SDG 09

Build resilient infrastructure, promote inclusive and sustainable industrialization and foster innovation

8 Courses

30 Researchers

87 Research Outputs
FWCI:2.26

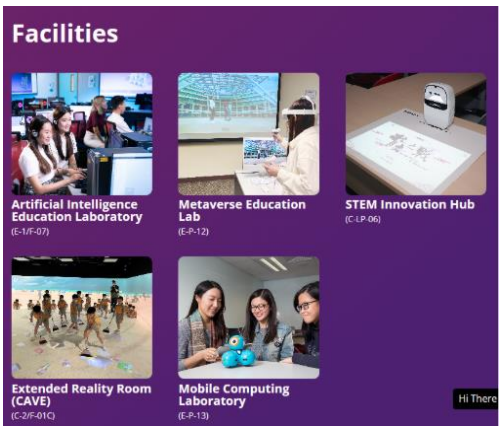
1,146 participants

11 Outreach events

The Education University of Hong Kong is committed to building resilient infrastructure, promoting inclusive and sustainable industrialisation, and fostering a vibrant culture of innovation. As a hub of educational excellence, we leverage our expertise to create a sustainable campus, drive technological advancement through pioneering research, and translate new knowledge into impactful solutions that benefit industry and society.

Pioneering Education for Sustainable Industry and Technological Advancement

The University's programmes emphasise the importance of fostering technological literacy and sustainable development through targeted initiatives. A key example is the "**AI Literacy Programme for Secondary Students**," offered by EdUHK's Centre for Learning, Teaching and Technology. This initiative aims to equip secondary school students with the essential skills to understand and apply artificial intelligence in various contexts, thereby promoting innovation and technological advancement. Supported by the Li Ka Shing Foundation and the UGC Research Matching Grant Scheme, the programme provides participants with a robust understanding of AI concepts, from machine learning to ethical considerations. This is part of a broader commitment that includes programmes for teachers and parents to build AI awareness across the community.



In parallel, EdUHK is embedding sustainability principles into specialised fields. The academic programme in Sustainable Tourism is being developed to ensure that future industry professionals are equipped with the knowledge to create resilient and sustainable infrastructure. These initiatives demonstrate a strong commitment to bridging education with industry needs, fostering a culture of innovation, and supporting the development of infrastructure that can adapt to evolving societal and economic challenges. By emphasising interdisciplinary learning and practical applications, these programmes contribute to building a knowledgeable workforce capable of driving sustainable industrial growth and technological progress.

Advancing Sustainable Construction through Digital Innovation

Research from scholars at EdUHK is delivering significant advancements in sustainability for the construction industry by tackling the critical challenge of carbon emissions. A study published in the journal Resources, Conservation and Recycling introduces an innovative digital platform designed to accurately monitor and reduce the carbon footprint of prefabricated buildings.

The research, titled "**Integrated BIM-IoT platform for carbon emission assessment and tracking in prefabricated building materialization**," presents a scalable system that combines Building Information Modelling (BIM) with the Internet of Things (IoT). This integrated platform enables the precise, real-time assessment and tracking of carbon emissions throughout the entire production and assembly process of prefabricated buildings. By using IoT sensors for automated data collection and BIM for detailed modelling, the system provides a clear and comprehensive picture of a building's carbon impact.

The evaluation of the platform has yielded impressive results, demonstrating that it improves the accuracy of real-time carbon tracking by approximately 30% when compared with traditional methods. More significantly, the system facilitates overall carbon reductions of between 30% and 50%, with a potential for reductions of up to 60%.

This pioneering work offers a practical and effective framework for carbon control within the construction sector. It provides invaluable insights for creating sustainable policies and highlights the transformative potential of integrating digital technologies to drive the low-carbon transition of the industry.

Source: Xiaojuan Li, Ming Jiang, Chengxin Lin, Rixin Chen, Meng Weng, C.Y. Jim, Integrated BIM-IoT platform for carbon emission assessment and tracking in prefabricated building materialization, *Resources, Conservation and Recycling*, Volume 215, 2025, 108122, ISSN 0921-3449

Promoting Knowledge Transfer and Industry Collaboration

EdUHK actively translates its research into practical applications, viewing knowledge transfer as a third pillar of the University's development alongside teaching and research. Since 2018, our researchers have won a total of 190 awards at international invention competitions, and the University has supported the filing or granting of more than 50 patents.

