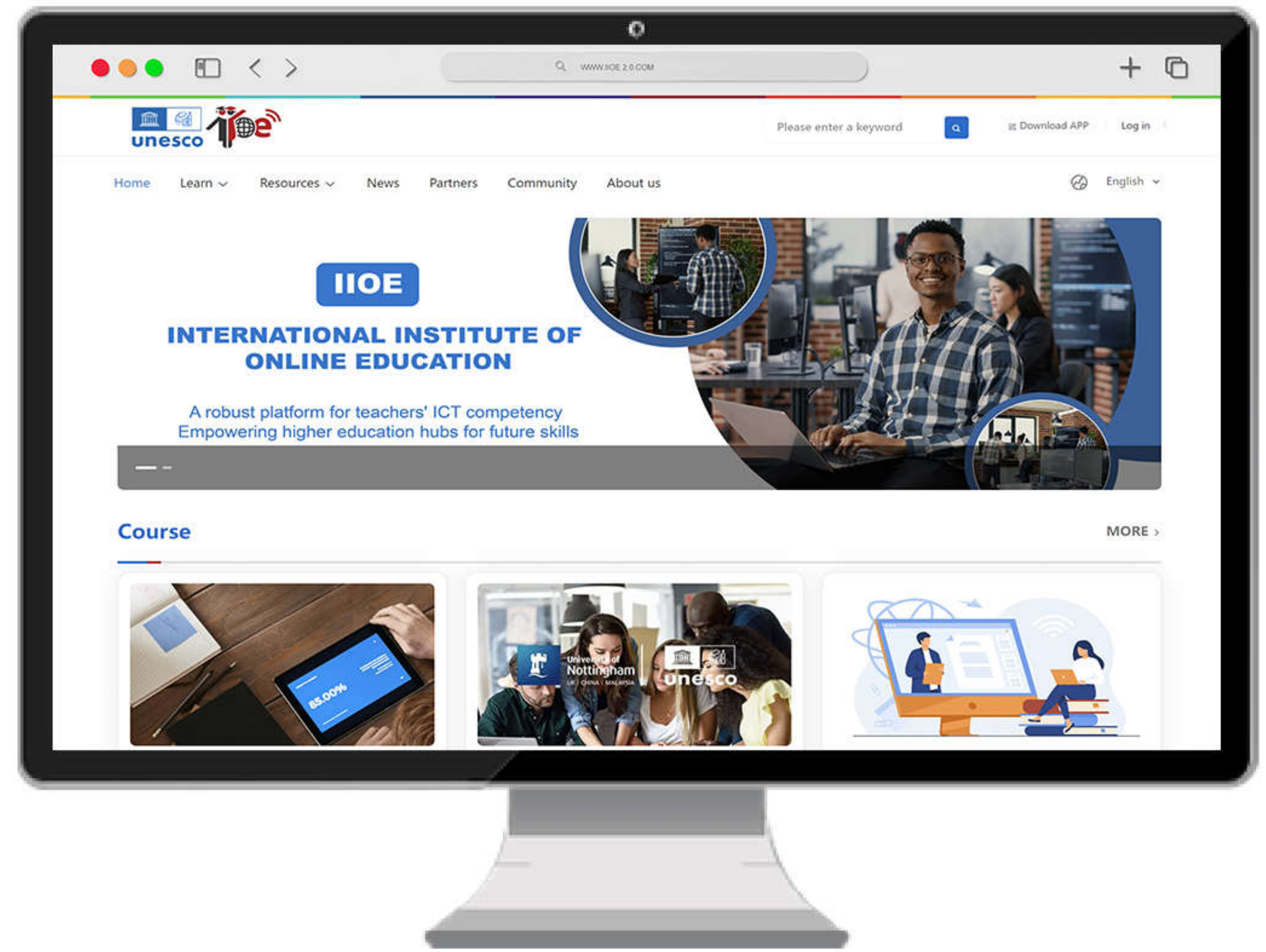
Founded in 1950, ASU is one of the oldest and most prestigious universities in Africa and the Middle East. As a public university ranked second in Egypt and eighth in Africa, ASU consists of 16 Faculties and 3 Postgraduate Institutes, accommodating 20,000 faculty staff and more than 200,000 students. Furthermore, there are close to 200 ongoing research projects at ASU.

The Smart Classroom at ASU is also the first SCR implemented by UNESCO-ICHEI in Africa. Since its establishment in January 2020, SCR has provided a timely solution to addressing the education disruption caused by COVID-19. As the first rotating Chair HEI of IIOE, the President of ASU personally led administrators to participate in the operation training of SCR. Before the outbreak of COVID-19, ASU also held Teaching for Students with Disabilities Workshop and World Design Studio Video Conferences Sessions at the Smart Classroom in February and March. Since then, 18 professors at ASU has recorded ten online courses (about 54 hours) at the Smart Classroom, ensuring education continuity for more than 200,000 students during the COVID-19 pandemic.

Smart Classroom and IIOE



The International Institute of Online Education (IIOE) is another flagship project of UNESCO-ICHEI. In December 2019, UNESCO-ICHEI, together with 11 Asian and African partner HEIs, 4 Chinese universities, and 9 ICT enterprises, jointly initiated IIOE. Since the launch of the IIOE online learning platform in April 2020, it has made 184 courses in Chinese, English and French available as open educational resources (OERs), covering a wide range of topics, such as Computer Science, Artificial Intelligence, Big Data, Cloud Computing, the Internet of Things, Blockchain Technology, including courses at the foundation, intermediate and advanced levels. To support COVID education response of HEIs in developing countries, UNESCO-ICHEI has organised 10 COVID-response capacity-building workshops in English and French on conducting effective online teaching and learning and student assessments. A total of 2,108 university teachers and administrators from 307 HEIs and government agencies from 46 countries participated in the workshops, and almost half of the participants came from IIOE's partner HEIs.



The IIOE online courses and programmes and the SCR facility offer both software and hardware support for the digital transformation of partner HEIs and ICT capacity building of their teachers and administrators. On the one hand, teachers and administrators can participate in online training and develop online courses at the Smart Classroom for joint knowledge production and resource sharing. On the other hand, SCR also provides a shared digital teaching and learning environment for both the teachers and students, so they can apply what they learned in the same setting.



SCR Global Network

UNESCO-ICHEI has planned 7 phases of the Smart Classroom Project, with a total of 40 projects, **18 in Asia and 22 in Africa**, of which 12 Smart Classrooms have been successfully delivered.

The SCR Project is being implemented at 12 partner HEIs, including Royal University of Phnom Penh (Cambodia), University of Colombo (Sri Lanka), University of Engineering and Technology Lahore (Pakistan), Ain Shams University (Egypt), Addis Ababa University (Ethiopia), University of Djibouti (Djibouti), Partner HEI in Indonesia (to be determined), Mongolian University of Science and Technology (Mongolia), Makerere University (Uganda), Ahmadu Bello University (Nigeria), University Of The Gambia (The Gambia), and University of Nairobi (Kenya).

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Future Prospect

The Smart Classroom project will be carried out in collaboration with **Beijing Kingsoft Office Software, Inc. and Jiangxi Kmax Industry Co., Ltd** to further enhance digital capabilities.

Kingsoft Office offers WPS Cloud Pro software, a cloud office service that provides document management, document cloud storage, document permission control, document sharing, network office and other functions.

Based on VR technology, Kmax provides partner institutions with a digital solution for overseas vocational skills training that integrates hardware, software, curriculum and operational services.

Contact Information



www.ichei.org



office@ichei.org



www.iioe.org



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