



香港教育大學

The Education University
of Hong Kong

Annual Report on Recurrent Funding for Knowledge Transfer 2021/22



KNOWLEDGE
TRANSFER
SUB-OFFICE
知識轉移辦公室

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1. EXECUTIVE SUMMARY

Universities and other tertiary education establishments have a vital role in encouraging original research and innovation that benefit industry and the wider community. Alongside teaching and research, knowledge transfer is the third mission of universities. Knowledge transfer between universities and industry is considered essential to technological advancement, innovation, and the social economy. It fosters the commercialisation of discoveries and new knowledge with community partners. Universities and colleges such as EdUHK, funded by the community, are at the cutting edge of research and analysis, and it is important that research results are shared with the society that supports them.

With society adapting to the new normal under COVID-19, we have strengthened our commitment to creating inspiring and innovative research that benefits society. This also includes fostering an entrepreneurship culture that supports both education and social services, as well as our research capabilities to protect and promote intellectual property. This year, five active commercial licenses have been granted for productising EdUHK intellectual property. The innovative products or services include educational technology solutions, educational toys, healthcare technologies, and pedagogical innovations. Two of these licensees are start-ups supported by the University's Education and Social Entrepreneurs Fund (EASE Fund). Notably, the founders of these start-ups translated their EdUHK-based projects into business ventures shortly after graduation.

Internationally, the University gained recognition through its participation in three international innovation exhibitions in Geneva (Switzerland), Toronto (Canada), and Taiwan. At these events, a total of 14 innovations by EdUHK researchers and start-ups received 21 international invention awards. These innovations were based on environmental sensing technology, artificial intelligence (AI), healthcare goods, musical instrument technology, and computerised education.

The Knowledge Transfer Sub-office (KT Sub-office) of the University has utilised internal and external resources to establish a funding infrastructure to support the University's knowledge transfer initiatives. From 2019–2021, the existing three funding schemes were refined, and two new schemes were established. The total annual fund size also increased by a factor of six during this period. For innovation development, the funding schemes supported 40 translational research and knowledge transfer projects, and 12 patent applications. On the entrepreneurship front, 97 start-up teams were trained, and 20 of them received funding. The start-up teams also received 15 recognitions through external awards and sizeable funding.

THIS report summarises EdUHK's key KT and entrepreneurship activities, achievements, and developments in the 2021/22 academic year.

2. HIGHLIGHTS OF THE YEAR

The annual earmarked support from the University Grants Committee (UGC) provides a solid foundation for the new establishment of the University's translational research and KT. While the University remains steadfast in its Education-plus approach, our innovation and technology development focuses on environmental sustainability, big data analytics, psychology and neuroscience, life and career development, and sports science and coaching. To raise the impact of our translational research, we have pursued initiatives on expanding the capability of innovation and technology development through building up strategic partnerships with industry and innovation and technology hubs, investing in research facilities, facilitating researchers in establishing deep collaboration with other universities and research centres, and bidding large-scale grants. The financial resources have enabled EdUHK to extend its support of transferring knowledge-based innovation into a wider spectrum of applications.

2.1 DRIVING INNOVATION

2.1.1 KNOWLEDGE TRANSFER SUB-OFFICE

The KT Sub-office within the Research and Development Office is the central support unit for fostering KT in EdUHK. As a key component at downstream of the University's translational research strategy, this Sub-office forges connections and collaborations between the University and wider community. Internally, the KT Sub-office supports academics and research units, and advises them on developing research and intellectual property (IP) with social and commercial values. Externally, it reaches out to potential partners to initiate KT collaborations and the commercialisation of R&D projects.

The KT Sub-office's role of reinforcing the University's KT activities is crucial. Over the years, it has refined its system for supporting the development, protection, and licensing of EdUHK IPs, garnered outside recognition of our research efforts, and continued to encourage innovation and technology development among the EdUHK community. All of these contributions have helped EdUHK's KT move in the right direction.

The KT Sub-office obtained new resources and strengthened the functions of four teams, namely "IP Development", "IP Promotion", "Entrepreneurship Development", and "Administration and Fund Management". With the expanded functions, the KT Sub-office will provide more holistic support to EdUHK researchers on their downstream translation research. It will reinforce the linkage with industries to establish collaboration on high-end consultancy, contract research and IP licensing to advance technology development and adoption. The Sub-office will offer a comprehensive spectrum of entrepreneurial activities to train talents and to transfer our knowledge-based innovation into impact-creating social ventures. The KT Sub-office will continue rendering its support in carving out the University's role in the innovation and technology ecosystem.

2.1.2 FUNDING SCHEMES

To bridge the gap between research and practical application in the industries and the wider community, the KT Sub-office has utilised internal and external resources to establish the funding infrastructure to support the KT initiatives in the University. The University has provided three internal funding schemes in 2021/22, allowing academic staff to further translate

their research outcomes into innovative, original, and compelling KT initiatives with potential market value.

2.1.2.1 KT FUND SCHEME



The annual KT Fund Scheme. It aims to support EdUHK researchers to create EdUHK-owned intellectual properties and research prototypes based on their original research. In the reporting period, eight projects were supported. A list of funded projects is set out in Annex II. The scheme will continue in the upcoming academic year, and a comprehensive review is also scheduled in late 2022 to refine the scale and scope to fit the latest strategies of the University and social needs.

2.1.2.2 ITECH FUND



Since its establishment in 2019/20, the iTech Fund has served as an accelerator for technology development at the University. The scheme has supported academic/teaching staff in transforming and demonstrating research results in the form of practical technological innovations. For instance, an art tech project for music education and performance, which was founded by the project team, has become an incubating start-up company. Another project—related to educational technology—is helping people with reading difficulties and has already received significant industry sponsorship to further develop a social robot. Two rounds of the iTech Fund were covered in this reporting period. A total of 21 applications were received, of which nine were supported. A list of funded projects is set out in Annex III.

2.1.2.3 FUND FOR INNOVATION, TECHNOLOGY, AND SOCIAL-WELLBEING



The first cohort of partnership projects under the “Fund for Innovation, Technology, and Social-wellbeing” (FITS) scheme began in late 2021. The FITS is funding four projects this year to identify the community’s capabilities, opportunities, and needs, develop models and best practices to tackle poverty and social exclusion, and foster well-being and cohesion through social innovation. The FITS scheme is supported by the Social Innovation and Entrepreneurship Development Fund (SIE Fund) of the HKSAR. It aims to fund applied research projects with commercialisation partners in the community or industries. The initial fund size of the FITS is HK\$2 million. EdUHK researchers can submit proposals related to local social issues, such as 1) education; 2) public health; 3) art and culture; 4) social reconstruction. The project period will be 12–24 months. The scheme supports proposals which fill the gap between proof of concept and practical models of social innovation initiatives at EdUHK. A list of funded projects is set out in Annex IV.

2.1.3 INTELLECTUAL PROPERTY (IP)

2.1.3.1 INNOVATION LICENSING

EdUHK is committed to its “*Education-plus*” approach and extends the impact of its research and development beyond mainstream teaching and learning. Education technology, education innovation, and social innovation are the strategic foci of KT at EdUHK. For 2021/22, the University has five active licenses that were granted to commercialise or productise our IP to educational business entities. The licenses include educational technology solutions, educational toys, healthcare technology, and pedagogical innovations.

Licensees include two winning start-ups of the *EdUHK Education and Social Entrepreneurship Fund (EASE Fund)*, namely *Stardust Hall Limited* and *KreativeLab HK Limited*. The founders of these two start-ups were original research students and team members of the licensed projects, who transferred their research outcomes to start businesses shortly after project completion.

2.1.3.2 PATENTS

The University set up the *Central Funding for Patent Application* in 2018 to support academics and researchers in protecting their inventions through patent applications. A patent application is not just a means to legally protect EdUHK's invention, but also a way to capitalise on EdUHK's knowledge transfer to society via patent licensing. The patent application scheme was strengthened in 2019 with additional resources and support from the University's KT Sub-office. In June 2022, the Sub-office conducted a new round of refining its patent application support. This included the streamlining of internal review and documentation procedures, and the introduction of comprehensive patent consultation services. The refinement aims to facilitate researchers in accessing the patentability of their research work and ease their preparations of patent specifications. Within the month of launching this refinement, the KT Sub-office processed over ten patent applications. A list of patents filed in the reporting period is set out in Annex V.

2.2 FOSTERING AN ENTREPRENEURIAL CULTURE THROUGH PRACTICES

As the entrepreneurial arm of Research and Development at EdUHK, the KT Sub-office plays a pivotal role in advancing innovation, entrepreneurship, and beyond. We actively promote entrepreneurship, cultivate mindsets and talents around campus, and foster EdUHK in the start-up ecosystem both locally and globally.