The Knowledge Transfer Sub-office plays a crucial role in this process by empowering faculty to address industry and societal problems by transforming their research into market-ready solutions. The team provides mentorship, training, and a co-working space to connect research teams with industry partners. To cultivate an entrepreneurial mindset among students and alumni, the University has supported over 22 start-up teams since 2018 through initiatives like the **Education⁺ and Social Entrepreneurs (EASE) Fund Scheme**. These efforts bridge the gap between academia and industry, ensuring that our innovations contribute to sustainable economic development and create a lasting positive impact on the community.

9 INDUSTRY, INNOVATION AND INFRASTRUCTURE

Driving Innovation for Sustainable Industry and Infrastructure

The University is actively developing innovative technologies with real-world impact. At the Silicon Valley International Invention Festival (SVIIF) in 2025, our teams won nine awards—including two Special Prizes and four Gold Medals, reflecting our ongoing commitment to delivering solutions that support sustainable industrial and societal development.

At the 50th International Exhibition of Inventions Geneva, EdUHK secured nine awards, including two International Special Merit Awards and multiple Gold and Silver Medals, for innovations in AI, biomaterials, and educational technology.

Central to these achievements is our investment in research facilities like the new University Research Facility of Data Science and Artificial Intelligence (UDSAI) and University Research Facility of Human Behavioural Neuroscience (UHBN), which are to promote interdisciplinary research, such as among the fields of artificial intelligence, biology and neuroscience, early childhood education, curriculum and instruction, learning sciences, and linguistics.

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Advancing Sustainable Futures: Technological and Pedagogical Innovations

The University has developed **state-of-the-art STEM facilities** to support innovative teaching and research in science, technology, engineering, and mathematics. These facilities, including a STEM Innovation Hub, a Makerspace with 3D printers and laser cutters, and an Artificial Intelligence Education Laboratory, are designed to encourage hands-on learning and promote practical skills among students, equipping them for future careers in STEM disciplines.

In a significant collaboration, EdUHK has partnered with Tencent to develop the innovative mobile application "**趣學普通話**" ("**JoyLearning PTH Journey**"). This charitable initiative aims to revolutionise Putonghua (Mandarin) learning by merging education with entertainment to foster students' interest in the language. Supported by the Government of the Hong Kong Special Administrative Region of the People's Republic of China (HKSAR)'s Education Bureau, the platform utilises AI speech assessment technology for pronunciation evaluation and integrates localised the HKSAR contexts into its learning materials. The application employs gamification to create an engaging and interactive experience for primary school students. Furthermore, it includes a class management function that allows teachers to monitor student progress, enabling them to provide more targeted teaching support. This partnership exemplifies a cross-sectoral synergy between education and technology, showcasing how EdUHK actively integrates knowledge and technology to contribute to the community.

Extended Reality Room (CAVE)

(C-2/F-01C)

Metaverse Education Lab

(E-P-12)

STEM Innovation Hub

(C-LP-06)

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Driving Educational Innovation and Global Dialogue

Innovation is a cornerstone of EdUHK's identity, with a strong emphasis on applying research to solve real-world challenges. The University has established a powerful ecosystem to support this mission, spearheaded by centres such as the Centre for Learning, Teaching and Technology (LTTC). The LTTC is at the forefront of integrating emerging technologies like Artificial Intelligence (AI) and the metaverse into educational practices, offering workshops on AI literacy, coding, and STEM education to enhance digital competency.

Our researchers are making significant breakthroughs in various fields. In response to the rapid development of AI, EdUHK has established the **Artificial Intelligence Research and Education Alliance (AIREA)** to foster global collaboration and drive innovation in the education sector.

Demonstrating its leadership in the field, EdUHK proudly hosted the inaugural "**2025 Annual Conference of the Global Chinese Academy for Science Education Research**" from 3 to 4 January 2025. Under the theme "**Sustainable Science Education: Shaping a Brighter Future**", the conference brought together over 400 experts, scholars, teachers, and educational researchers from around the world. This prestigious event provided a vital platform for sharing cutting-edge research and fostering collaboration on the latest advancements in science education.

The conference covered a wide range of critical topics, including STEM education, curriculum development, innovative teaching methodologies, and the application of AI in science education. It also featured a special "**Greater Bay Area Science Education Forum**" to strengthen regional collaboration and the integration of research and practice. By hosting this event, EdUHK underscores its commitment to advancing science education research and aligning with the national strategy of "**Invigorating the Country through Science and Education**", showcasing Hong Kong's unique educational advantages on a global stage.

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