





Annual Report on Recurrent Funding for Knowledge Transfer 2020/21







Submitted to University Grants Committee

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# 1. EXECUTIVE SUMMARY

It is an old but still occasionally repeated accusation that the academic world is an "ivory tower", disconnected from the wider community. In most practical disciplines in today's world that description does not apply. Universities and colleges such as EdUHK, funded by the community, are at the cutting edge of research and analysis, and the results of that research should inevitably be shared with the society that supports them.

Central to EdUHK's philosophy is the idea that research excellence is achieved through a combination of scholarship, professionalism, and service to the broader community through Knowledge Transfer (KT) and application of that knowledge.

During the 2020/21 academic year, COVID-19 has continued to bring challenges and interruptions to educators, researchers, and students, just as it has made life difficult for the communities around us. We have remained steadfast in our commitment to innovation, invention, and insight. We are committed to creating inspiring and innovative research that benefits society, to an entrepreneurship culture that benefits both education and social services, and to better support our research capabilities to the protection and promotion of intellectual property.

We can be proud that our achievement in these areas has continued to receive affirmation and recognition, both locally and internationally, in the 2020/21 academic year. Internationally, the University obtained recognition through its participation in three notable international innovation exhibitions: the 2021 Special Edition – Inventions Geneva Evaluation Days, the 11th International Innovation and Invention Competition in Taiwan, and the International Invention Innovation Competition in Canada. At these events, fifteen of our innovations, including five in Assessment Technology, seven Technologized Learning Tools, one in Life Education, one in Mindfulness Training Equipment, and one in Construction Material, received 29 international invention awards.

Internally, the University continues, through its own awards and prizes, to recognize, encourage, and reward staff who generate outstanding KT activities. These awards include the President's Award for Outstanding Performance in KT, Impact Case Study Prize and Knowledge Transfer Prize by the Faculty of Liberal Arts and Social Sciences, and the Dean's Research Award: Research Engagement and Impact by the Faculty of Education and Human Development.

To maximise the practical, and even commercial, advantages of our research, EdUHK fosters an entrepreneurial culture within the University community through the Education And Social Entrepreneurs (EASE) Fund Scheme launched in 2018, entrepreneur workshops, and through developing networking and marketing opportunities. To this end, the KT Sub-office seeks funding support from the HKSAR government and NGOs. In 2021, EdUHK was selected as one of sixteen organisations to receive funding from the "Funding Scheme for Youth Entrepreneurship in the Guangdong-Hong Kong-Macao Greater Bay Area (GBA)", part of the "We Venture" project of the Home Affairs Bureau's Youth Development Fund (YDF) officially launched on 26th February 2021. In the coming three years, we will receive funding of over HK\$9M to provide entrepreneurial support and incubation services. In 2020/21 and 2021/22, with this support, the KT Sub-office continues to enhance "The EdUHK Education And Social Entrepreneurs (EASE) Fund — the GBA Youth Entrepreneur Funding Scheme".

This report summarises EdUHK's key KT and entrepreneurship activities, achievements, and developments in the 2020/21 academic year.

# 2. HIGHLIGHTS OF THE YEAR

The University is very grateful for the support of the University Grants Committee (UGC) in earmarked funding for our KT. Our KT activities continue to surge and diversify owing to funding from both UGC and EdUHK. These financial resources have enabled EdUHK to continue supporting and promoting a wide range of KT activities at both University and academic unit level in the reporting year.

# 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. This sub-office forges connections and collaborations between the University and the wider community. Internally, the KT Sub-office supports academics and applied research units and advises them on developing intellectual property. Externally, it reaches out to potential partners to initiate KT collaborations and commercialisation of R&D projects.

The KT Sub-office role in reinforcing the University's KT activities is crucial. Over the years, it has contributed to establishing a solid infrastructure for the development, protection, and licensing of EdUHK intellectual properties (IPs), cultivating outside recognition of our research efforts, and, ultimately, forging a new KT culture community. All these contributions have helped EdUHK's KT move forward.

The KT Sub-office was expanded from three teams to four in the 2020/21 academic year to facilitate the growth of KT activities within the EdUHK community. The responsibilities of those teams are: "IP Development and Protection", "IP Promotion and Licensing", "Entrepreneurship Development", and "Administration Support". The expansion of the KT Sub-office is an essential step towards extending EdUHK's capacity for innovation and maximizing the social impact of its research. Executive support for the KT Sub-office enables the KT Director and the Committee of Research and Development (CRD) to continue monitoring the University's implementation of KT activities over the next three years.

#### 2.1.2 Funding Schemes

The University continued to provide internal funding schemes in 2020/21, allowing academic staff to further develop innovative, original, and compelling KT initiatives that benefit the school sector, industries, and the wider community.

#### 2.1.2.1 KT Funds Scheme



Due to the effectiveness of the KT Funds Scheme as demonstrated in past academic years, the University has continued to provide the Scheme in the 2020/21 academic year to support academic units' pursuit of applied R&D, implementation of innovations, and development of KT initiatives and

activities. A working task group composed of the CRD members and the KT Director coordinates grant applications. In the reporting period, a total of nineteen applications were received. Eight were supported. A list of funded projects is set out in Annex II. The scheme is to continue in the next academic year.

# 2.1.2.2 Innovation & Technology Fund



As technology drives innovation and KT advancement, in May 2020 the KT Sub-office launched a new funding scheme, namely the Innovation & Technology Fund (iTech Fund), to support academic/ teaching staff in converting ideas (research results) into practical reality (technological innovations). In the academic year covered by this report, thirteen applications were received, of which four were supported in July 2020. Due to its demonstrated effectiveness, this scheme is to continue. A list of funded projects is set out in Annex III.

# 2.1.2.3 Fund for Innovation, Technology, and Social-wellbeing



The KT Sub-office gained support from The Social Innovation and Entrepreneurship Development Fund (SIE Fund) of the HKSAR in March 2021 to launch the "Fund for Innovation, Technology, and Social-wellbeing" (FITS) scheme, the aim of which is to fill the gap between proof of concept and practical models of social innovation initiatives in EdUHK.

The scheme supports applied research for identifying capabilities, opportunities, and needs in the community, developing models and best practices for tackling poverty and social exclusion and fostering well-being and cohesion through social innovation.

The FITS projects will identify social issues and facilitate the formulation of strategies, and, most importantly, produce practical and sustainable solutions.

The SIE Fund is initially supporting us with HK\$2,000,000 to run the first cohort of FITS. EdUHK researchers can submit proposals related to local social issues: 1) Education; 2) Public Health; 3) Art and Culture or 4) Social Reconstruction. The project period will be 12 to 24 months. Sixteen project proposals were received. Applicants will be informed of the results in August 2021.

#### 2.1.3 Intellectual Properties (IPs)

#### 2.1.3.1 Innovations Licensing

Education technology, education innovation, and social innovation are the strategic foci of KT in EdUHK. Since 2019, the University has licensed six IPs to educational business entities. Three of these commercialisation licenses were concluded in this reporting period.

One alumnus, who won the EdUHK Education And Social Entrepreneurs Fund (EASE Fund) 2018/19, has licensed the IP of "透過繪本教學提升幼兒的品格" of the Department of Early Childhood Education (ECE). The company is adopting the IP to their commercially available storybooks.

In October 2020, an exclusive license of "A Literacy Play Kit for Supporting

Young Children's English Learning" from the ECE and Department of Psychology was granted to one local manufacturer. The company commercialised has the innovation **English** as an learning game. The products were placed on the local market in Nov 2020.



The KT Sub-office concluded a license with the KreativeLab HK Limited, one of the EASE Fund 2019/20 winning teams, to commercially develop "A system for creating a grid notation music score" (Hong Kong Patent: HK1259119) developed by Dr Leung Chi-hin of the Department of Cultural and Creative Arts. The license enables the start-up to develop an innovative form of music education.

#### **2.1.3.2** Patents

The Central Funding for Patent Application (CFPA) was set up in 2018 to support academics and researchers in protecting their valuable inventions through patent applications. A patent application is not just a means to properly protect EdUHK's invention; it is also a way to capitalize on EdUHK's knowledge and transfer such knowledge to society via patent licensing. In 2019, the KT Sub-office obtained funding support from the Innovation and Technology Commission (ITC) to enhance technology transfer capability, including patent application. During the reporting period, EdUHK filed five patent applications. They are listed in Annex IV.

# 2.1.3.3 KT Sub-office joined the IP Manager Scheme of HKSAR Intellectual Property Department

To meet the development needs due to increasing demand for patent applications, the KT Sub-office joined the IP Manager Scheme of the HKSAR Intellectual Property Department in December 2020. The scheme provides comprehensive and in-depth IP training courses to the KT Sub-office IP management team. The latest information on IP has augmented the team's expertise and skills so it can better support EdUHK researchers.

# 2.2 Fostering Entrepreneurship

The setting up of the EdUHK Education And Social Entrepreneurs Fund (EASE Fund) Scheme in 2018 was a milestone in nurturing innovation and entrepreneurship within the EdUHK community.

During the reporting period, the KT Sub-office has allocated extra resources to enrich the scheme. These include multiplying the resources with matching grants from the HKSAR government, co-developing new schemes with NGOs, organising entrepreneur workshops by engaging guest speakers from the local start-up community, and creating networking/ marketing opportunities for EASE Fund teams as follows:

#### 2.2.1 Entrepreneurship Workshops

The KT Sub-office has organised workshops for members and groups within the EdUHK community at different stages of their entrepreneurial journeys. In the reporting period, two workshops, 64 business clinics, and 46 consultation sessions were conducted:



#### The Entrepreneur Skills Development Series

This series of two workshops with 64 business clinics aimed to equip (potential) EASE Fund applicants with essential skills as entrepreneurs. Industry veterans were invited as guest speakers/ instructors in their areas of expertise. The workshops on turning ideas into business plans drew close to 107 EdUHK students, alumni, and staff as participants.