2.2.1 EDUHK SEED FUNDING PROGRAMME – EDUCATION AND SOCIAL ENTREPRENEURS FUND SCHEME

The *EdUHK Education and Social Entrepreneurs (EASE) Fund Scheme* is a seed funding programme that nurtures entrepreneurship as a means of transferring EdUHK knowledge, with the aim of making a positive impact on society. The *EASE Fund* fosters entrepreneurship among students, faculty members, and alumni from different disciplines. This year, almost 100 contestants formed into 45 teams. After three rounds of screening, 14 *EASE Fund* winning teams were selected to receive funds. The judges, from various professional industries, selected five teams to receive special awards, which was based on their extraordinary performance in particular areas. The winning teams' proposals covered a broad spectrum of innovative businesses, including social inclusion, sportswear, marine sensing, and education technology (e.g., AI, metaverse, and gamification). The teams are listed out in Annex VI.



The *EASE Fund* Scheme has made solid connections this year, with new partnerships between EdUHK and its new incubation partners from the industry – HSBC, the Association of Chartered Certified Accountants (ACCA), and Amazon Web Services. They will provide EdUHK start-up teams with complementary professional services, such as cloud computing services, banking and financial advisory, and investor networks and resources.

2.2.2 EDUHK SEED FUNDING PROGRAMME – FUNDING SCHEME FOR YOUTH ENTREPRENEURSHIP IN GUANGDONG – HONG KONG – MACAO GREATER BAY AREA

EdUHK was selected as one of 16 organisations to receive the “*Funding Scheme for Youth Entrepreneurship in Guangdong-Hong Kong- Macao Greater Bay Area*” under the Youth Development Fund (YDF) of the HKSAR Home and Youth Affairs Bureau. Funding of over HK\$11 million has been given to the KT Sub-office to offer three-year entrepreneurial support and incubation services in 2021–2024. This funding scheme enhances the existing EASE Fund with increased seed funding, partnerships with entrepreneurial bases, and over 120 hours of entrepreneurship workshops. The Online Final Pitching of the EASE Fund was conducted on 4 March 2022. Twelve EASE Fund winning teams are supported under the YDF Funding Scheme.

2.2.3 EDUHK SEED FUNDING PROGRAMME – WOFOO SUSTAINABILITY DEVELOPMENT GOAL (SDG) AWARD

Wofoo Social Enterprises supported the EASE Fund by offering a special award, namely the “*EASE Fund – Wofoo Sustainability Development Goal (SDG) Award*”, to recognise two start-up teams dedicated to fulfilling the United Nations SDGs and combating climate change. The two awardees are “NerOcean” and “The Anthropocene”.

2.2.4 INITIATIVES ON EXTENDING THE ENTREPRENEURSHIP SPECTRUM – EDUHK CENTRE FOR ENTREPRENEURSHIP AND RESEARCH (CEAR) AND INNOVATION AND ENTREPRENEURSHIP STUDENT TALENT DEVELOPMENT (INVESTED) PROGRAMME

To support research transformation, commercialisation, and talent development, the KT Sub-office initiated the *Centre for Entrepreneurship and Research (CEAR)* and *Innovation and Entrepreneurship Student Talent Development (INVESTED)* Programme during the reporting period.

CEAR is an initiative that supports EdUHK research teams in moving their translational research towards research-based business operations. *CEAR* aims to incubate EdUHK research, knowledge, and start-ups in developing and transferring innovation and technology towards commercialisation by offering office space in a well-known innovation hub, mentoring services, technical support, and business support to qualified teams of EdUHK members. To benefit society, we intend to maximise the impact of EdUHK’s research on educational development and technological and social innovation.

On the upstream side, we established the *INVESTED Programme* to prepare students with practical experience in entrepreneurship development. This was initiated to inspire, enable, and nurture EdUHK students to develop innovative solutions for educational and societal problems with the support of EdUHK research, IP, technology, and expertise. Additionally, we hope to create a thriving ecosystem that is committed to facilitating collaboration among the EdUHK start-up community and fostering campus-wide entrepreneurship. The Programme is a one-year non-credit-bearing course to equip students with technological business knowledge, soft skills, an entrepreneurial mindset, and, more importantly, first-hand

experience in the innovation and technology ecosystem. Students will eventually form teams to generate start-up ideas and compete in two start-up competitions with external startupper.

2.2.5 EDUHK X CHINA X APAC INNOVATION AND ENTREPRENEURSHIP CHALLENGE

To follow the success of the local inter-institutional entrepreneurship competition in the last reporting year, EdUHK has expanded the event from a local to a regional level. The new *Asian Universities Student Entrepreneurship Ideation Challenge (AUSEIC) Competition*, initiated by the EdUHK in 2022, is an inter-disciplinary and inter-institutional innovation and entrepreneurship development programme. *AUSEIC* was designed to encourage student innovation and entrepreneurship to address Asian social and education related issues; for instance, equity, diversity, and inclusion, with research-based solutions. It will prepare student teams to be future innovators and entrepreneurs with global perspectives. Renowned universities from Belt and Road Initiative countries have been invited to join the *AUSEIC* and form a strategic alliance to run the Programme in the long-term.

2.2.6 EDUHK INCUBATED START-UP ACHIEVEMENTS IN EXTERNAL COMPETITIONS

The KT Sub-office provides not only opportunities, but also consultation and training services to support start-up teams to compete in local and international competitions. Through experiential learning, the EdUHK start-up community will successfully develop and gain further access to business and funding opportunities via potential investors, partners, and customers. A highlight of the external recognitions is set out in Annex VII.



2.3 MAKING A DIFFERENCE

2.3.1 CREATING AN IMPACT ON INDUSTRY AND SOCIETY

The University aims to use our fundamental research results to significantly impact lifelong learning and the advancement of innovation and technology. We have partnered with external parties to magnify the value we have created. The following examples are a few of our highlights.

2.3.1.1 REGULAR BUSINESS MATCHING WITH INNOVATION AND TECHNOLOGY COMPANIES

In this reporting period, the KT Sub-office has developed partnerships with two innovation and technology hubs – the Hong Kong Science and Technology Park Corporate and the Hong Kong Cyberport Management Company Limited – for business matching between the in-park companies and EdUHK researchers. Four rounds of business matching and “Ed-Tech-Talk” sharing sessions were arranged to build up research collaboration between EdUHK and the innovation and technology ecosystem in 2021/22.

2.3.1.2 KT PARTNERSHIP WITH A FURNITURE MANUFACTURER

The KT Sub-office established a strategic partnership with a sizeable furniture manufacturer in designing and producing research-based furniture integrating educational value and technological innovation for students with special education needs. EdUHK research and professional centres have conducted a few contract research and consultancy projects. The commercial partner has also committed a HK\$2 million research sponsorship for follow-up research and development. Moreover, the company will support EdUHK researchers in prototyping ten furniture sets for their pilot research programme. The scope of the partnership covers furniture hardware and training software development for students with special education needs in both classrooms and domestic settings.

2.3.1.3 CLAP@JC

Created and funded by The Hong Kong Jockey Club Charities Trust, the Project CLAP@JC is Hong Kong's first cross-sectoral support platform on career and life development (CLD), aiming to foster a sustainable ecosystem by bringing together the education, business, and community sectors to smoothen the transition from school to work for all youth. The project encourages youth to "LIVE DIFFERENT, LIVE FULL" and maximise their endless potential by setting sail on a unique life journey.

The CLAP@JC project introduces a comprehensive systematic framework, "CLAP@JC HK Benchmarks" (HKBM), empowering schools to build quality CLD provisions for students. In 2021–2022, 50 secondary schools in Cohort 1 were supported by the cross-sector HKBM team and through six school hubs in self-evaluation, action planning, and implementation of whole-school CLD programmes. Under the Professional Development Programmes offered by EdUHK, 240 principals/senior school leaders were trained, and over 500 teachers were equipped in their own capacities to promote good practices.

2.3.1.4 THE AP GOOD SHEPHERD PROJECT

Partnered with the Advance Children Medical and Education Foundation Limited and the Edge Development Centre, the Department of Special Education and Counselling organised the AP Good Shepherd Project specifically for primary school students from low-income families with attention-deficit hyperactivity disorder (ADHD), reading difficulties (RD), and autism spectrum disorder. This project offers hope in these dark times by preventing their learning from coming to a complete halt and helping them to stay motivated and feel supported. The APGood Shepherd Project involves not only providing direct services to students, but also training for university students and graduates. Since its launch in September 2020, the project has covered 34 local primary schools, and reached out to around 370 low-income students with SEN and about 200 SEN tutors. Eighty new groups joined the project in the year 2021/22.

2.3.1.5 AI AND INNOVATION TECHNOLOGY COMPETITION 2021–2022

For the first time, the AI and Innovation Technology Competition 2021–2022 was jointly organised by the Department of Mathematics and Technology EdUHK, and co-organised by the Hong Kong Association for Computer Education, Hong Kong Joint School Technology Association, and the Hong Kong Technology Education Association. The key objectives of the Competition are to promote AI and innovation technology education, cultivate students' interest in AI technology, and enhance their AI literacy and problem-solving skills.

The first round of AI and Innovation Technology Competition 2021–2022 was successfully completed, attracting approximately 100 secondary school students to participate in the Competition.

