

Research Assessment Exercise 2020
Impact Overview Statement

University: [The Education University of Hong Kong |

Unit of Assessment (UoA): [13 Computer studies/science (incl. information technology) |

Total number of eligible staff of the university in the UoA: 9 |

(1) Context

The main non-academic user groups, beneficiaries or audiences for the unit's research:

Research conducted under Unit 13 by the Department of Mathematics and Information Technology (MIT) and the Centre for Learning, Teaching and Technology (LTTC), lies at the heart of the development and effective use of digital technologies in education in Hong Kong. As such, the main non-academic user groups and beneficiaries are within the education sector, including teachers and students in kindergartens, primary and secondary schools and other universities, as well as policymakers overseeing education, notably the Education Bureau's Information Technology in Education Section, and educational technology companies taking advantage of pedagogical developments. Students are the ultimate beneficiaries of our vision to use research to change the core competencies of the young generation. Aligning with the University's Education plus mission and as a result of multi-disciplinary collaboration, some research has benefit for the wider public, such as family members caring for dementia patients benefiting from a new smartphone application to sense their mental wellbeing (with Department of Asia and Policy Studies [APS]); middle-aged overweight adults benefiting from smartphone technology to manage weight issues (with APS and Department of Health and Physical Education [HPE]); and college rowers, benefiting from digital technology to monitor their training and performance (with HPE).

The main types of impact specifically relevant to the unit's research: Unit 13 is proud of the wide range of types of impact it is achieving from its research. The most significant is societal impact that enhances teaching and student learning and increases use and understanding of technology, across all levels of education within and beyond Hong Kong, through innovations in digital technology and pedagogy; impact on public policy in education; and economic impact for companies taking advantage of new policies, curricula and pedagogical developments in schools resulting from the research. There are also impacts on health and quality of life of adults; and on performance of athletes. These reflect the range of research activity of groups and individuals focused on IT in education and use of digital technology to enhance learning and teaching (such as **Kong's** research on technology-transformed education and computational thinking education); and computer science (such as **Xie's** work on Artificial Intelligence (AI), big data analytics and machine learning). |

(2) Approach to impact

[Our approach to achieving impact has 5 major elements:

1. *Ensuring the quality, rigour and relevance of our research*, which underpins our reputation in the wider society;

2. *Building strong networks* with policymakers (such as the EDB's Information Technology in Education Section), major donors such as the Hong Kong Jockey Club; and engaging with school leaders and middle-leaders, which together ensures we ask the most relevant research questions and can successfully transfer our knowledge. We have built networks by accepting invitations to participate in policy advisory committees such Curriculum Development Council

(CDC) Committee on Learning Resources and Support Services and CDC-HKEAA Committee on Information and Communication Technology, HKSAR EDB; speaking on our research and its relevance to practice at policy-led events such as the annual Learning and Teaching Expos organised by the EDB (2014 and 2017), and organising our own international events for policymakers, school practitioners and academics, such as the CoolThink@JC International Conference of Computational Thinking Education (CTE) held 2017-2019 and Coding Fair held 2018-2019, which attracted 500 local and international educators to the conference and 4,600 teachers, students and parents the Coding Fair in 2018.

3. We have *tendered for research* that will support local education policy and schools, such as partnering with schools in **Kong's** QEF project on Building a Community of Practice for Mathematics Teachers Using Cognitive Tools and Communication Platforms, and **Lai's** QEF project Coding as Learning with Robots in Hong Kong Primary Schools.

4. We have sought out *cross-disciplinary and international collaboration* to strengthen our research and impact in its significance and reach.

5. Collaborating with the University's Communications Office, we implemented a *coherent communications and media strategy* across multiple platforms to engage with the potential beneficiaries of our research. As a result we have reached audiences of millions through print, radio and online media coverage and from our public web platforms (e.g. the CoolThink@JC platform <https://www.coolthink.hk/en/learningplatform/>).

(3) **Strategy and plans**

Strategy and plans to achieve impact in the coming years start at the research planning process, where proposals will include attention to their relevance and strategies for achieving impact. Other plans to transfer our knowledge and achieve impact include continuing the CTE Conference and Coding Fair series in 2020 in order to build a sustainable platform to reach out to schools as they implement CTE and coding education, and hosting other major conferences, such as the International Conference on STEM Education 2019 cum Workshop on Coding, Physical Computing and Computational Thinking for K-12 STEM Education 2019, and IEEE International Conference on Teaching, Assessment, and Learning for Engineering (TALE). We are strengthening our national and international networks by building our Visiting Scholar Scheme by 2019 and taking advantage of the Croucher Foundation and Tin Ka Ping visitorships. In order to achieve our ambition to change the competencies of young people, we will adopt a more holistic approach that seeks to align our research with policy directions for IT in education; support for pilot schools; and teacher development through workshops and Professional Development Programmes, and our own undergraduate teacher education, thus equipping teachers with the knowledge and skills to implement and lead IT-based innovations in education. KT will be further facilitated by our plan to establish an online platform as an open-access resource of cutting-edge teaching materials and videos informed by our research.

(4) **Relationship to case studies**

The Unit has supported the case study by facilitating members' engagement with policymakers, schools and the wider public; supporting and approving grant applications and private contracts; encouraging international collaboration; securing manpower resources for project completion; managing the project budget; leading the projects' communications strategies; hosting international conferences; and organizing knowledge transfer activities.