#### Consultation Sessions

To provide support for application, business planning, team formation, funding opportunities, etc., the KT Sub-office organised 46 consultation sessions supporting 23 teams and linked those teams with EdUHK scholars as their advisors.

#### 2.2.2 EdUHK Supports Start-up Entrepreneurs to Pursue Their Dream

EASE Fund 2019/20 received about 40 applications. The KT Sub-office held experience-sharing sessions with industry experts and entrepreneurs and arranged practitioners in social enterprises to be mentors for participating teams. The teams also attended about 120 hours of intensive workshops on entrepreneurial skills for their start-up business.

After two rounds of competition, nine teams entered the "Online Final Pitching of the Education and Social Entrepreneurs Fund (EASE Fund)" on 25th February 2021. Close to 140 EdUHK students, staff, alumni, and representatives from NGOs and business communities participated in the event. The KT Sub-office was honoured to invite Mr Herbert Chia, Venture Partner of



Sequoia Capital China Fund and former VP of Alibaba (China) Co., Ltd; Ms Clara Chan, Vice-Chairperson of Hong Kong SDG Hub & CEO of Lee Kee Holdings Ltd; and Ms Susanna Chiu, Council Treasurer of EdUHK and Past President of HKICPA to join the judging panel.

After considering the innovation and creativity, feasibility and sustainability of the business model, professional capability, and social impact of individual proposals, the panel selected **five teams to receive seed grants of HK\$150,000 each** to realize their dreams, they are:

- Lighten Dementia: Offers fun, interactive, and localised cognitive training games for dementia patients, caregivers and local community centres.
- KreativeLab e-Orch and The Grid Notation: Facilitates and speeds up music learning for non-experts
- Earth Melon Project: A parent-child drama concept game package with drama and ideas from professionals.
- PoSENtial: Interest class for children with special educational needs: Tailors interest classes for high-functioning children with special educational needs.
- Wubuntu Intercultural Empowerment to Bring Africa and China Closer: Equips youth in Hong Kong & the Greater Bay Area with African intercultural knowledge and skills.

The University held a signing ceremony on 29th May 2021 for EASE Fund winning teams to kick off their start-up projects officially.



#### 2.2.3 EASE Fund 2019/20 – Wofoo Sustainability Development Goal (SDG) Award

Wofoo Social Enterprise supported the EASE Fund 2019/20 to set up a special prize entitled "EASE Fund 2019/20 – Wofoo Sustainability Development Goal (SDG) Award" to recognize three EASE Fund teams dedicated to meeting United Nation SDGs and/or combating climate change. The awardees are:

Gold: Earth Melon Project
Silver: K Farm Social Enterprise

Bronze: Wubuntu - Intercultural Empowerment to Bring Africa and China Closer

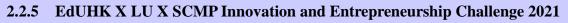
# 2.2.4 Funding Scheme for Youth Entrepreneurship in the Guangdong-Hong Kong-Macao Greater Bay Area under Youth Development Fund (YDF) from Home Affairs Bureau (HAB)

EdUHK was selected as one of sixteen organisations to receive the "Funding Scheme for Youth Entrepreneurship in the Guangdong-Hong Kong-Macao Greater Bay Area" under YDF of HAB. Funding of over HK\$9M will be provided to EdUHK to provide entrepreneurial support and incubation services in the coming three years. The enhanced EASE Fund Scheme in 2020/21 and 2021/22 will be named "The EdUHK Education And Social Entrepreneurs (EASE) Fund — the GBA Youth Entrepreneur Funding

**Scheme**" and is under the "We Venture" project of YDF that was officially launched on 26th February 2021.

The EASE Fund Scheme for the current academic year was launched on 17th May 2021 and called for applications till 17th July 2021 with the following enhancements:

- i. increased seed funding, to a maximum of HK\$600,000;
- ii. partnership with co-working spaces/entrepreneurial bases for better incubation support;
- iii. more workshops from experts in the education sector, including EdUHK researchers; and
- iv. information on the supporting policies and market opportunities in the Greater Bay Area.





The KT Sub-office partnered with Lingnan University (LU)'s Entrepreneurship Initiative and South China Morning Post (SCMP) to jointly organize the "EdUHK X LU X SCMP Innovation and Entrepreneurship Challenge 2021". This challenge was an inter-disciplinary and inter-institutional innovation and entrepreneurship development programme for students and alumni from EdUHK and LU to generate innovative ideas related to "Redesign

Education" and/or "Digital Transformation".

#### 2.2.6 EdUHK Incubated Start-ups' Achievements in External Competition

Apart from the internal schemes, the KT Sub-office also supported the participation of EdUHK entrepreneurs in external start-up contests with the objectives of expanding their networks; gaining access to potential investors/partners/customers; building up their entrepreneurial skills, and acquiring further funding.

# For instance,

Start-up	External Competition	Achievements
Bridge AI, founded by Victor Wong, a Year 1 student on the Doctor of Education (EdD) programme	JUMPSTARTER IdeaPOP! 2021, a pitching competition organised by the Alibaba Entrepreneurs Fund for local university students	Champion
Azadi Food	Alibaba Ideapop Competition 2021	Selected in the top eight (competition is ongoing)
Abraham Kok Yu-hang, a final year student in Bachelor of Health Education (Honours) and retired triathlon athlete	The Social Innovation and Entrepreneurship Development Fund (SIE Fund) organized by BEHub	Abraham's team was granted funding approval for starting up his project - "Hong Kong Special Needs Sports Institute".
Wubuntu, EASE Fund 2019/20 - Wofoo SDG Awardee	Corporate-backed venture support programme by University of Cape Town	Top 10
ProjectLearnt, EASE Fund 2018/19 awardee	PolyU Good Seed Competition 2020 funded by SIE Fund	Awarded HK\$200,000
Shopgrouper, EASE 2019/20 not-selected team	The Cyberport Creative Micro Fund – Hong Kong Young Entrepreneur Programme	Awarded HK\$200,000
K Farm Social Enterprise	The 7 <sup>th</sup> Innovation and Entrepreneurship Competition of University Students of Guangdong, Hong Kong, Macao and Taiwan 2020	Semi-finalist
Lighten Dementia, EASE Fund 2019/20 awardee	Inno Impact organised by The Hong Kong Federation of Youth Groups	Awarded HK\$200,000
EarthMelon, EASE Fund 2019/20 awardee	Climate Action Recognition Scheme 2020-21 organised by Hong Kong SDG Hub of Wofoo Social Enterprises	Entered the Grand Final

# 2.3 Making Differences

#### 2.3.1 Create Impacts in the Community

The University aims to use our fundamental research results to generate significant educational development impacts and enhance access to quality education in the community. The following is a highlight example.

# 2.3.1.1 Kindergarten-Primary Bridging Project 360

The pandemic has affected kindergarten students' social and emotional development and independence, as they have had to attend classes online and spend more time at home due to social distancing. To facilitate their transition



from kindergarten to primary school, the University launched a new online project in May 2021, providing free learning resources and extensive information for parents and children.

EdUHK's "Kindergarten-Primary Bridging Project 360" comprises three parts: video series for parents, animated videos for parents and children, and online meetings with parents. In the project, jointly presented by ECE and the Educational Innovation Leadership Project under the KT Sub-office at EdUHK, primary school principals, psychologists and education scholars share their professional expertise and insights. Details are as follows:

#### **Video series for parents**

There are 28 videos in total covering "Learning", "Adaption", and "Mind". In the videos, professionals share the challenges children will face when moving up to primary school and give advice to their parents.

#### **Animated videos for parents and children**

A total of 25 animated videos, covering themes on children's adaptation to the new environment, social life and self-care, are available on collaborative partner EVIGarten's online learning platform, and accessible free of charge. The content covers peer relationships and getting along with people, as well as time and money management. Each video is supplemented with targeted teaching guidelines and engaging exercises designed for parents and children.

#### **Online meetings with parents**

Five experienced primary school principals conducted online meetings with parents, with an in-depth discussion on different topics regarding the move up to primary school.

As of June 2021, a total of 150 schools, 10,000 parents and 5000 students have benefited from the project.

#### 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 tender/ contract research and consultancy.

#### 2.3.2.1 Tenders/ Contract Research and Consultancies

In the 2020/21 academic year, the KT Sub-office supported 29 tenders, contract research and consultancy applications, and received a total of HK\$8,605,080 and US\$85,920 for 12 tender projects.

#### 2.3.2.2 Research Publications

Among the 876 refereed research outputs in the 2020/21, 41% (358) were related to the various school education sectors. These research outputs include early childhood, primary, secondary, technical and special education and were disseminated across different sectors focussing on teacher education and education disciplines. A total of 57% (539) of the outputs were related to complementary discipline areas, such as the social sciences, humanities and languages, health and environmental studies, and other professional and vocational subjects. These refereed outputs, and those produced in earlier years, provided a substantial new knowledge base for KT to provide insights into practical improvement, professional innovation, and education development in Hong Kong and beyond.

#### 2.3.2.3 EdUHK Research Repository

Apart from its use for extensive KT activities, the EdUHK Research Repository (https://repository.eduhk.hk), an initiative coordinated and promoted by our University Library, has been part of a strategy to transform education and the teaching profession through research. The repository allows the direct transfer of knowledge, effort, and results of academic research by EdUHK staff members to potential users over the Internet. The repository also acts as a channel between the University and the public for sharing knowledge and ideas.

Materials deposited in the database include scholarly books, book chapters, journal articles, conference papers, and Teaching Development Grants reports. As of 30th June 2021, the repository has collected 37,465 records of citations dating back to 1994, all of which have been validated by the Library.