2.3.1.6 TOURING TURTLE

The Centre for Special Educational Needs and Inclusive Education and a commercial partner jointly developed the Touring Turtle, which is a Chinese learning card game with over 300 vocabulary cards and six scenes for interactive learning. The game allows users to write with an Apple Pencil and use radical cards to form meaningful Chinese characters for learning both Putonghua and Cantonese pronunciation and practising writing with AI-empowered stroke order exercises. Touring Turtle integrates electric field messaging technology with evidence-based educational practice. The commercialised product received the silver award at the Hong Kong Smart Design Awards 2022.

2.3.2 DISSEMINATE RESEARCH OUTPUTS

The University supports staff members working in partnership with external organisations to reinforce EdUHK's research and KT. As part of their work portfolio at the University, individual academic or teaching staff members may undertake research and KT projects funded by outside organisations through tenders/contract research and consultancy.

2.3.2.1 TENDERS/CONTRACT RESEARCH AND CONSULTANCIES

In the 2021/22 academic year, the KT Sub-office supported 156 tenders, contract research, and consultancy projects which received a total of HK\$108 million.

2.3.2.3 EDUHK RESEARCH REPOSITORY

This database can be accessed by the public at <https://repository.eduhk.hk>, or via the EdUHK Library Website at <http://www.lib.eduhk.hk>. It collects, manages, preserves, and showcases in one digital location the research outputs of all staff and postgraduate students of the University. As of 30 June 2022, the Repository has collected 39,779 records of citations dating back to 1994, all of which have been validated by the Library. Links to full-text are provided in 16,446 records, 5,798 of which can be accessed by the public. Additionally, 54% of the records are provided with abstracts. Google Analytics has been employed to measure and evaluate the traffic of the Repository website. A total of 265,719 visits and 142,605 users were recorded from July 2021 to June 2022.

2.3.3 TRAIN PROFESSIONALS

Immense improvements in the research capabilities and outputs of EdUHK over the years have enabled the University to disseminate and transfer new knowledge to professionals. This effort has transformed the training of educators and practitioners to create a new generation of professionals equipped with novel research-based knowledge.

2.3.3.1 CONTINUING PROFESSIONAL DEVELOPMENT (CPD) COURSES

The academic departments and centres of the University have long provided a wide range of self-funded development courses and training programmes, occasionally in collaboration with external parties. The aim is to transfer the new research findings and latest teaching methods of staff members to support the continuous development of the education profession in early childhood, primary, secondary, technical, and special education. These CPD courses allow the University to establish close relationships and networks with schools. Such relationships have led to significant professional improvements and innovations in the school sector and contributed to developing high-quality education practitioners in Hong Kong and throughout the region.

Training Experts for Special Education

During the reporting period, the University continued to organise numerous CPD courses to train special education experts for schools. These include a professional certificate course for inclusive education and school-based professional development courses for schools in Macau. Locally, we continue to organise the Training Course for Special School Teachers, and also launched a new workshop on “*Catering for Diverse Learning Needs for Teaching Assistants / Teacher Assistants (TAs) Working in Ordinary Schools and Special Schools*”.

Leadership Training for School Management

We have organised CPD courses to enhance current and future school management leadership. The “*C-for-Chinese@JC: School Leaders*” programme, which took place in April and May 2022, provided kindergarten leaders with professional knowledge and practical skills for developing and implementing effective strategies in the home-school-community. The “*School Administration and Management*” trained school leaders in the mindset and necessary skills in effective organisational management. The “*Production of e-Learning Packages for the Professional Development and Training of Principals and Teachers*” continued this year under the “*T-excel@hk*” Project of the Education Bureau. Participants gained a profound understanding of developing global leadership beyond the school context and built their capability through experiential learning to become more effective school leaders.

Moreover, the University also contributed to improving education competency by offering CPD courses in digital practice for language teaching, social and emotional learning in classrooms, and the development of cross-curriculum e-resources. A total of 2,085 principals and 3,183 teachers utilised these CPD courses.

2.3.3.2 THE 2ND INTERNATIONAL KT FORUM ON LANGUAGE TEACHING AND RESEARCH

The *2nd International Knowledge Transfer Forum* (hereafter *KT Forum*), held jointly by the Department of English Language Education of EdUHK and The Association for the Teaching of English as a Foreign Language in Indonesia (TELFIN), from 7 to 21 August 2021, brought together researchers, educators, and policymakers from Asia and beyond to engage in interactive dialogue about language teaching and research.

A total of 3,295 people attended the Forum. It provided a platform for international knowledge exchange among researchers, teachers, teacher educators, policymakers, and students from all over Asia. The professional outcome for collaborating faculty was the opportunity to participate in joint presentations and expand their expertise on a global scale. The KT Forum also provided opportunities for career advancement for junior researchers and research students.

2.3.4 STUDENT ENGAGEMENT

2.3.4.1 STUDENTS INTERNSHIP AND PLACEMENTS

Our Student Affairs Office and Faculties organise student internship programmes to encourage students to engage with and serve the community. These programmes allow students to gain experiential learning for their holistic personal development. The University also arranges placements with local schools for all full-time students of education-related programmes. Opportunities for student placements and internships offer two-way knowledge transfer between the students, the education sector, and the industry. In total, there were around 2,000 student placements and internships for 2021/22.

2.3.4.2 ENTREPRENEURIAL EDUCATION AND SOCIAL INNOVATION CULTURE

EdUHK Entrepreneurship and Innovation Education Unit (EIEU) is dedicated to developing students with entrepreneurial and innovative minds. The Unit organised activities for EdUHK students to develop personal attributes and transferable generic skills that form the basis of an entrepreneurial mindset and behaviour.

2022 Online Student Fair: EdUHK Lunar New Year Fair

The Online Student Fair served as a marketplace for students to learn about commerce and retail. Participating students ran their small businesses from business planning, product sourcing, and development, to customer interaction and business dealing. The merchandise provided at the “2022 Online Student Fair” includes a wide variety of Chinese New Year products, original artworks and handcrafts, stationery, clothing, accessories, plants, etc. Two workshops were conducted to help students prepare their business.

EI Fiesta

EI Fiesta aims to provide EdUHK students of all programmes with opportunities to broaden their horizons with a wide range of learning activities, to develop their entrepreneurial and innovative mindset and competencies, and to apply the knowledge learnt in their daily life and future workplace.

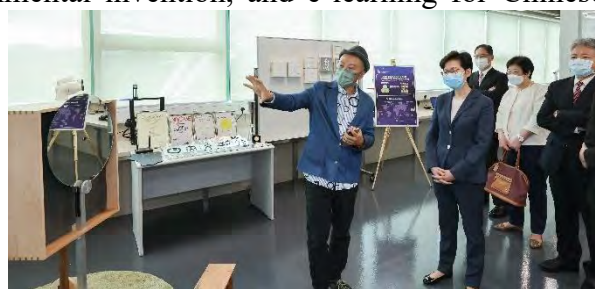
EI Fiesta was held from March to June 2022. The activities included an Event Logo Design and Pitching Competition, discussions with renowned entrepreneurs, workshops on effective presentation and storytelling skills, design thinking, social media strategy, and video production for KOL.

2.4 EMPOWERING KT MARKETING

2.4.1 CHIEF EXECUTIVE VISIT TO EDUHK

The Chief Executive visited EdUHK on 26 July 2021 to learn about the University’s research and KT achievements. Accompanied by Council Chairman Dr David Wong Yau-kar and President Professor Stephen Cheung Yan-leung, the Chief Executive was given an introduction to the University’s start-up, research, and innovation projects.

A mini-exhibition was set up to showcase EdUHK’s technologies and creative ideas in art tech, EdTech for music, AI for education, environmental invention, and e-learning for Chinese history and culture. Following the tour, there was a meeting between the Chief Executive, EdUHK Council officers, and senior management on the promotion of knowledge transfer in EdUHK to leverage academic research and professional skills for social and educational development.



2.4.2 PROMOTING EDUCATIONAL TECHNOLOGY DEVELOPMENT

Educational Technology (EdTech) is a strategic focus of KT at EdUHK. In the year 2021/22, the KT Sub-office organised two key activities to promote the development of EdTech businesses with the potential application of EdUHK IP, namely the EdTech Challenge – Future Classroom and EdTech Conference – Special Education.

Co-organised with the Hong Kong Association of Youth Development, the EdTech Challenge – Future Classroom promotes EdUHK innovation and technology to the education industry, technology start-ups, and youth generation. Teams of young people were introduced to EdTech research in EdUHK, who then developed EdTech business proposals by collaborating with start-ups, EdUHK researchers, and students. The event was supported by the Hong Kong Cyberport Management Company.

The KT Sub-office and Integrated Centre for Wellbeing at EdUHK co-hosted the EdTech Conference – Special Education on 9 and 10 June 2022. The two-day conference promoted EdUHK EdTech to schools, companies, and NGOs to create a platform for co-development and commercialisation opportunities. Over 1,000 people attended the conference.

2.4.3 INNOCARNIVAL 2021

The KT Sub-office joined the InnoCarnival 2021 (23–31 October 2021), an annual flagship event of the HKSAR Innovation and Technology Commission, to promote innovation and technology. This year, the EdUHK pavilion was designed under the theme of “Fostering Wellbeing Through Technology”, showcasing innovative projects in sleep health, personal development, and urban conservation. With the aid of technology, these novel and practical solutions can empower individuals to maintain a healthy and positive lifestyle.

2.4.4 LEARNING AND TEACHING EXPO 2021

The Learning and Teaching Expo (L&T Expo) 2021 was held at the Hong Kong Convention and Exhibition Centre from 8–10 December 2021. This is the city’s most prominent annual trade fair for educational technology, services, and products. During the 2021 L&T Expo, the KT Sub-office organised a booth to highlight several ready-for-market innovations of EdUHK, covering areas of language learning for young children, e-learning in music, urban tree conversation, and support programmes for SEN students. Scholars of EdUHK also gave speeches in a number of key sessions, including global horizon on education, GBA innovative education, AI Summit, computational thinking, future classroom, and blending learning design.



2.5 AWARDS AND ACHIEVEMENTS

2.5.1 EDUHK INNOVATIONS AND TECHNOLOGIES IN INTERNATIONAL INVENTION COMPETITIONS

In recent years, EdUHK has been dedicated to carrying out research and development with application value to help transform society and the economy. The innovations of our research and development have been recognised in numerous international competitions and exhibitions. Throughout the year, the KT Sub-office pitched EdUHK technological innovations to international platforms. Fourteen innovations by EdUHK researchers and start-ups were showcased at these events, which received 21 international invention awards. The innovations covered environmental sensing technologies,



AI, healthcare goods, musical instrument technology, and computerised education. A list of award-winning projects in 2021/22 is set out in Annex VIII.

2.5.2 PRESIDENT'S AWARD FOR OUTSTANDING PERFORMANCE IN KNOWLEDGE TRANSFER

The President's Award for Outstanding Performance in Knowledge Transfer was established in 2016 to recognise, encourage, and reward academics who successfully transferred university-owned knowledge to society or industry with innovation and impact on education at the local, regional, and/or international community level. The results of the President's Award for Knowledge Transfer 2021/22 were announced in June 2022. A list of awardees is set out in Annex IX.

3. PERFORMANCE MEASUREMENT AND PERFORMANCE INDICATORS

The outcomes of the University's KT activities are closely monitored by performance indicators (PIs). For instance, faculties, university-level research centres, and relevant academic support units must submit annual reports on their implementation of KT activities, including data on the list of PIs specific to their key initiatives.

With the mentioned new investments, initiatives and strategies on KT, the University has seen gradual progress and improvement in various domains in 2020/21. Compared with 2019/20, the incomes from partnership projects, commissioned / contract projects and consultancies have recorded significant increases of 41%, 2% and 15%, respectively. The income from commercialised R&D products has also hit a record high of HK\$2.85 million in EdUHK. Please refer to Annex X for a summary of PIs. To better reflect the impact of EdUHK's KT on wider aspects and align the social and economic atmosphere, EdUHK will redefine the existing PIs and introduce new ones, especially on entrepreneurial activities in the upcoming triennium.

4. LOOKING FORWARD

Over the years, the University has established a solid foundation in teacher education. Forging ahead, we will push the boundaries of education by tapping into our complementary strengths in line with our “Education-plus” approach. In the 2022–2025 triennium, we will expand our innovation capacity to emerging sectors and professionals beyond education. This also includes investing our resources in developing education and humanities, social sciences, creative arts and culture, environmental studies, mathematics and statistics, and computer science. We have recently kicked start the discussion with the Hong Kong Cyberport on establishing strategic collaboration on educational technology co-development. Besides, the formation of a subsidiary company for KT has been on solid progress. We are also pushing the formulation of related policies. The company will be the official engagement party with external partners on commercial KT activities, and will establish a healthy arm’s length relationship between UGC and non-UGC funded activities.

Going forward, we are committed to strengthening the University’s research centres to become critical knowledge hubs; establishing university level central research facilities; facilitating faculty members to bid for large-scale external technology transfer grants; and fostering deep collaborations with industrial partners. Social networks and analytics, environmental health, life and career development, and educational models for students with special needs are four strategic, multidisciplinary research areas for growth in the next few years.

Innovation and entrepreneurship will be strengthened under the University’s knowledge transfer initiative. The KT Sub-office, under the Research and Development Office, will play an increasing role in this technology partnership. The aim of technology partnerships is to have the Sub-office connect EdUHK’s researchers and entrepreneurs with innovation and technology industries. The Sub-office’s new role will better position the University to nurture research-based spin-offs and start-ups. Additionally, the EdUHK Centre for Entrepreneurship and Research will be in operation shortly. In parallel with establishing the Centre, a new programme, namely the Innovation and Entrepreneurship Student Talent Development (INVESTED) Program will be launched in this academic year. Our target is to nurture 90 EdUHK students as innovators and entrepreneurs, with practical skills and first-hand experience in the start-up ecosystem.

With the expanding support in industrial collaboration, patent application, and entrepreneurship development, EdUHK will continue to strengthen its role and contribution to innovation and technology development locally, regionally, and internationally.

Impact Case History (i)

Project Title

Promoting light volleyball (LVB) among special populations in need in Hong Kong

Principal Investigator/ Project Leader

Dr LEUNG Ka Man Carman, Department of Health and Physical Education

Project Summary

Dr Leung, teaming up with other team members, has conducted research for improving physical and psychosocial health among special populations in need in Hong Kong (HK) through promoting Light Volleyball (LVB) and adapted LVb, called Sitting Light Volleyball (SLVB). Their study directly benefited 350 older adults, and they have planned to promote LVb for about 3,600 older adults in the coming years. Recently, they have received another sustained grant for establishing fitness norms and developing tailor-made sports accessories for people with physical disabilities(PWPD) in HK. SLVB will be further promoted to other regions (e.g., East Asia) as a sporting event.

Underpinning Research

Funded by the university's internal grants, external UGC grant and external research matching fund, this case study is led by Dr Ka-Man Leung and supported by Prof CHUNG Pak Kwong (HKBU), Prof Lynda Ransdell (NAU), Mr Chan Ching Yat (EdUHK), key members of Hong Kong Light Volleyball Association Ltd. (LVBAHK), Caritas, Hong Kong, Neighbourhood Advice-Action Council, Hong Kong Federation of Handicapped Youth (HKFHY), and Hong Kong Playground Association.

The population in Hong Kong (HK) is rapidly ageing. Chung and his colleagues (2016) established the FIRST functional fitness norms for HK older adults aged between 65 and 84years. This explorative, cross-sectional study recruited 944 older adults from 22 community senior service centres in 2014-2015. Results found that significant ageing-associated degradation and sex differences were observed in the functional fitness tests. HKSAR Government is advised to allocate funding for improving functional fitness and developing ageing-specific PA to the older adults in HK.

Extending the aforementioned work, Dr Leung and her team promoted a new form of PA, the Light Volleyball (LVB), for HK older adults in 2015-2016. In contrast to traditional volleyball, LVb uses a lighter weight (LVB 150g vs. traditional volleyball 250g) and bigger sized (LVB 80 – 83cm in circumference vs. traditional volleyball 65-67cm) ball. The LVb ball thus travels in the air at a lower velocity, and that makes it more accessible to those people with ageing-associated degradations or other populations with special needs. In the LVb study, participants (N = 78; aged ≥60 yrs.) were assigned to intervention (LVB), comparison [rouliqiu (RLQ)], and

control (CG) groups. Results revealed significant improvement in agility, cardiovascular endurance, muscle strength, and PA enjoyment among participants in the LVB group compared to CG group. Participants in the LVB group also demonstrated greater cardiovascular endurance, upper extremity muscle strength, and PA enjoyment than that of RLQ group. In addition, the psychometric properties of the 8-item Physical Activity Enjoyment Scale in Hong Kong older adults were also examined in this study. In response to the promising results of the LVB pilot study and the priority of allocating resources to the prevention of age-related fitness degradation in HKG, Dr Leung and her team successfully applied the Research Impact Fund (HK\$7,400,556) on a project “Promoting healthy ageing through light volleyball (LVB) promotion in Hong Kong and Mainland China”.

Considering the positive physical and psychosocial health benefits of LVB and its potential for development (e.g., cost-effective), Dr Leung and her team in November 2017 received another sustained university grant to modify the LVB(SLVB) for those PWPDs in HK. SLVB has modified rules, such as the ball being permitted to bounce once each pass. Being more inclusive and easier to learn and offering players greater control, SLVB is relatively easier to play for individuals with muscular degradation or motor impairment. Her team conducted a 16-week SLVB intervention to examine its effectiveness in improving health outcomes of PWPD in Hong Kong. Compared with the control group, the SLVB intervention group had significantly higher cardiovascular endurance, stronger body composition, and more reported PA enjoyment. This study also responds to the Government of HKSAR Policy Address 2017 on promoting sports participation among people with disabilities. Currently, the team is now working on applying and transferring our knowledge and expertise in sitting light volleyball (sport) to produce tailor-made functional sportswear and accessories to PWPD as participants of SLVB intervention explained that these movement restrictions are caused by 1) the elasticity of the sports pants; 2) length of the sports pants was too long; 3) material of the sports apparel were durable and not tear-resistant. Potentially this SLVB could be further promoted as a competitive sport in the Paralympics Games in the near future.