Links to full-text are provided in 14,976 records, 5,361 of which can be accessed by the public. In addition, 53% of the records are provided with abstracts. A total of 284,298 visits were recorded from July 2020 to June 2021, and 205,012 users were recorded.

#### 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 the development of high-quality education practitioners in Hong Kong and the region.

#### **STEM Education**

In this reporting year, we continued to organise CPD courses to introduce the principles and practices of STEM education to secondary and primary teacher participants, with the goal of developing students' STEM literacy. These courses not only trace the origin and background of STEM education but also introduce various modes adopted to implement STEM education around the world (including the recent development of STEAM).

The Centre for Education in Environmental Sustainability organised "Provision of Training Service on Professional Development Programme to Support Teachers from Special Schools Implementing STEM Education in General Studies (2018/19)", which was completed in June 2021, and "Provision of Advisory Service on the Development of Learning and Teaching Guide of Implementing STEM Education Through General Studies in Special Schools (2019/20)", which was completed in Oct 2021.

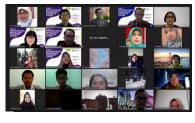
#### **Leadership Enhancement for Principals**

We also organised CPD courses to enhance leadership for serving principals, including the "Leadership Development Programme for Middle Leaders of Primary Schools (2019/20)", completed in September 2020, "Programme for

Leadership Enhancement for Serving Vice-Principals 2019/20" and "Programme on Legal Matters in the School Context for School Principals 2019/20", which were completed in October 2020, and "Production of e-Learning Packages for the Professional Development and Training of Principals and Teachers" under the "T-excel@hk" Project of the Education Bureau. Participants gained a profound understanding of how to develop global leadership perspectives beyond the school context and how to draw on the experience gained from the CPD courses to become more effective school leaders. These CPD courses enhanced the leadership of the profession.

A total of 588 principals and 3,731 teachers benefited from these CPD courses.

# 2.3.3.2 The 1st International KT Forum on language teaching and research



The Department of English Language Education (ELE) and The Association for the Teaching of English as a Foreign Language in Indonesia (TELFIN) jointly held the International Knowledge Transfer Forum (hereafter KT Forum) from 8th to 22nd August 2020. The KT Forum brought together researchers, education practitioners, policymakers, and graduate students from across Asia (and beyond) to engage in dialogue about language teaching and research.

More than 2,400 attendees, including researchers, in-service and pre-service language teachers, teacher educators, and graduate students from institutions in Indonesia and 20 other countries, participated in the KT Forum via online live streaming. The programme featured six keynote speeches delivered by researchers who are experts in technology in language education, second language acquisition and curriculum development, language policy, and an interactive Q&A session.

#### **Outcomes and implications for the KT Forum**

This three-week KT forum's main objective was to promote knowledge transfer and facilitate academic exchange at an international level. The event brought participants from 21 countries together to learn about various theories and research findings, which enable these stakeholders to better make informed decisions. The professional outcome for collaborating faculty was that it provided opportunities for joint presentations and expanded their record of expertise internationally. The KT Forum also offered multiple opportunities for career advancement for research assistant and students. The professional outcomes to EdUHK and ELE were also significant, as it has extended and strengthened ties and opportunities for future exchange with universities and organisations in Indonesia and other Asian nations of growing international importance. It has also raised the profiles of EdUHK and ELE in those regions.

One of the main outcomes of the KT Forum was that both ELE and TELFIN representatives recognised the value of this collaborating event. Both parties also agreed to continue close collaboration and partnership. In that regard, some initiatives are now under way: 1) we expect, soon, to sign a memorandum of understanding between ELE and TELFIN (and perhaps one national university in Indonesia), and 2) to organise a 2nd KT Forum. ELE will continue to enhance its region-leading role in the research and practice of English language education in Hong Kong and beyond through the KT Forum.

#### 2.3.4 Students 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. The students 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. There were 3,188 student placements and internships in 2020/21 in total.

# 2.3.4.2 Entrepreneurship and Social Innovation Culture

EdUHK has started to develop its own entrepreneurship culture, with implications for education and social services. Units within the University have organised entrepreneurship-related activities ranging from introducing the start-up concept, providing training, and sharing to support students in turning their aspirations into reality.

# 2.3.4.2.1 EdUHK Innovative Challenge 2021



In anticipation of the continuous impacts of COVID-19 and for the safety of EdUHK members and visitors, the Entrepreneurship and Innovation Education Unit (EIEU) of EdUHK Library organised the "EdUHK Innovative Challenge 2021" as a replacement of the annual EdUHK Student Fair that had initially been scheduled for early 2021.

The Challenge was open to all EdUHK students, either part-time or full-time.

Twenty-eight students/student groups submitted business plans on selling their products or services at an off-campus market. Twelve proposals scoring 75/100 or above were the winners of this Challenge.

#### 2.3.4.2.3 EdUHK Idea Contest



With the aim of nourishing entrepreneurship and innovation among students and to raise the awareness of EdUHK's framework of graduate attributes "PEER & I" (Professional Excellence, Ethical Responsibility & Innovation), EIEU organised the "EdUHK Idea Contest" in November 2020 on the theme "Starting a social enterprise to help people cope with the challenges raised by COVID-19 in the coming two years".

The Adjudication Panel selected the following three winning teams:

#### **Champion:**

Student Name: Tai Yan-wai and Tai Yan-oi

Title: 陶舒館 Clay House

# 1st Runner Up

Student Name: Victor WONG Chun-man

Title: Bridge AI - MOOC built for SEN students to cope with

COVID-19

#### 2<sup>nd</sup> Runner Up

Student Name: CHIU Wai Lam

Title: Speed Art & Food

## 2.3.4.2.3 EI Marketplace



"EI Marketplace 初創格仔舖" was an online-offline business consignment event organised by the University to encourage EdUHK students to develop their innovative and entrepreneurial spirit through an actual business operation.



Funded by the University Grants Committee (UGC), EI Marketplace replaced the "2020 Student Fair", which was postponed to 2021 due to the COVID-19 pandemic. It was a learning activity designed to help students develop entrepreneurial skills such as flexibility, adaptability, innovation, and resilience in adversity through running their consignment With hands-on experience, students established what fundamental skills they would require to obtain information, help and guidance, as well as the technical and ethical reasoning needed by entrepreneurs in the real world.

This event started in May 2020 and involved 17 teams of EdUHK students. The teams each set up a showcase box on EdUHK's Tai Po Campus and promoted their products or services via designated webpages on a dedicated website. They also practised face-to-face selling in the Lifestyle ShoppingFest, a

public fair organised by the Hong Kong Trade Development Council from 28th April to 2nd May 2021 at the Hong Kong Exhibition and Convention Centre.

# 2.4 Empowering KT Marketing

#### 2.4.1 InnoCarnival 2020

The KT Sub-office joined the Virtual InnoCarnival 2020 (23rd – 31st December 2020), an annual flagship event of the **HKSAR** Innovation **Technology** and



Commission to promote innovation and technology. This year, the EdUHK pavilion showcased four innovative technologies related to the conservation of Hong Kong's ocean and STEM education. Visitors could learn about marine biodiversity in Hong Kong, preservation of the underwater world, wastewater treatment, and STEM education through interactive learning games and videos.

# 2.4.2 "Knowledge Transfer at EdUHK" Booklet





To promote the University's research outcomes to outside parties for potential commercialisation, the Knowledge Transfer Sub-office published a book: "Knowledge Transfer at EdUHK – IP Licensing". It features twenty-seven innovative projects, ranging from a kindergarten play kit to an AI aided learning system. These highlighted projects have won awards or been nominated in different exhibitions and competitions in the past few years, where they have demonstrated EdUHK's success in technological integration. The book classifies the projects into 6 categories – Assessment; E-Learning Platform; Innovative Education – Art; Innovative Education – Language; Sustainability; and Wellbeing.

#### 2.4.3 KT Website

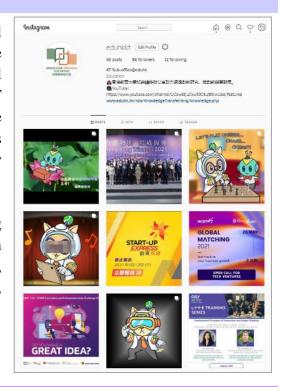
The KT website (http://www.eduhk.hk/rdo/KnowledgeTransfer/) continues to function as a channel for promoting KT activities. The website demonstrates the breadth of the University's KT activities, publicises our KT policies and guidelines, and highlights our commitment to excellence and shared good practices. It is also a channel for networking with internal and external stakeholders (e.g. researchers, experts, special interest groups, government, funding bodies, and education and business sectors) and opening the way for interaction and exchange of new ideas on KT.

The KT Sub-office is currently working on a project to revamp the website. The target is to launch the new website by December 2021.

#### 2.4.4 KT Stories on Social Media Platforms

The KT Sub-office launched a digital marketing campaign in the previous year. We launched an Instagram account as our official social media channel to promote the KT Sub-office and EdUHK innovations to the public. Additionally, EdUHK KT projects and innovations were featured on the new designated YouTube channel.

These platforms disseminate, in an entertaining way, the latest information about KT in EdUHK, including updates on KT activities, highlights/ side-stories of KT events, announcements, and EdUHK innovations.



#### 2.5 Awards and Achievements

# 2.5.1 Recognition of EdUHK Outstanding KT Activities/ Projects, Innovations and Technologies through Internal Awards

Awards are an incremental part of recognising excellence and driving innovation. The University has established a range of awards/ prizes to recognize, encourage, and reward staff who demonstrate the transfer of University-owned knowledge to society through outstanding KT activities. These awards/ prizes include the President's Award for Outstanding Performance in KT, Research Impact Prize by the Faculty of Liberal Arts and Social Sciences, and the Dean's Research Award: Research Engagement and Impact by Faculty of Education and Human Development. A list of faculties' award/ prize recipients of 2020/21 is at Annex V.

#### 2.5.2 President's Award for Outstanding Performance in Knowledge Transfer

The President's Award for Outstanding Performance in KT 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. Due to the Covid-19 pandemic, the 2019/20 presentation ceremony was held online on 27th May 2021, alongside the 2020/21 version.



2019/20 Outstanding Performance in Knowledge Transfer

#### **Team Award**

Department of Early Childhood Education

**Professor Kevin Chung Kien-hoa**, Chair Professor, Department of Early Childhood Education

**Dr Ian Lam Chun-bun**, Associate Professor, Department of Early Childhood Education

#### Team Award

CoolThink@JC Project Team **Professor Kong Siu-cheung**, Director of Centre for Learning, Teaching and Technology

**Professor Chiu Ming Ming**, Chair Professor of Analytics and Diversity, Department of Special Education and Counselling

**Dr Sun Daner**, Assistant Professor, Department of Mathematics and Information Technology



2020/21 Outstanding Performance in Knowledge Transfer

#### **Individual Award**

**Dr Kean Poon Kei-yan**, Assistant Professor, Department of Special Education and Counselling

#### **Individual Award**

**Dr Pansy Tam Po-chi**, Assistant Professor, Department of Early Childhood Education

# 2.5.3 Recognition of EdUHK Outstanding KT Activities/ Projects, Innovations and Technologies through International Awards



Many of EdUHK's innovations have harvested international awards. Throughout the year, the KT Sub-office pitched EdUHK innovations and technologies at numerous international invention exhibitions. Our 15 innovations won 29 international invention awards, including five for Assessment Technology, seven for Technologized Learning Tools, one for Life Education, one for

Mindfulness Training Equipment, and one for Construction Material. A list of award-winning projects in 2020/21 is set out in Annex VI.

# 2.5.4 EdUHK Award-Winning Innovations Salon – "Invent • Edu-novate • Cohesive Community"

To promote knowledge transfer, the University hosted the Award-Winning Innovations Salon (AWIS) on 5th March 2021, showcasing its 11 award-winning projects that had been recognised in international invention and innovation competitions in 2020. Areas covered by the innovations range from educational technology for language learners, SEN learners, and



educational practitioners to other research areas, such as arts and culture and environmental technologies.

AWIS is an annual event organised by the KT Sub-office to foster communication and stimulate collaboration among different sectors and the University by bringing together academics, educational practitioners, and industry experts. Themed "Invent • Edu-novate • Cohesive Community", the 2020 virtual Salon featured a series of online activities, including panel discussions and a virtual exhibition of the awarded projects.



#### 2.5.5 2021 Invention Geneva Evaluation Days

EdUHK excelled in the first-ever virtual edition of Geneva's Invention Expo, garnering seven awards, including two gold medals and five silver medals, setting the best record since it first participated in the competition. The inventors attended the celebration reception hosted by the Chief Executive on 17th May 2021.

Areas covered by the winning projects include mindfulness, education technology, language learning, drug rehabilitation, environmental education, and sustainable construction technology.





# 3. PERFORMANCE MEASUREMENT AND PERFORMANCE INDICATORS (PIs)

The outcomes of the KT activities conducted by different units of the University are closely monitored using PIs. 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 KT activities.

Compared with 2019/20, the University has seen gradual progress and improvement in different domains in 2020/21. Please refer to Annex VII for a summary of PIs.

# 4. LOOKING FORWARD

More than a year has passed since the COVID-19 pandemic began its relentless and devastating journey around the world. Vaccination campaigns and social interventions have slowed its spread, but more time is needed to bring it under control.

The disruptions to the lives and work of students, academics, and the broader community, have been significant. Many of these challenges will persist in the coming twelve months.

During the 2020/21 academic year, virtual learning and events became a new normal, compelling educational institutions to move teaching, activities, and events online. Nonetheless, along with other educational institutions, EdUHK has persisted in its mission: to inspire through its commitment to education, research, KT, and community service.

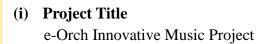
For the coming year, whatever the process or technology required, the University will encourage students, teachers, and administrators to prioritise ownership, creativity and research, the practical application of our work, and to better support our research capabilities to the protection and promotion of intellectual property.

We will continue to maintain, monitor, and expand our KT activities and events, and promote our innovative and entrepreneurial culture through collaborations with governments, enterprises, and international organisations.

The COVID-19 pandemic is just one of many challenges facing Hong Kong, and – indeed – the international community. EdUHK's commitment to education and social innovation will continue to equip our students and alumni with the innovative and entrepreneurial mindset to improve human wellbeing and to tackle new challenges as they arise.

#### Annex I-A

#### **Impact Case History**



# (ii) Name of Principal InvestigatorDr Leung Chi-hinDepartment of Cultural and Creative Arts

### (iii) Summary

Innovative Grid Notation is tailor-made for tablet music performance & creation, with specific instructions for the apps e-Orch and GarageBand settings such as virtual interface, scale, dynamic, articulation, etc. Unlike traditional staff notation, grid notation presents music in boxes with solfa names and signs. The boxes represent the sub-divided basic beats. With the easy-to-read music score, players can sight-read and play music directly and easily by using a tablet.

# (iv) Underpinning Research

Dr Leung published the "e-Orch Teaching Manual: Curriculum and Resources" in 2020 (1) to disseminate the research finding of his Early Career Scheme (ECS) to the education sectors; (2) to provide practical electronic orchestra (e-Orch) teaching design and resources to primary, secondary sectors and the community with the use of tablet device; (3) to demonstrate a comprehensive approach to e-Orch music notation – Grid Notation; (4) to provide a necessary technical setup plan of e-Orch; (5) to organise a professional



seminar/ workshop for in-service music teachers and community; and (6) to nurture a broader scope for future research.

#### (v) References to the Research

The research was presented at the 12th Asia-Pacific Symposium for Music Education Research and Apple Distinguished Educator Institute in July 2019. It will be presented at the 13th Asia-Pacific Symposium for Music Education Research in Tokyo in September 2021.

#### (vi) Details of Local/Regional and International Impact or Benefit

Since 2017, Dr Leung has collaborated with the Leisure and Cultural Services Department and the Hong Kong Association for Music Educators to curate a year-long education programme for primary and secondary schools with Grid Notation and tablet. It has been one of the most popular

programmes in the School Performing Arts in Practice Scheme. Over the years, the scheme has supported more than 30 schools and involved 600 students in establishing their e-Orch. 60 pieces for e-Orch were arranged, and more than 150 original student compositions created.

The impact was extended to the community in a collaboration between the Music Office and Dr Leung to design several innovative programmes for adults and kids in their centres, enabling all participants to perform and compose music whether or not they had any musical background. In 2021, the Music Office commissioned Dr Leung to compose two original compositions for e-Orch and ensembles that were featured in the concert "Music Office Ensembles X e-Orch" in the HK SciFest 2021. The concert also featured original compositions for e-Orch composed by two EdUHK undergraduate music students.



HK SciFest 2021: Music Office Ensembles X e-Orch Concert

The e-Orch Music Creation and Performance Professional Development Workshop for pre-service and in-service teachers was held in Hong Kong City Hall High Block in July 2020 and was broadcast live to audiences. Teachers were equipped with the pedagogical skills to apply Grid Notation with e-Orch. It has successfully reached more than 300 teachers and received positive feedback.



The Online Streaming Concert Recording Session with Professional Musician Mavis Lam on pipa and Pooi To Middle School e-Orch



Spinning Spectrum e-Orch Music Creation and Performance in Practice Project – Finale Performance cum Exhibition

The upcoming research entitled "Lowering the Barriers to Music-making: Investigating the Feasibility of Tablet Orchestra in the Teaching and Learning of Music Performance and Composition" will focus on the effectiveness of the Grid Notation.

In 2021, Dr Leung served as the consultant for KreativeLab and won the EdUHK Education and Social Entrepreneurs "EASE" Fund Scheme. KreativeLab has licensed the Grid Notation to curate programmes for primary and secondary schools for wide application.

### (vii)References to the Corroboration of Impact or Benefit

More than 1000 direct and indirect beneficiaries have been involved in learning music with grid score. By using a tablet device and the e-Orch app they required less score reading time compared to using traditional staff notation.

#### Annex I-B

#### **Impact Case History**

#### (i) Project Title

Promoting Sustainable Tourism Development for Wolong National Nature Reserve, Sichuan Province, and Hong Kong

#### (ii) Name of Principal Investigator

Dr Lewis Cheung Ting-on Associate Head & Associate Professor Department of Social Sciences



#### (iii) Summary

The UNESCO-listed Wolong National Nature Reserve, famous as the prime habitat for the endangered panda, was badly damaged by the devastating Sichuan earthquake of 2008, as it is located just 20km from the epicentre. Restoring normal life to the isolated area's more than 5,000 residents was of paramount importance. It was equally important to rebuild the reserve into an ecologically sustainable area. To help accomplish this, Dr Lewis Cheung Ting-on, Associate Professor of EdUHK's Department of Social Sciences (SSC), led a research team to evaluate the best way to develop sustainable tourism for the reserve and devised two unique accreditation systems for its ecotourism industry (Eco Certification for tourism businesses and for ecotour guides), as part of the regulation for the tourism development in the ecologically sensitive reserve, funded by the Government of the Hong Kong Special Administrative Region (HKSAR). In 2016 the local administration in Wolong accepted and implemented the recommendations and systems in full. So far 8 businesses out of around 20 (local farmhouses operating as sustainable farms and hotels) have achieved the resulting Bronze and Silver Panda Ecotourism Certification Awards. The project has achieved significant environmental impact through ecological conservation and education; and economic impact for the 5,000 residents by identifying new sustainable tourism services and products, putting in place a management system for sustainable tourism that provides new business opportunities balanced with the need to protect the ecology and panda habitat. From the knowledge and experiences gained through the project, Dr Cheung advises hotels and hostels in Hong Kong on how to improve the sustainability of their operations. Impact reach is extended through his leadership role on the Global Sustainable Tourism Council and regional training activities.