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Details of Impact or Benefit

Improve physical and psychological health among older adults in Hong Kong by implementing LVB intervention and classes

In the LVB intervention (pilot study: participants = 78), LVB was found to significantly improve lower extremity muscle strength, agility and dynamic balance, aerobic endurance, upper extremity muscle strength, and physical activity enjoyment among older adults. Other than the health improvements shown by the data, the participants reflected that since joining the LVB class, their limb mobilities and aerobic endurances had greatly improved. Importantly, the president of Caritas also appreciated our effort to improve older members' functional fitness and psychological health by providing the LVB intervention/classes and agreed to the need to sustain the LVB for the older adults in the community. Two follow-up LVB classes were conducted in Caritas and Island Harbourview Elderly Club (reached another group of older adults, 60 ppl). From the social welfare standpoint of view, LVB may help save government and family healthcare expenses. The study informed the HKSAR Government that LVB could be an alternative in promoting active ageing and preventing chronic illness in the ageing population. The Government is recommended to organise and promote LVB programs or even further develop LVB as regular sports competitions (e.g., Master Games) organised by the Leisure and Cultural Services Department. The Government should also allocate funding.

Increase the general public's awareness and understanding of LVB in Hong Kong

The impact case has also raised public awareness of older adults' fitness degradation (Appendix 8) and understanding of the role played by LVB in promoting active ageing in HK. For instance, the Television Broadcasts Limited (TVB) SportsWorld and Viu TV, HK (Appendix 1 and 8) highlighted the older adult's fitness degradation and introduced LVB, such as the history and its playing skills. A LVB teaching kit was developed and distributed to around 900 people in the community. A LVB seminar was organised to discuss LVB's possible development, and a press conference (e.g., Oriental Daily, Tai Kung Pao, Hong Kong Headline, Sing Tao...etc., Appendix 1 and 4) was held to generate news about LVB. The press conference attracted participants from different disciplines, including participants of our study, LVB coaches and players, HPE students from EdUHK, and staff members from other tertiary institutions, Caritas, LVBAHK and knowledge transfer offices. All these activities helped disseminate the health benefits of playing LVB to the public. It was later selected to be showcased in the Golden Age Expo &

Summit (GAES) 2017, a large-scale event in Hong Kong for encouraging and supporting the Golden Age population to strive for a productive and healthy life. A “Introduction of LVB” workshop was also jointly organised with LVBAHK on August 2016 in Polytechnic University (PolyU), HK. The staff of EdUHK and PolyU (about 30 ppls) have participated in this workshop. In the coming 3 years, the research team will work on a larger-scale LVB intervention and promotion in Hong Kong and Mainland China (reached to about 3820 older adults, with funding support from UGC Research Impact Fund).

Develop the Sitting Light Volleyball (SLVB)

In 2015, the Government of HKSAR commissioned a consultancy study (Home Affairs Bureaus, Government of HKSAR, 2016) on how to promote sports participation by persons with disabilities. The study revealed that students with motor disabilities (MD) showed received less opportunity to participate in sports. The study concluded that service for increasing sports participation among the MD students is needed. To echo this appeal, the research team decided to plan to promote SLVB as a sporting event in Paralympic Games as a long-term target and started to develop SLVB study for PWPDP. Next, a SLVB brochure will be developed and published. A workshop accredited by LVBAHK will be conducted to disseminate the knowledge/ skills of SLVB to the practitioners [e.g., physical educators, LVB professionals in HKLVBA, and other stakeholders (i.e., Social Workers and Sports Officers in NGOs)].

Develop Tailor-Made Sports Accessories to PWPDP

Following up with our SLVB intervention, from our observation and comment from participants (focus group intervention, n = 11), PWPDP in SLVB intervention may suffer from abrasion with their lower body part(ies) to the floor. These body parties include the toe, ankle, knee, and hip. Other than abrasion, participants of our SLVB intervention may also have the problem of sitting imbalance that may further promote abrasion. The ground floor friction may also increase their resistance to sports movement in SLVB. In fact, participants also complained that the sportswear available in the existing market could not satisfy their needs or prevent them injured while playing sport. The majority of them agreed that tailor-made sportswear was needed for them. Therefore, we are now working with a textile designer and transferring our knowledge and expertise in sitting light volleyball (sport) as well as textile and design to produce tailor-made functional sportswear and accessories to PWPDP (knowledge Transfer fund, EdUHK, \$99478). The first four prototypes are developed for further amendments.

Impact Case History (ii)

Project Title

Centre of Excellence for Higher Education Teaching and Learning Innovations under the World Bank's "Higher Education Improvement Project (HEIP)" in Cambodia

Principal Investigator/ Project Leader

Professor LIM Cher Ping, Department of Curriculum and Instruction

Project Summary

This project establishes the World Bank-funded Centre of Excellence for Higher Education Teaching and Learning Innovations (CEHETLI) that focuses on higher education teaching, learning and innovation in Cambodia located at the Royal University of Phnom Penh (RUPP). The establishment of the Centre is in line with recent initiatives from the Ministry of Education, Youth and Sport to establish Centres for Excellence based in universities to lead and support innovative practices and policies in universities across Cambodia. The Centre is designed, implemented, evaluated and quality assured through a partnership between RUPP and EdUHK.

1. RUPP works with EdUHK to (1) co-design capacity building programmes for leaders (policy dialogues and workshops) and teachers (Graduate Certificate in Teaching and Learning in Higher Education) of Cambodian universities. and (2) Co-develop quality online professional development resources in both English and Khmer to support delivery of quality professional development for university teachers. These localised online resources provide university teachers with improved access to professional learning that meet their professional needs. The other five Cambodian universities that are involved in the establishment of the CEHETLI are the Institute of Technology of Cambodia (ITC), National University of Battambang (NUBB), Royal University of Agriculture (RUA), Svay Rieng University (SRU), and University of Heng Samrin Thbongkhmum (UHST). Once the capacity of the six Cambodian universities (including RUPP) are built, the rest of the universities in Cambodia will undergo this capacity building process for inclusive and equitable quality higher education.

Underpinning Research

Professor Lim has worked with teacher professional development and higher education experts and specialists at UNESCO, the Asian Development Bank, the World Bank, the International Development Research Centre and partner universities worldwide. His frameworks for an institutional approach to higher education blended and online learning and for teacher professional development at scale are based on two decades of research and knowledge transfer work with higher education teachers, education leaders, and policy makers.

To build the capacity of higher education institutions in Cambodia for inclusive and equitable quality education and lifelong learning for all, Professor Lim draws on three key principles from his previous research: (1) at the institutional or system level, a holistic approach has to be adopted by education leaders to drive and support innovative teaching and learning practices (including blended and online learning) with the aim of improving access to quality education

[R1, R5]; (2) given the pivotal roles of teachers and institutions in quality higher education teaching and learning, the capacity of institutions, education leaders and teachers has to be built [R3,R6], and (3) for professional development of teachers and leaders to be done at scale, blended and online professional learning has to be considered to address equity, quality and efficiency [R2, R4]. These key principles have been based on a publication base that has generated more than 6,400 citations.

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Details of Impact or Benefit

The project is in its first year of implementation and the following are its direct impacts: (1) 42 master teachers from the six partner universities completed the Graduate Certificate of Higher Education Teaching and Learning in April 2022. These master teachers will serve as professional development coordinators and facilitators in their own universities. (2) 60 university leaders and 10 policy makers and officials have completed a series of capacity building sessions from needs and situation analysis of teachers' professional learning needs to professional development policies and practices. (3) A suite of digital professional development resources to support the master teachers to conduct professional development programs and courses within their own university. (4) A comprehensive professional development plan for each university that is localised and customised for the professional learning needs of the teachers and leaders. (5) Documenting the establishment of the Centre as a way of sharing promising practices and lessons learnt of a teacher professional development at scale model.

Impact Case History (iii)

Project Title

The Development And Evaluation of an Innovative Corpus-Based Language Teaching Approach Among School In-Service Teachers in The Greater Bay Area or Beyond

Principal Investigator/ Project Leader

Dr MA Qing Angel, Department of Linguistics and Modern Language Studies

Project Summary

Building on the success of the research team's endeavour to increasing and promoting an innovative corpus-based language pedagogy at EdUHK in the past few years, a number of colleagues from the Department of Linguistics and Modern Language Studies (LML) conducted this KT project in order to further extend this new language pedagogy among school teachers and make a significant social impact on language pedagogy and curriculum in schools in the Greater Bay Area or beyond. Guided by a self-developed theoretical framework, this project provided a two-phase corpus-based training for in-service teachers in primary, secondary and tertiary schools in the Greater Bay Area, including cities such as Hong Kong, Shenzhen, Guangzhou, Zhuhai and Huizhou. Through the development and implementation of workshop series, online self-learning materials, teacher professional training and consultancy provided for schools, this project helps develop school teachers' understanding and implementation of an innovative corpus-based language pedagogy that is developed co-jointly from two aspects, corpus literacy and corpus-based pedagogy.