#### (iv) Underpinning research

Dr Cheung's research focuses on sustainable tourism with particular emphasis on nature-based tourism in protected areas, environmental education, and environmental conservation [R1]. He completed his PhD in the field of ecotourism and has published extensively in the field. As a result of his expertise, he was commissioned in 2014 by the Development Bureau of the HKSAR government to lead, as Principal Investigator, a 20-month research project on sustainable tourism development for the Wolong National Nature Reserve in Sichuan Province, China, as part of its support for reconstruction of earthquake-stricken areas. The aims of the project, involving researchers from EdUHK, University of Hong Kong and the Chinese University of Hong Kong, were to: (1) investigate the ecotourism resources of the Wolong National Nature Reserve, (2) formulate an ecotourism development guideline for the reserve, (3) provide a series of trainings and public forums for residents and government officials and (4) design two ecotourism accreditation systems for

tourism businesses and ecotour guides. The project was completed in June 2016. Dr Cheung was the principal investigator, responsible for the study design, from data collection to formulation of the developmental guidelines, ecotourism accreditation systems and implementation. The EdUHK team conducted a household survey to assess the post-quake situation of residents. It organised two forums to introduce the ecotourism development plan and certification systems, and to glean local views for the ecotourism development guidelines. The project began with an evaluation of the potential impacts of tourism development and environmental conservation in an ecologically sensitive It used various theoretical frameworks on visitor management, protected area planning and management, ecotourism and sustainable tourism as the research backbone for tourism development of the heritage site [R1, R2]. For the certification systems, the Global Sustainable Tourism Criteria, which are arranged in four pillars, namely Sustainable Management, Socioeconomic Impacts, Cultural Impacts, and Environmental Impacts, were developed to become the Ecotourism Accreditation and Certification System for the reserve [R5]. Articles published in leading journals also investigated the impacts of relocation of local residents [R5]; their resilience in the face of natural hazards and disaster [R3, R4]; and preferences and degree of support for post-disaster ecotourism development [R6]. Together, this expertise informed the ecotourism development planning for the reserve. The success of the project resulted in Dr Cheung being awarded the EdUHK President's Award for Outstanding Performance in Knowledge Transfer in 2016/17 and being invited by international and local organisations to take up advisory roles on sustainable tourism.



All captive giant pandas have settled in the newly built Giant Panda Reserve Centre in the Wolong National Nature Reserve and the centre has become an attractive tourism destination in Sichuan, China.

#### (v) References to the Research

- 1. Cheung, L.T.O. (2013). Improving visitor management approaches for the changing preferences and behaviours of country park visitors in Hong Kong. *Natural Resources Forum*, 37(4), 231-241.
- 2. Cheung, L.T.O. & Jim, C.Y. (2013). Ecotourism service preference and management in Hong Kong (2013). *International Journal of Sustainable Development and World Ecology*, 20 (2), 182-194.
- 3. Cheung, L.T.O. (2015). Seismic risk perception in the aftermath of Wenchuan earthquakes in southwestern China. *Natural Hazards*, 78(3): 1979-1996. (Co-Author with Alex Y.H. Lo).

- 4. Lo, A.Y. and Cheung, L.T.O. (2016). Geographies of social capital: Catastrophe experience, risk perception, and the transformation of social space in post-earthquake re-settlements in Sichuan, China (2016). *Annals of the Association of American Geographers*, 106 (4), 874-890.
- 5. Lo, A.Y., Cheung, L.T.O., Lee, A.K.Y. & Xu, B. (2016). Confidence and trust in public institution natural hazards management: Case studies in urban and rural China (SSCI). *Professional Geographer*, 68(3), 475-484.
- 6. Liu, S., Cheung, L.T.O.\*, Lo, A.Y. & Fang, W. (2018). Residents' expectations of and support for post-earthquake nature-based tourism development in the Wolong National Nature Reserve, Sichuan, China. *Sustainability*, 10(3), 699-718

#### (vi) Details of the Impact or Benefit

Dr Cheung's research has had multi-faceted impacts on the ecotourism development of Wolong National Nature Reserve and other areas of China and the wider region. The main long-term impacts include: i.) impact on local policy and professional practice; ii.) impact on knowledge of ecotourism and environmental awareness; iii.) economic impact for the local economy, through the development of sustainable tourism, and iv.) environmental impact by ensuring ecological conservation of the area.

# 1) Impact on Local Policy and Professional Practice

The Ecotourism Development Guideline (EDG) prepared by Dr Cheung included holistic recommendations and suggestions for ecotourism planning, activity designs, infrastructure development, marketing etc. It was adopted in full by the reserve's administration [See Section V, C1] and the resulting voluntary Ecotourism Accreditation and Certification System (EACS) and Ecotour Guide Accreditation System are now fully implemented. This is the first regional ecotourism certification in protected areas of Mainland China to be recognized and implemented by the local government and is a positive influence on the ecotourism development of other protected areas, as evidenced by Dr Cheung now liaising with other protected areas in the Mainland and Taiwan. The reserve's administration affirmed the contribution for Wolong: "The project has promoted the tourism development plan and offered a clear direction for sustainable development of tourism" [C1]. As a result of the policy initiative, as of December 2018, 8 farmhouses and hotels out of around 20 have been certified to receive Bronze Panda and Silver Panda awards for their effort in operating sustainable businesses in the reserve, and significant economic and environmental impact has been achieved (see iii. below). Dr Cheung's success in Wolong resulted in further impact on policy and professional practice, through his appointment as advisor to other policy bodies and other organisations in Sichuan Province and Hong Kong, including programme director of the Global Sustainable Tourism Council (GSTC) for Sustainable Tourism Development in the Greater China region; chairman of the Assessment Committee for EcoGuide Australia Certification of the Greater China region [C5] as well as overseas expert of the Assessment Panel of Ecotourism Accreditation and Certification System of the Wolong National Nature Reserve [C4]. In March 2017, GSTC appointed him as the lead trainer for the regional training entity, Infinity Service Holding, the first GSTC training programme on sustainable tourism in Hong Kong. Around 15 participants joined the 3-day course. 2017, a similar training session was held in Taiwan for more than 25 government officials of scenic sites [C7].

### 2) Impact on Ecotourism Knowledge and Environmental Awareness

Ecotourism can only be developed with the understanding, input, and support of the local The EdUHK team organised two public forums to glean residents' views in setting the ecotourism development guidelines; and to introduce the development plans and certification systems for businesses and guides. These forums, attended by over 100 residents and officials, increased local understanding of the plan [C1]. The team also organised a two-day training workshop on the development guideline and the accreditation systems, attended by over 20 local residents (including several hotel owners) and 20 government officials, including those in charge of tourism development in the reserve. One official noted: "There is now greater awareness of saving water, electrical power and waste segregation. Hostels' use of disposable items has been greatly reduced. The sewage management has also been greatly improved." Reflecting a significant shift in attitudes and awareness, residents accepted that development should no longer proceed through "destructive" and "vicious competition" but should cater for visitors who appreciate the eco-tourism approach [C1]. Dr Cheung was a keynote speaker in the Workshop on Conservational Research Collaboration at Sichuan Wolong National Nature Reserve in October 2016, joined by delegates from Hong Kong. A public forum on the same topic was organised in EdUHK, with more than 150 participants. These events raised public understanding in Hong Kong of the reserve's reconstruction and how the HKSAR Government's donation was used. Dr Cheung's work has also changed public perceptions through extensive media coverage. In total, 238 media clippings have been gathered. 142 were from mass media in mainland China and 10 from Hong Kong, the rest from elsewhere in the region, reaching audiences of millions [C3]. Extending the reach and significance of the impact on knowledge of ecotourism and environmental awareness, Dr Cheung was appointed adviser of the Environmental Group of the YMCA's HarbourView Hotel and for hostel services of the Hong Kong Federation of Youth Groups, offering advice on enhancing the environmental performance of these hotels and organisations [C8, C9]. His suggestions have been implemented in the HarbourView Hotel to substantially enhance environmental sustainability of the hotel, as reported in its annual report [C10].

# 3) Impact on the Local Economy and Environment through Sustainable Eco-tourism Development and Environmental Impact; and iv) Environmental Impact

Dr Cheung's Ecotourism Development Guideline for Wolong was accepted in full by the reserve and suggestions were adopted by the reserve. The guideline helped identify new tourism services and products, benefiting the local economy through the increased income generated for individual businesses and local residents. Once the new policy was implemented the number of tourists visiting the reserve surged from less than 1000 a year before 2014 to over 350,000 annually by 2017, with over 19,000 visiting during the October golden week in 2018 [C1]. Wolong official noted the project "helped the Nature Reserve to gain economic growth without damaging the environment. Instead, it has improved the economic growth through environmental protection in ecological tourism. The sustainable development approach has brought huge benefit to the Nature Reserve region". The accreditation system boosted business for individual hotels and farmhouses by attracting more tourists than other hotels, and benefited the local community because criteria include that they hire local staff and use local products and contribute to a conservation fund. WAN Fugui, manager of Wolong Memory Hotel, affirmed his hotel saved RMB 5,000 a month by eco-friendly practices such as reducing disposable products and had attracted more visitors, including new overseas groups, through ecotourism [C2]. This

contrasted with the previous "unhealthy" approach to development [C1, C2]. The official added that the tourism income of 3 hostels that pioneered the certification "is the highest in the sector". Further economic and environmental benefits include reduced costs through reduced energy and water consumption, and waste reduction. Timothy Ng, Parks Operations Director, Ocean Park, which administered the project, affirmed Cheung's "contribution to the sustainable tourism development" of the reserve, and its social, economic, and environmental impacts. He wrote that the accreditation systems "do play an important role in governing the sustainable development of tourism in the flagship national nature reserve". They "not only can generate economic and social benefits to the local people but also help regulate inappropriate tourism development which may possibly cause degradation to the invaluable habitats [C6]."



The new Giant Panda Research Centre which was constructed with the funding support by the HKSAR government has become an important destination to attract a high volume of tourists annually.

### (vii) References to the Corroboration of Impact or Benefit

- 1. Impact testimonial, from the Administration of the Wolong National Nature Reserve
- 2. Impact testimonial, from a certified farmhouse in the Wolong National Nature Reserve
- 3. https://www.sohu.com/a/222630168\_357504; https://au.finance.yahoo.com/news/eduhk-led-team-bringssustainable-023000977.html
- 4. Appointment Certification from the Administration of the Wolong National Nature Reserve
- 5. http://www.ecoguidecert.com/?page\_id=17
- 6. Letter of appreciation, from Timothy Ng, Parks Operations Director, Ocean Park
- 7. "First GSTC Training in Hong Kong Concludes with a Great Success"
- 8. https://www.gstcouncil.org/first-gstc-training-hong-kongconcludes-great-success/
- 9. Letter of appreciation from Harrison Leung, General Manager of The HarbourView
- 10. https://www.theharbourView.com.hk/en/eco-hospitality
- 11. Annual Environmental Reports of The HarbourView; https://www.theharbourview.com.hk/uploads/files/2015-2016%20The%20Harbourview%20Gr een%20Report Final%20version.pdf

#### Annex I-C

#### **Impact Case History**

#### (i) Project Title

Development of High-grade Pellets Using Food Wastes for Safe and Quality Fish Production

#### (ii) Name of Principal Investigator

Dr Brian Man Yu-bon Assistant Professor, Department of Science and Environmental Studies

#### (iii) Summary

Food contamination and waste disposal are two major global environmental issues. In this impact case study, our team has successfully



(From left) Dr Mo Wing-yin, Professor Wong Ming-hung, Dr Man Yu-bon and Mr Zhang Feng

developed fish feed pellets produced with food waste for farming freshwater and marine fish. The results indicate that food waste-based feeds (FWBFs) could produce safe and quality fish at a lower cost, which will benefit the reuse of food waste and sustainable fish farming.

#### (iv) Underpinning research

Professor Wong Ming-hung joined EdUHK as Research Chair Professor [2013-2016], then Advisor of Environmental Science [2017-]. A research team was formed after Dr Man Yu-bon and Dr Mo Wing-yin joined as Post-Doctoral Fellows, to conduct extensive research on recycling food waste for sustainable fish farming. Food waste from local hotels and restaurants is used as the major raw material to produce high-quality fish feed for growing commercial fish species, to simultaneously ease waste disposal pressure on the existing landfills and develop sustainable local fish farming.

The first relevant project sponsored by the Environmental and Conservation Fund (ECF: HK\$1.9 million) was aimed at reactivating some abandoned local fishponds. Food waste was used as the major ingredient of fish feeds, replacing a major part of the fishmeal contained for growing low-trophic level freshwater fish: bighead (Hypophthalmichthys nobilis), grass carp (Ctenopharyngodon idellus) and mud carp (Cirrhinus molitorella). It was observed that fish fed with FWBFs were safe for consumption, with acceptable levels of polycyclic aromatic hydrocarbons (PAHs) and heavy metals (HMs), when compared with those fed commercial pellets [Refer to Section v, R1 and R2]. Based on the results, the research team was granted HK\$4.5 million for an Innovation Technology Fund (ITF) (Innovation and Technology Bureau) in 2015, targeting a more in-depth study of recycling food waste for farming two important freshwater fish species: Nile tilapia (Oreochroms niloticus) and jade perch (Scortum barcoo). The quality of FWBFs was improved by adding Chinese herbal medicine ingredients, probiotics, and other active ingredients, leading to enhanced fish growth and immunity It was further indicated that the concentrations of PAHs and HMs in the cultured fish were safe for consumption [R4 and R5]. To broaden the usage of FWBFs in farming marine fish, with higher nutritional requirements, a follow-up study was conducted with the support of HK\$8.45 million from the Sustainable Fisheries Development Fund (SFDF) in 2017. After trying different FWBF formulas, it was established that a particular formula was well suited for farming Sabah giant grouper (Epinephelus fuscoguttatus × Epinephelus lanceolatus), a very popular locally cultured marine fish.

Furthermore, major pollutants: PAHs and dioxins in the cultured fish were significantly lower than those in the market fish (of the same species). The feed formula was further upgraded by incorporating spirulina, a blue-green alga (Spirulina platensis), and results showed that supplementing fish diets with 5% of spirulina could improve the growth of the fish [R6].

The use of FWBF instead of commercial fish feeds for fish farming could save up to 28.5% (2017), 24.5% (2017), and 28.6% (2019) respectively of the total production cost for Nile tilapia, jade perch and Sabah giant grouper. Moreover, the fish products produced are safe for human consumption with acceptable levels of major pollutants: HMs [R5], PAHs [R5], and dioxins. From the results, it can safely be concluded that there is a great potential for using FWBF as an alternative to commercial feeds for cultivating safe and quality freshwater and marine fish, at a lower cost.



#### (v) References to the Research

- [R1] Cheng Z, Mo WY, Lam CL, Choi WM, Wong MH (2015). Replacing fishmeal by food waste to produce lower trophic level fish containing acceptable levels of PAHs: Health risk assessments. *Science of the Total Environment* 523: 253-61.
- [R2] Cheng Z, Lam CL, Mo WY, Nie XP, Choi WM, Man YB, Wong MH (2016). Food Wastes as Fish Feeds for Polyculture of Low-trophic-level Fish: Bioaccumulation and Health Risk Assessments of Heavy Metals in the Cultured Fish. *Environmental Science and Pollution Research* 23:7195-203.
- [R3] Mo WY, Lun CHI, Choi WM, Man YB, Wong MH (2016). Enhancing Growth and Non-specific Immunity of Grass Carp and Nile tilapia by Incorporating Chinese Herbs (Astragalus membranaceus and Lycium barbarum) into Food Waste Based Pellets. *Environmental Pollution* 219: 475-482.
- [R4] Mo WY, Man YB#, Zhang F, Wong MH (2019). Fermented Food Waste for Culturing Jade Perch and Nile tilapia: Growth Performance and Health Risk Assessment Based on Metal/Loids. *Journal of Hazardous Materials* 236: 236-44. (# Co-first author)
- [R5] Man YB, Mo WY, Zhang F, Wong MH (2020). Health Risk Assessments Based on Polycyclic Aromatic Hydrocarbons in Freshwater Fish Cultured Using Food Waste-based Diets. *Environmental Pollution* 256, 113380.
- [R6] Agriculture, Fisheries and Conservation Department (Sustainable Fisheries Development Fund) (SFDF 0023), 2016-2019, Safe and Quality Fish Production: Development of High Grade Pellets Using Food Wastes for Three Popular Marine Fish (HK\$84,500,000) (Wong MH (PI), Man YB (Co-I), Mo WY (Co-I)).

#### (vi) Details of the Impact or Benefit

The International Exhibition of Inventions in Geneva is the world's most prestigious innovation exhibition, arranged under the patronage of the World Intellectual Property Organization (WIPO) of the Swiss Government and City of Geneva. The annual exhibition is a major global event dedicated to innovation and to new products. The research team won a Silver Medal at the 47th International Exhibition of Inventions in Geneva (12th April 2019), for the positive impact of its work on the reuse of food waste and sustainable



fish farming [Refer to Section vii, C1]. The research outputs also received the "Research Output Prize" of the Faculty of Liberal Arts and Social Science (EdUHK) in 2020 [C1].

Recycling food waste into fish feeds not only reduces food waste and eases associated disposal problems, but also lowers the cost of producing feed pellets (20 % lower than the commercial fish feed, in general). Local fish farmers would benefit from the lower cost of fish feeds for growing quality fish. The research team is filing two patents for two FWBF formulas: 'Production process and user instructions for jade perch's fish feed' (CN201810474984.5), and 'Production process and user instructions for Nile tilapia' (CN201810473652.5) [C2]. Our industry partner (Kowloon Environmental Development Limited) has already benefited from the production of safe and good quality food waste-based fish feeds at a lower cost [C3]. "The price of the FWBF was about 20% lower than commercial fish feed. I strongly believe that the sales of FWBF would be more competitive than commercial fish feeds available in the local market" [C3].



(From left) Mr Wong Yuk-chun, Founder of Kowloon Environmental Development Limited, Professor Wong Ming-hung, Dr Yau Wing-kwong, former member of the Town Planning Board, Dr Man Yu-bon and Mr Law Kwong-choi

The research work has also attracted public attention on the reuse of food resources (recycling food waste into valuable products). A series of reports and news related to the topic can be accessed on the websites [C4]. Promotions were also made on various occasions, including public events, innovation exhibitions and trade fairs in Hong Kong, Mainland China and overseas [C5]. The research team has also shared its work with policy makers and relevant professionals at the 3rd and 4th International Conference on Biological Waste as Resource in 2018 and 2019, accordingly [C6].

The technology has been disseminated to the government and fish farmers, as well as relevant professionals and industrialists, via a series of knowledge transfer and technical training workshops. The research team has been invited to deliver a talk (26 Nov 2020) on this impact case study, sponsored by the AFCD and Business Environment Council, aiming to promote the FWBFs to fish farmers, recyclers, and fish feed producers, with the aim of transforming the raw materials into valuable fish feeds for sustainable fish farming [C7].