Firstly, a variety of tailor-made workshops/learning sessions covering various language skills (lexis, grammar, phonology and translation, reading and writing) were offered to more than 600 participants in order to equip them with some essential understanding and skills of corpus literacy and corpus pedagogy. The self-learning online sessions helped participants engage in individual, pair and group learning activities and strengthen their understanding of the key concepts and issues learnt in the workshops. Meanwhile, an interactive online learning platform supporting interactions at different levels: intra-school, between-school and the whole community was built for teachers to learn from, exchange with each other and enhance their learning. The information change and idea sharing inject vitality and dynamics into the community, helping the teacher participants construct and consolidate the knowledge and skills acquired from the training.

After the training sessions, teachers in the partner schools were invited to participate in lesson plan design competitions organised in the online learning communities to enhance their competence in applying corpus linguistic knowledge in the field of language pedagogy. Apart from interacting with the research team members on the online platform, online consultancy was provided to guide teachers on integrating corpus tools and resources into classroom teaching. Therefore, after acquiring adequate corpus literacy, the in-service teacher participants developed their competence of applying the corpus linguistic knowledge into the context of classroom

teaching, including designing and carrying out the language teaching and learning activities. A corpus-aided platform (CAP) for language teachers was further developed and updated to disseminate rich corpus-based resources to facilitate the corpus-based training for teacher participants, help them complete various online self-learning activities as well as design and implement corpus-based learning and teaching activities in varied classroom contexts.

The development of school in-service teachers' corpus literacy and corpus-based language pedagogy, in turn, made a positive impact on their student language learning in several aspects, i.e., solving learners' common difficulties/confusions in English learning, facilitating learners' independent learning skills after adopting corpus tools, and finally developing learner autonomy. To disseminate the project achievement, winners in competitions were invited to showcase their corpus-based lessons and corpus-based-training provided for their students in classroom settings to further promote this innovative pedagogy to international educators and researchers on an international conference organised by LML [Technology-Enhanced Language Learning and Teaching & Corpus-based Language Learning and Teaching 2021 (TeLLT & CoLLT2021)]. The global impact of the project was also maximised through publications (Ma et al., 2022; Ma & Mei, 2021; Fanget al., 2021) in international academic journals.

Underpinning Research

Corpus linguistics has firmly established itself as an innovative and effective approach to language studies and analysis. However, a corpus-based linguistic approach remains largely unknown to the majority of the professional teaching community due to various reasons, i.e., problems with hardware, limited computing skills, scarcity of free and user-friendly corpus resources (Römer, 2010; Tribble 2012), and lack of willingness among teachers to develop corpus literacy (Zareva, 2017). Corpus literacy, initially raised by Mukherjee (2006) and subsequently defined by (Heather & Helt, 2012) as “the ability to use the technology of corpus linguistics to investigate language and enhance the language development of students” (p. 417). Nonetheless, very few studies have investigated how to develop corpus literacy among pre- or in-service language teachers with a few exceptions (Heather &Helt, 2012; Leńko-Szymańska, 2014; Zareva, 2017).

Among a few studies that investigate the application of corpus literacy to teacher training, results show that concordance-based activities are considered monotonous, and participants lack interaction (Leńko-Szymańska, 2014). In addition, participants encountered great difficulty in figuring out what can and cannot be done with corpus data (Zareva,2017). Fundamentally, we believe developing teachers' corpus literacy, which only focuses on the ability to use corpus tools, is insufficient to help teachers integrate corpus literacy into their classroom teaching. A separate concept, corpus-based language pedagogy, should be developed after the teacher initial development of corpus literacy in order to bridge the gap between corpus linguistics knowledge and its actual implementation in the classroom. Corpus-based language pedagogy is defined as “the ability to use the technology of corpus linguistics to facilitate the language learning and teaching in a classroom context” (Ma et al., 2021).

Based on the differentiation of the two key terms, i.e., corpus literacy and corpus-based language pedagogy, a theoretical framework is proposed to guide the design and implementation of the project. The project aims to develop in school teachers a good corpus literacy and corpus-based language pedagogy under the guidance of this framework.

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Details of Impact or Benefit

1. The corpus-based training reached a wide spectrum of stakeholders in the Greater Bay Area and beyond
2. The knowledge of this project reached a wide general public both regionally and internationally
3. The project helped developed school teachers' understanding and implementation of an innovative corpus-based language pedagogy

4. The project constructed an online corpus-based learning community formed by teachers from the Greater Bay Area and beyond
5. The project provided rich online resources to support teachers' development of corpus literacy and corpus-based language pedagogy

Impact Case History (iv)

Project Title

Capacity building for addressing SDGs through curriculum and pedagogy innovation in Technical Vocational Education and Training (TVET) and
CRAC project: Creating an Impact: Setting up a Green Skills Hub at the EdUHK

Principal Investigator/ Project Leader

Dr Margarita PAVLOVA, Department of International Education

Project Summary

The UNESCO project is built on the results of the EdUHK Central Reserve Allocation Committee (CRAC) project and is aimed to support capacity building on curriculum and pedagogy innovation for the development of students' green skills. This programme has built up the cooperation between seven UNEVOC centres under the Coaction Initiative of UNESCO-UNEVOC Network. In this context, UNESCO-UNEVOC is partnering with the Education University of Hong Kong (EdUHK) to strengthen the TVET practitioners' and leaders' knowledge of greening TVET and ability to implement change. In particular, it enhances teachers' capacity towards curriculum and pedagogy innovation for the greening of curriculum and the development of generic green skills. The following countries are involved: Saudi Arabia, Nigeria, the Philippines, China and Mongolia.

Among the purpose of the CRAC project (finalised in 2019) was to research current curriculum greening practices among vocational and professional education and training (VPET) providers in Hong Kong and investigate professional vocational education (PVE) teacher training practices at the EdUHK, and other universities in the region, with the aim to formulate recommendations on how to address development of generic green skills through changes in curriculum and to develop resources that can be used for development of generic green skills for VPET students and teachers. The results of the research continue to be disseminated well beyond Hong Kong to enable knowledge transfer by training VPET leaders internationally (particularly through UNESCO-UNEVOC network), so they can develop an holistic approach towards greening VPET curriculum and practical operations, thereby having a positive impact on the lowering of carbon emissions.

Underpinning Research

The Central Reserve funded project (The EdUHK, 2017 –2019) led by Dr Pavlova was focused on addressing generic green skills development in support of the realisation of SDGs in order to further advance green skills research and development in Hong Kong and the wider region. The project mapped the current practices related to the greening of curriculum by surveying one of the largest VPET providers in Hong Kong. 33 teaching staff from different disciplines in this substantial organisation completed the survey. These findings suggest that more innovative and interactive ways of teaching environmental content are needed in order to raise students' interests and to deliver knowledge more effectively.

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Details of Impact or Benefit

The CRAC project was extremely helpful in identifying the specific needs of TVET providers in terms of required resources and approaches towards the inclusion of generic green skills into TVET curriculum and TVET teacher training. Thus, in addition, to publications, the results of this project have been widely disseminated through seminars and training workshops for TVET leaders: the Ministry of Labour and Vocational Training, Cambodia; GIZ (German international aid agency), ministry representatives and TVET leaders from 6 Pacific countries; UNEVOC members in the region; TVET practitioners in Australia; Malaysia and Saudi Arabia and New Zealand. They were commissioned by international and regional agencies such as UNESCO, Skills New Zealand, GIZ, governments and universities. These engagements have an impact on the international and regional levels.

The approach we established during this project towards the development of generic green skills resources and the ways they can be used for greening the TVET curriculum and TVET teacher training has been considered to be innovative and very valuable by TVET leaders in the region, as well as the UNESCO-UNEVOC International Center in Bonn. This conclusion is based on the current project with UNESCO on capacity building of TVET practitioners and leaders at the international level and numerous invitations received to present the results of the project and on the interest expressed by participants as well as feedback following my presentations.

Annex II

Approved KT Fund Projects 2021/22

Principal Investigator	Project Title
Dr Chen Junjun Department of Education Policy and Leadership	Documenting and Promoting the Occupational Well-being of Principals in Hong Kong and Mainland: A Mixed Method Approach
Dr Leung Ka-man Department of Health and Physical Education	A Pilot Scheme for Training the Trainers to Empower People with Physical Disabilities (PWPD) in Playing the Sitting Light Volleyball (SLVB)
Dr Yang Lan Department of Curriculum and Instruction	What Can Secondary Students Benefit from Team-based E-Assessment (TEA) and Immediate Feedback? Examining the Impact of TEA on Student Learning via Knowledge Transfer Activities
Dr Kevin Chan Ka-shing Department of Psychology	Self-stigma Reduction Programme for Families of Autistic Children
Dr Song Yanjie Department of Mathematics and Information Technology	Developing the Learning verse Prototype – a 3D Educational Metaverse Solution Focusing on Functionalising Social Interactions between Avatars
Dr Ricky Tso Van-yip Department of Psychology	A Convenient Package of Study Skills Training for College Students with Developmental Disorders (SpLD, ASD & ADHD)
Dr Louisa Chung Ming-yan Department of Health and Physical Education	Development of Game-basis Learning Materials for Children to Promote Healthy Eating and Hand Hygiene
Dr Eric Poon Tsz-chun Department of Health and Physical Education	Application of a Community-based Telehealth Program for Post-COVID Recovery

Annex III**Approved iTech Fund Projects 2021/22 (Jun 2021 – Mar 2022)**

Principal Investigator	Project Title
Dr Fu Hong Department of Mathematics and Information Technology	Developing an Automated Ocular Misalignment Measurement System
Dr Kean Poon Kei-yan Department of Special Education and Counselling	Working Memory Application for Pre-School Children from Low-Income Families
Prof Leung Bo-wah Department of Cultural and Creative Arts	Developing a Computerised Application for Accompaniment of Cantonese Operatic Singing
Prof Chou Kee-lee Department of Asian and Policy Studies	Development of Mobile App Games to Enhance Executive Functioning among Children with AI Enabled Personalized Features
Dr Tong Xiuhong Department of Psychology	Applying Artificial Intelligence and Machine Learning to Develop a Scientific Evidence-based Syntactic Knowledge Learning App

Approved iTech Fund Projects 2022/23 (Apr 2022 – Mar 2023)

Principal Investigator	Project Title
Dr Susanna Yeung Siu-sze Department of Psychology	Social Robot for Second Language Learning
Dr TING Fridolin	LearnToEarn: Motivating Active Learning and Teaching through a Reward-based Student Response System (SRS)
Dr Hung Keung Department of Cultural and Creative Arts	Novel Technologies (Animation Art, Interactive Art & AR) in Modern Puppet
Prof Philip Yu Leung-ho Department of Mathematics and Information Technology	Designing a Novel Tai Chi Practice Experience by Integrating New Digital Typefaces Design and AR Technology
Dr Tong Xiuhong Department of Psychology	Applying EEG Technique to Testing the Effectiveness of Applied Behavior Analysis (ABA) in Children with Autism Spectrum Disorder

Annex IV

Approved Fund for Innovation, Technology, and Social-wellbeing 2021
(Sep 2021 – Aug 2023)

Principal Investigator	Project Title
Dr Hung Keung Department of Cultural and Creative Arts	Novel Interactive and Audible 3D Chinese Characters for People with Special Needs: “An Inclusive Design and Educational Workshop”
Dr Leung Chi-hin Department of Cultural and Creative Arts	Innovating Music for Everyone: Music Creation and Performance with e-Orch
Dr Kevin Chan Ka-shing Department of Psychology	Mindfulness-based Stigma Stress Reduction Programme for Children with Neurodevelopmental Disorders and their Parents
Dr Anna Kam Chi-shan Department of Special Education and Counselling	Screening for Mild Cognitive Impairment, Dementia, and Hearing Loss in Older Adults in the Community with Special Automated Audiological Assessments

Annex VList of Patent Application in 2021/22

Type	Inventor List	Name of Patent	Serial Number of Patent	Country/Region Granting the Patent	Date of Application/Grant
Patent application	Professor Rudolf WU Shiu-sun Department of Science and Environmental Studies Dr Vincent Ko Chi-chiu, Professor Roy Vellaisamy & Dr Jill Chiu Man-ying (external partners)	Apparatus, System, Sensor and Method for Determining Dissolved Oxygen Content in a Medium 用於測定介質中的溶解氧含量的裝置、系統、傳感器和方法	Application No.: 2021109323 86.0	China	2021-08-13
Patent application	Dr Song Yanjie Prof Philip Yu Leung-ho Department of Mathematics and Information Technology Prof John Lee Chi-kin Department of Curriculum and Instruction	A System and Method for Animating An Avatar in a Virtual World	Application No.: 3202205547 7.0	Hong Kong	2022-06-20
Patent application	Dr Hung Keung Department of Cultural and Creative Arts	An Interactive System and a Method for Assisting a User to Meditate Using the Interactive System	Application No.: 3202205560 8.0	Hong Kong	2022-06-22

Annex VIEASE Fund Winning Teams - 2021/22

#	EASE Fund Team	Team Summary
1	CanToLearn Limited*	The team is an App & Website Platform - Cantonese learning tool for learning Chinese as a Second Language in schools, workplaces and homes. An all in one language empowerment resource with a learning management system. They use the inductive approach and gamification of communicative language teaching (CLT) with collaborative crowdsourcing using Design Thinking.
2	Downstairs Limited*	The team is an online shopping platform to help people from the same community to purchase grocery products in a much cheaper price by order gathering and community-based delivery service provided.
3	FLAIR Sports Technology Limited*	The team develops aerobic gymnastics shoes for athletes who have high demand in movement performance. With protective, movable & affordable trainers, they apply stretchy & supportive materials with shoes design-based biomechanics.
4	HeadSet Limited*	The team aims to develop a cognitive training app catering to 3-6-year-old children. Underpinned by AI technology, the team addresses the underserved area of cognitive development in early childhood development. Uniquely, the app combines device-driven interaction with physical movement & real-world action and provides analytics supporting development.
5	IC Edverse Limited*	The team is an immersive learning platform to help secondary students dive into different 3D worlds, to experience different roles, perform situational tasks and get instant feedbacks using the latest VR technology. It is the first platform that brings local curriculum to metaverse.
6	Keweya Education Technology Limited*	Our one-stop online career platform, Keweya, is shaping the virtual career world for students. By experiencing the bite-sized simulation of work interactively and with all-rounded career information, youths can be nurtured as best fit talents for corporates in the near future.
7	NerOcean Limited	The team builds up the Nerve of the Ocean by developing a new generation of dissolved oxygen sensors using replaceable photo-sensing film to provide a cost-effective solution for sustainable environmental monitoring and management.
8	Pink Dolphin Academy Limited*	The team offer female-exclusive swimming classes and hydrotherapy for women, especially those with ethnic minority backgrounds, to promote sportsmanship, accessibility and

		inclusivity in aquatic sports in a female-friendly, culturally and linguistically diverse environment at affordable prices.
9	Readily Limited*	The team focus to design a teaching software, aiming to help tutors automatically generate English reading comprehension questions from any selected passages that suit students' interests and abilities with AI technology, to make learning English fun again.
10	Street Law Hong Kong Development Limited*	The team is dedicated to empowering the community by localising, simplifying and gamifying legal education.
11	TacklEd Innovation Limited*	The team aims to provide an immersive gamified learning platform for students to learn STEM with joy, empowers students to be independent“Maker” in problem-solving.
12	The Anthropocene Limited*	The team aims to facilitate STEM and sustainability education by using a new interdisciplinary framework, which explains the world from the beginning of the universe to the present world and extrapolates to our future, through a curiosity-driven, evidence-based, understanding-oriented approach.
13	Trigger Lab Limited*	The team is a mobile app that caters the needs of people with attention deficit, anxiety, stress, sleep disorder and purposeless with AR technology, EMI intervention and Expressive Art Therapy that is recognised by WHO. Through the app, user can set their own Body-Mind-Spirit Gym plan in a scientific way.
14	WinkyBuddy Limited	The team is providing emotional fun learning kits and animation to help 4-8 years old ADHD children and parents who do not know how to deal with themselves and kids' emotions to have fun with emotions, within a supportive community and affordably in a scientifically research-based approach.

**Supported by Funding Scheme for Youth Entrepreneurship in Guangdong-Hong Kong- Macao Greater Bay Area” under Youth Development Fund (YDF) of Home and Affairs Bureau.*

EASE Fund (2021-2022) Special Awards Winning Teams

#	Special Award	EASE Fund Team
1	The Grand Jury Award	IC Edverse Limited
2	The Best Presentation Award	IC Edverse Limited
3	Social Impact Award	Street Law Hong Kong Development Limited
4	Innovative Award	IC Edverse Limited
5	Technology Excellence Award	Readily Limited