The FWBFs are effective in fostering safe and quality fish products with acceptable levels of HMs (such as mercury), dichlorodiphenyltrichloroethane (DDTs), and dioxins, all of which are important pollutants when considering food safety. This will directly lead to higher-quality fish products carrying fewer pollutants. The public can also benefit from the consumption of these fish products when they are introduced in local fish markets [C8].

Impact on education and student learning: The evident-based research outcomes of the study have been knowledge transferred into teaching materials for students at EdUHK. In addition, Dr MAN Yu Bon was invited by the Education Bureau to give a talk on "Food safety, organic agriculture and sustainable development" (27 Nov 2020), sharing this research impact case study with more than 99 liberal studies teachers [C9].

Results derived from our studies have been published in 31 international scientific journals, one book chapter and one magazine. In addition, presentations (as plenary/invited talks) were made at several international meetings.

#### (vii) References to the Corroboration of Impact or Benefit

[C1] Awards:

The 47th International Exhibition of Inventions of Geneva (12th April 2019)



The project won a Silver Medal at the International Exhibition of Inventions of Geneva 2019. (From left) Dr Man Yu-bon, Professor Wong Ming-hung, Dr Chow Ka-lai and Dr Mo Wing-yin

### Research output prize (Faculty of Liberal Arts and Social Science, 24 Sept 2020)



Awardees from Left to Right: Dr Man Yu-bon, Dr Leung Chi-fai, Dr HO Wing-kei

# [C2] Patents:

Formulation for Jade Perch pellets - Filing #:201810474984.5 (pending) Formulation for Nile tilapia pellets - Filing #:201810473652.5 (pending)

### [C3] Letter from the feed production company:

Mr Wong Yuk-chun, Founder/Director of Kowloon Environmental Development Limited



#### [C4] Reports and news:

Topic: Researchers make fish feed from food waste

https://www.savingseafood.org/science/researchers-make-fish-feed-from-food-waste/

Topic: EdUHK Researchers Develop Cleaner, Affordable Fish Feed from Food Waste

https://qswownews.com/eduhk-researchers-develop-clean-affordable-fish-feed-from-food-waste/

Topic: Researchers make fish feed from food waste

https://phys.org/news/2020-07-fish-food.html

Topic: Integrated Pond Fish Farming Using Food Wastes

https://www.youtube.com/watch?v=XbBGLrgbOTA

Topic: 厨余再造鱼粮/疫情下点环保?

https://gbcode.rthk.hk/TuniS/www.rthk.hk/radio/radio1/programme/climate\_watcher2017/episode/673255

Topic: 廚餘再造魚糧/水資源危機

https://www.rthk.hk/radio/radio1/programme/climate\_watcher2017/episode/680349

#### [C5] Exhibitions and trade fairs:

21-29 Oct 2017, HK Science Park;

16-21 Nov 2017, Shenzhen Convention & Exhibition Centre;

18-20 Dec 2017, China Import and Export Fair, Guangzhou; and

12 April 2019, Exhibition of Inventions of Geneva

#### [C6] International conferences:

The 3rd International Conference on Biological Waste as Resource 2018, Hong Kong. https://www.eduhk.hk/ses/web/news\_detail.php?id=167

The 4th International Conference on Biological Waste as Resource 2019, Korea. http://www.bwr2019.org/

#### [C7] Symposium:

活動:「漁業持續發展基金」工作坊 1

日期:2020年11月26日 (星期四)

對像:優質養魚場代表、餐飲業代表 (50人)

流程:3:00-3:45pm「將廚餘製造飼料」研討會(黃銘洪教授-香港教育大學顧問、 黃旭 進-九龍環境處理發展有限公司)

3:45-4:30pm「廚餘從餐桌到魚場」工作坊 (所有與會者)

4:30-5:00pm 業務聯繫 (優質養魚場代表、餐飲業代表)

地點:康得思酒店7 樓 - 宴會廳III (旺角朗豪坊旁邊)

活動:「漁業持續發展基金」工作坊 2

日期:2021年7月15 日(星期四)

對像:魚民代表 (14人)

流程:14:30-15:30 pm「廚餘製造海水魚飼料」研討會(黃銘洪教授-香港教育大學顧問、 文裕邦 博士-香港教育大學:助理教授、黃旭進-九龍環境處理發展有

地點:中央圖書館一號活動室

#### [C8] Food safety:

Topic title: 教院研健康魚糧減魚類體內毒素

https://news.yahoo.com/HK/news/教院研健康魚糧-減魚類體內毒素-215632336.html

#### [C9] Education:

課程:高中通識教育知識增益系列:食物安全、有機農業與可持續發展

(新辨)網上課程(教育局)

日期:二零二零年十一月二十七日(星期五)

時間:下午三時至五時

主講人:李偉展博士,文裕邦博士

#### Annex I-D

#### **Impact Case History**

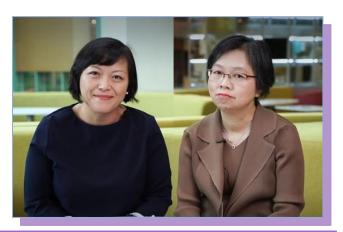
#### (i) Project Title

Use of Literacy Play Kit in Supporting English Learning at Home

#### (ii) Name of Principal Investigator

Project Leader: Dr Susanna Yeung Siu-sze, Associate Professor, Department of Psychology

Project Team Member: Dr Ng Mei-lee, Assistant Professor, Department of Early Childhood Education



(From left): Dr Susanna Yeung Siu-sze, Dr Ng Mei-lee

#### (iii) Summary

Since 2015, the project team has been developing a literacy play kit to enhance parental support for developing the English vocabulary of young second language learners of English. A series of studies have been conducted to examine the effects of the play kit on language learning and beyond. We have demonstrated the play kit is effective in enhancing children's vocabulary, confidence in learning English, and the parent-child relationship. The kit was awarded a Silver Medal in the 4th International Invention Innovation Competition in Canada in 2019. Over the years, the play kit has been promoted to parents of young children, and over 400 parents have been trained to use it at home. It has been used as a teaching material in early childhood teacher education. In 2020, the play kit has been successfully commercialized in collaboration with an commercial company and over 1000 pieces of the product have been sold. Customers include schools, educational centres, NGOs, and parents. In 2021, around 100 pieces were distributed via NGOs and kindergartens to underprivileged families who received training from the project team on how to best use the kit at home to support English learning.

#### (iv) Underpinning research

The initial version of the literacy play kit has been evaluated (Yeung & Ng, 2015). The findings demonstrate the effects of implementing home-based language play using the kit in promoting learning of vocabulary. We have also observed positive effects on children's confidence and interest in learning English as well as on parent-child relationships. In 2020, we further enhanced the content of the play kit and are currently evaluating the effects of the updated version on parental involvement in children's learning of English (competence and confidence), parents' sense of competence, and parent-child relationship by conducting a randomized controlled trial involving around 150 families.

#### (v) References to the Research

- [R1] Yeung, S. S., & Ng, M. L. (2015, June). Parental teaching through play and emergent literacy skills in English among Hong Kong Chinese ESL children: A pilot study. Paper presented at the 2015 Quality Childhood Conference International (QCCI) Enhancing Quality Childhood Education: Synergizing Global Efforts, The Hong Kong Institute of Education, China. https://repository.eduhk.hk/en/publications/parental-teaching-through-play-and-emergent-literacy-skills-in-en-3
- [R2] Yeung, S. S., & King, R. B. (2016). Home literacy environment and English language and literacy skills among Chinese young children who learn English as a second language. *Reading Psychology*, 37, 92-120. https://doi.org/10.1080/02702711.2015.1009591
- [R3] Yeung, S. S., & Chan, C. K. K. (2013). Phonological awareness and oral language proficiency in learning to read English among Chinese kindergarten children in Hong Kong. *British Journal of Educational Psychology*. 83, 550-568. https://doi.org/10.1111/j.2044-8279.2012.02082.x
- [R4] Yeung, S. S., Ng, M. L., Qiao, S., & Tsang, A. (2020). Effects of explicit L2 vocabulary instruction on developing kindergarten children's target and general vocabulary and phonological awareness. *Reading and Writing*, 33, 671-6889. https://doi.org/10.1007/s11145-019-09982-3
- [R5] Liu, Y., Yeung, S.S., Lin, D., Wong, R.K.S. (2017). English Expressive Vocabulary Growth and Its Unique Role in Predicting English Word Reading: A Longitudinal Study Involving Hong Kong Chinese ESL Children, *Contemporary Educational Psychology*, 49, 195-202. https://doi.org/10.1016/j.cedpsych.2017.02.001
- [R6] Lin, D., Liu, Y., Sun, H., Wong, R. K. S. & Yeung, S. S. (2017). The pathway to English word reading in Chinese ESL children: The role of spelling. *Reading and Writing*, 30, 87-103. https://doi.org/10.1007/s11145-016-9664-6



Commercialized Version of the Literacy Play Kit

#### (vi) Details of the Impact or Benefit

In the past 5 years, through participating in our training, over 400 parents have gained knowledge in how to support children's learning of a second language at home by implementing language-focused engaging play. Our project activities have not only enhanced children's English language development through parental support, but also brought about changes in parental beliefs regarding learning and development in early years. Through commercialization of the literacy play kit, the impact has reached a wide community. Exclusive license of the Literacy Play Kit has been signed with Captronics Industrial Ltd., a local toy manufacturer. The kit was commercialized as an English learning game and hit the market in Nov 2020. With around 1000 pieces of the product sold in the last 6 months, many families have benefited from our evidenced-based educational tool. The buyers include families, schools, and NGOs. The literacy play kit and related research have been covered by the media, including MingPao and 教聯專業月刊. Recently, the project team has distributed the kit to around 100 underprivileged families. Parents from these families were provided with training on how to best use the kit in supporting English at home. The kit was well received, and parents were enthusiastic to conduct literacy play at home using the kit.