Annex VIIHighlighted External Achievements of EdUHK Startups - 2021/22

EdUHK Start-up	Nature of Business	External Achievement
Edge Support Association	Matching platform of special education services	<ul style="list-style-type: none"> • Received a \$5M commercial support for a collaborative project with EdUHK
Lighten Dementia	Gamified cognitive training	<ul style="list-style-type: none"> • Won the Inno Impact organised by The Hong Kong Federation of Youth Groups (\$200k) • Gold Medal at International Invention Innovation Competition in Taiwan (IIIC 2021) • Bronze Medal at the 48th International Exhibition of Inventions of Geneva
KreativeLab	e-Music education	<ul style="list-style-type: none"> • Participate in International Conference on Music Education Technology 2023
Omakidz Conception	Parent-child drama package (Project Earthmelon)	<ul style="list-style-type: none"> • Won the Young Startup Pioneer in GBA of The Hong Kong Federation of Youth Groups (\$600k)
PoSENTial Talent Development	Training classes for SEN students	<ul style="list-style-type: none"> • Signed an agreement with the Centre for Special Educational Needs and Inclusive Education (CSENIE) at EdUHK for collaboration on conducting shadow coach courses
Wubuntu	China-Africa Intercultural learning	<ul style="list-style-type: none"> • Won the Young Startup Pioneer in GBA of The Hong Kong Federation of Youth Groups
Bridge AI	Distance learning system for SEN students	<ul style="list-style-type: none"> • Awarded the <Futuremaker of the Year 2021> by Asia Social Innovation Award (ASIA); and • Won a Smart People (Smart Education and Learning) Certificate of Merit, with his partner ASTRI, in the Integrated Intelligent Intervention (3i)-Learning System at Hong Kong ICT Awards 2021. • Champions, Timely Impact Award, Youth Co:Lab HKSAR Winners and using “Kinnectus: Connect Us” as their project name in HKSEC 2021-22
Neurodissey Association 心腦歷情	Promote well-being and boost physical, cognitive and psychosocial development of SEN kids	<ul style="list-style-type: none"> • 1st Runner-up, Social Ambassador IP Award (Youth Co-Lab Summit observing teams) in HKSEC 2021-22
NerOcean	Biotech (Dissolved oxygen sensors)	<ul style="list-style-type: none"> • HKSTP Incubation Program HKSTP • CityU HKTech 300 Seed Fund • CityU HKTech 300 Angel Fund



International Award Winning Projects in 2021/22

Annex VIII

2022		
Project Title	Principal Investigator(s)	Award(s)
Special Edition – Inventions Geneva Evaluation Days 2022 (Mar)		
Total no. of projects: 6	Total no. of awards: 6	
A New Generation of Dissolved Oxygen Sensor Using Replaceable Photo-sensing Film	Prof Rudolf Wu Shiu-sun <i>Department of Science and Environmental Studies</i> <i>External partners Dr Vincent Ko Chi-chiu, Dr Ron Ng Chi-on, Prof Roy Vellaisamy, Dr Jill Chiu Man-ying</i>	Silver Medal
Integrated Intelligent Intervention (3i)-Learning System	Bridge AI Limited Mr Victor Wong (Student of EdD)	Silver Medal
Reimagining Music Learning with e-Orch	Dr Michael Leung Chi-hin <i>Department of Cultural and Creative Arts</i>	Silver Medal
UNISON: Unpaired Cross-lingual Image Captioning	Prof Philip Yu Leung-ho <i>Department of Mathematics and Information Technology</i> <i>External partners Ms Gao Jiahui, Ms Zhou Yi, Dr Shafiq Joty, Dr Gu Jiuxiang</i>	Silver Medal
Lighten Dementia Game Set (Donut, Tea Bag, Fly)	Lighten Dementia Limited Miss Christine Chan (Alumna of PGDE (Primary))	Bronze Medal
Shopgrouper – An Online Product Search Engine that Creates Intelligent Personalised Shopping Experience	Shopgrouper Company Mr Dicky Kwok Wing-cheung, Mr Lam Yick-sun (Alumni of BEd ICT) Dr Henry So Chi-fuk <i>Department of Mathematics and Information Technology</i>	Bronze Medal

2021		
Project Title	Principal Investigator(s)	Award(s)
International Innovation and Invention Competition in Taiwan 2021 (Oct)		
Total no. of projects: 5	Total no. of awards: 5	
The Chinese Inventory of Children's Socioemotional Competence (CICSEC)	Prof Kevin Chung Kien-hoa, Dr Ian Lam Chun-bun <i>Department of Early Childhood Education</i>	Gold Medal
Drug-Related Attentional Bias in Drug Abusers and Rehabilitated Drug Abusers	Professor Leung Chi-hung <i>Department of Special Education & Counselling</i> Co-investigators: Mr Chao Chac-kei Integrated Centre for Wellbeing; <i>External partner Mr Chan Hiu-fai</i>	Gold Medal
CKC Strokes – An Online Practice Tool for Chinese Strokes Writing	Dr Tse Ka-ho <i>Department of Chinese Language Studies</i>	Gold Medal
Lighten Dementia Game Set (Donut, Tea Bag, Fly)	Lighten Dementia Limited Miss Christine Chan (Alumna of PGDE (Primary))	Gold Medal
A Mouthpiece with a Supporting Windway for Vertical Flutes	Dr Koji Matsunobu <i>Department of Cultural and Creative Arts</i>	Silver Medal
International Invention Innovation Competition in Canada 2021 (Aug)		
Total no. of projects: 5	Total no. of awards: 10	
VocabGO – An Augmented Reality English Vocabulary Learning App	Dr Song Yanjie, Dr Lai Yiu-chi, Dr Alpha Ling Man-ho and Mr Wu Kaiyi <i>Department of Mathematics and Information Technology</i> <i>External partners Dr Walter Ng Wing-shui and Prof Hiroaki Ogata</i>	Gold Medal, Organiser's Choice Award
Audio-Tactile Chinese Characters: Bringing Multisensory & Novel Learning Experience to the Visually Impaired	Dr Hung Keung <i>Department of Cultural and Creative Arts</i>	Gold Medal, Best 10 Invention Designs Award
Tree Assessment for Life Education (TALE) Project	Professor Jim Chi-yung, Dr Alice Chow Sin-yin <i>Department of Social Sciences</i>	Gold Medal, Special Award

	Professor John Lee Chi-kin, TALE project team <i>Centre for Religious and Spirituality Education</i>	
The Chinese Inventory of Children's Socioemotional Competence (CICSEC)	Prof Kevin Chung Kien-hoa, Dr Ian Lam Chun-bun <i>Department of Early Childhood Education</i>	Silver Medal, Special Award
Dramaflow – Ideas Generation Dices for Planning Process Drama Lessons	Dr Pansy Tam Po-chi <i>Department of Early Childhood Education</i>	Bronze Medal, Best 10 Woman Inventors

2021/22 Outstanding Performance in Knowledge Transfer

Team Award

Centre for Special Educational Needs and Inclusive Education

Professor Kenneth SIN Kuen-fung

Director, CSENIE / Professor, Department of Special Education and Counselling

Professor John LEE Chi-kin

Vice President (Academic) and Provost

Professor LO Sing-kai

Co-Director, CSENIE / Chair Professor, Faculty of Liberal Arts and Social Sciences

Dr YANG Lan

Co-Director, CSENIE / Assistant Professor, Department of Curriculum and Instruction

Dr Eva CHUNG Yin-han

Co-Director, CSENIE / Assistant Professor, Department of Special Education and Counselling

Individual Award

Dr LEUNG Chi-hin

Assistant Professor, Department of Cultural and Creative Arts

Individual Award

Dr Margarita PAVLOVA

Associate Professor, Department of International Education

Annex X

Summary of Performance Indicators

Performance Indicators for Knowledge Transfer Activities			2020/21 (1/7 – 30/6)	2021/22 (1/7 – 30/6)
1	Continuing Professional Development (CPD) Courses	Number of CPD courses	41	29
		Income from CPD courses	\$14,173,590	9,875,566
		Number of key partners	41	45
		Number of student contact hours	8,700	38,945
2	Local/ International Professional Conferences	Number of local/ international conferences	32	59
		Income from conferences	\$2,257,171	\$805,060
		Number of key partners	65	102
		Number of presentations	872	1,418
3	Professional Seminars/ Workshops	Number of professional workshops/ seminars	381	339
		Income from seminars/ workshops	\$569,760	\$617,243
		Number of key partners	460	321
4	Commissioned/ Contract Projects	Number of commissioned/ contract projects	135	125
		Income from projects	\$104,649,853	\$106,382,790
		Number of key partners	549	419
5	Partnership Projects	Number of partnership projects	98	88
		Income from partnership projects	\$20,875,882	\$29,354,160
		Number of key partners	481	373
6	Consultancies	Number of consultancies	37	31
		Income from consultancies	\$1,152,871	\$1,324,075
7	Professionals Engaged in Academic/ Professional Programmes	Number of programmes involved	43	88
		Number of teachers engaged	121	74
		Number of principals engaged	147	97
		Number of other professionals engaged	121	136
8	Commercialised R&D Products and Intellectual Properties (IPs)	Number of commercialised R&D products/ IPs	46	37
		Income from the R&D products/ IPs	\$1,222,316	\$2,851,280
9	Social, Community and Cultural Engagement	Number of public lectures/ symposiums/ exhibitions	385	335
		Number of performances and exhibitions of creative	68	35
10	Staff Engaged as Professional Consultants or Members of External Advisory Bodies	Number of staff engaged	189	164
11	Student Engagement	Number of student internships/ placements	3,188	3,100
12	Publicity or Media Exposure	Number of publicity or media exposure related to KT, including print, on-line and electronic media	784	886
13	Nexus between Research and Teaching	Number of academic staff using research in teaching/ course activities	259	183
		Percentage of academic staff using research in teaching/ course activities	96.3%	92.9%
		Number of academic staff using teaching as research	154	151
		Percentage of academic staff using teaching as research	57.2%	76.6%
14	Publications with Local and Regional Impacts ^{Note 1}	Number of publications directly relevant to improvement, innovation and development of professional/ educational practices/ policy development	992	1014

Notes: All the incomes generated are in HK\$.