#### (vii) References to the Corroboration of Impact or Benefit

- [S1] 寓學於樂:教大專家設計 好玩遊戲卡 幼兒輕鬆學英語,明報 2021 年 4 月 6 日 https://happypama.mingpao.com/輕鬆升學/學習競技場/寓學於樂-教大專家設計-好玩遊戲卡/
- [S2] Yeung, S. S.-S., & Ng, M.-L. (2020). Literacy play kit for supporting young children's English learning. Hong Kong: The Education University of Hong Kong.



Parent workshop on 6th May 2021 at Pristine Kindergarten



Dr Yeung and Dr Lee Conducting a Workshop for Parents (Underprivileged Familes) in a NGO



Parent workshop on 17th April 2021 at Caritas Lions Club of Hong Kong (Pacific) Nursery

#### Annex I–E

#### **Impact Case History**

#### (i) Project Title

Harnessing the Power of Assessment to Maximize Productive Learning and Teaching

#### (ii) Name of Principal Investigator

Dr Yang Lan, Assistant Professor Department of Curriculum and Instruction



#### (iii) Summary

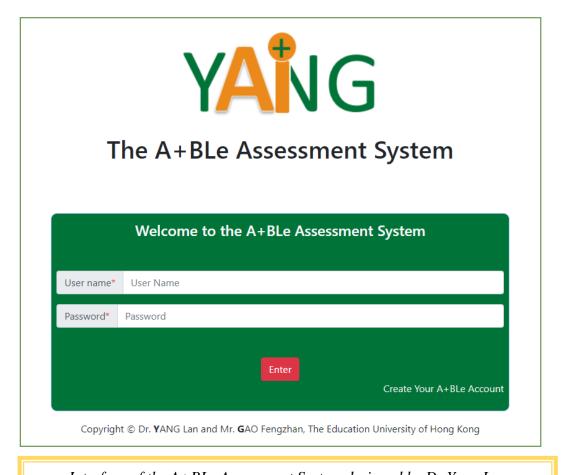
Assessment can be a powerful tool in affecting students' learning and teachers' teaching. However, in the existing literature the effects of assessment have also been found to be variable. Based on cutting-edge research on assessment, this project focused on (1) advancing assessment theory from the perspective of positive psychology and a conceptual framework developed by Dr Yang based on previous work, and (2) pioneering innovative technology-enhanced assessment by developing an assessment system called A+BLe to visualize teaching impacts and learning outcomes with learning analytics.

Three key assessment platforms have already been developed under the A+BLe umbrella (more are under development). The integrative perspective of psychology and assessment developed by Dr Yang has also contributed to obtaining an increasing number of funding sources by Dr Yang (including GRF, university-level TDG, and other internal research funds). The work has also drawn attention from local, regional, and international scholars who have invited Dr Yang to co-investigate over 6 GRF projects and 2 SCOLAR projects (as co-I), and 1 jockey club charity fund project with over HK\$18 million (as co-PI), and organizer of research symposia in international conferences (e.g., EARLI). This project has also made a big data study (involving over 120,000 participants including teachers, students and parents, and commissioned by the Education Bureau of Huadu district) possible and successful. Since 2020, the A+BLe assessment system designed and developed by Dr Yang (2019- present) has supported over 15 courses across three faculties (FEHD, FLASS, FHM) and 1 professional development course commissioned by EDB Hong Kong to train over 30 middle leaders in local schools in Hong Kong. Dr Yang's research on assessment, together with the A+BLe assessment system, will continue to contribute to harnessing the power of assessment to maximize productive learning and teaching. A+BLe has twofold interrelated meanings:

- 1) Integrating Assessment with Blended Learning to maximize productive learning and teaching.
- 2) Harnessing the power of Assessment of Learning (AoL), Assessment for Learning (AfL) and Assessment as Learning (AaL) to maximize productive learning and teaching.

#### (iv) Underpinning research

This project is based on 1 GRF on assessment feedback and learning engagement, 1 university-level TDG project on developing A+BLe as an innovative blended learning approach to use technology enhanced assessment tools integrated with face-to-face instruction to provide timely feedback and visualized learning assessment outcomes to students, and 1 RCF project examining the role of feedback perceptions in unravelling the power of feedback in affecting students' feedback uptake and learning outcomes.



Interface of the A+BLe Assessment System designed by Dr Yang Lan

#### (v) References to the Research

- 1 co-edited book:
  - Yan, Z., & Yang, L. (Eds.) (2021). Assessment as learning: Maximising opportunities for student learning and achievement. Routledge. (In press).
- 3 peer-reviewed journal articles on assessment feedback
- 4 under reviewed journal papers on assessment feedback
- 12+ paper presentations on the power of feedback in international conferences including 2 invited keynote speech, 2 symposia as the leading author and organizer.
- 1 best paper award issued by HKERA on examining the links between feedback perceptions, emotions and well-being
- 1 special issue on revealing the underlying mechanisms of the power of feedback in Educational Psychology: An International Journal of Experimental Educational Psychology as the leading guest editor

#### (vi) Details of the Impact or Benefit

Amid the COVID-19 Pandemic in March, 2020, Dr Yang provided timely support to design assessment packages for Education Bureau, Huadu district, Guangzhou, as commissioned.

#### 21,737 students'

- 1. Online learning feedback receiving experiences and feedback perceptions
- 2. Online learning engagement
- 3. Online learning emotion regulation
- 4. Online learning goal setting
- 5. Online learning social interactions with teachers and peers
- 6. Online learning competence and interests

#### 85,299 parents' evaluation of their children's

- 1. Online learning engagement
- 2. Online learning competence and interests
- 3. Online learning social interactions with teachers and peers

#### 8,568 teachers'

- 1. Online teaching engagement
- 2. Online teaching emotion regulation
- 3. Online teaching feedback providing experiences and feedback perceptions
- 4. Online teaching support from colleagues
- 5. Online teaching support from school administrative team
- 6. Online teaching support from district education bureau

Schools, teachers, students, and parents were facing various challenges and difficulties in coping with the "all-of-a-sudden" intensive online teaching mode caused by the COVID-19 pandemic. Based on three sets of assessments, results, and reports, Dr Yang helped to analyse and draft recommendations. The Education Bureau of Huadu district provided training to teachers to equip them with a range of skills in online teaching to support students' learning and outcomes in the period affected by the pandemic.

The A+BLe assessment system has supported over 15 academic and teaching staff at EdUHK, as well as over 15 courses and over 250 students. Over 30 visualized reports (in PDF version) have been prepared for colleagues who have used this system since the first semester of 2020/2021. The A+BLe assessment system is ready for any colleague who wants to try technology-enhanced assessment to identify teaching impacts and enhance students' learning outcomes (e.g., learning engagement, learning emotions, generic learning outcomes etc.)

For the tailor-made self-assessment platform (SAP)\_for eSAM course, 30+ Middle Leaders in Schools have benefited by self-assessing their learning outcomes and downloading visualized results and immediate feedback.

#### (vii)References Corroborating Impact or Benefit

Mainland China (2020): Providing assessment solutions and recommendations to EDB, Huadu district, Guangzhou

Preparation and provision of three big sets of assessment reports (Total N=121,753 participants including 85,299 parents, 27,886 students, and 8568 teachers) for the research and teaching development unit of the education bureau of Huadu district to distribute to over 100 schools, and to help them prepare tailor-made training workshops to teachers to engage and improve student learning:

- Provision of parent version assessment reports of over 85,000 parents to over 100 schools including primary schools (n = 61,379 parents), junior and senior secondary schools (n =19057 junior secondary students; n = 4863 senior secondary students);
- Provision of student version assessment reports based on 27,000 students to over 60 junior (n =21,737 students) and senior (n=6,149 students) secondary schools;
- Provision of teacher version assessment reports to over 100 schools including primary (n =5,550 teachers), junior (n =2,476 teachers) and senior secondary (n=542 teachers) schools;
- KT seminars to mainland, HK and India;
- Provision of 2 rounds of assessment-focused research seminars to EdUHK masters students and staff (n = 25+);
- Provision of 1 assessment seminar to School of Psychology, Nan Jing Normal University (25+);
   and
- Provision of 2 knowledge transfer seminars (n= 50+) and one KT report to Divyapath school in India.

Hong Kong (2019 to now): Developing a technology-enhanced assessment system called A+BLe to empower productive teaching and learning (<a href="http://csenie.ied.edu.hk/teaift/login.php">http://csenie.ied.edu.hk/teaift/login.php</a>).

Under A+BLe, the development and provision of 3 online assessment platforms with learning analytic techniques to provide immediate feedback, visualized assessment results and downloadable reports applicable to each teaching session to inform teaching impacts through students' learning process and outcomes:

- 1) Individual-based E-Assessment (IEA) platform (Demo Link of a session: http://csenie.ied.edu.hk/teaift/session1-5-quiz)
- 2) Team-based E-Assessment (TEA) and immediate feedback technique (Demo Link of a session: http://csenie.ied.edu.hk/teaift/session1-5)
- 3) Self- and peer-assessments (SPA) platform (http://csenie.ied.edu.hk/teaift/spa)

Three user guides for IEA, TEA, and SPA are available to all teaching staff who would be interested in using these assessment platforms to harness the power of assessment in improving teaching and learning.

Development and provision of one tailor-made self-assessment platform (http://csenie.ied.edu.hk/teaift/spa\_esam) to School Administration and Management for Middle Leaders in Schools. This course is part of a government-funded programme supported by the Education Bureau, Hong Kong

## Annex II

## **Approved KT Fund Projects 2020/21**

Principal Investigator	Project Title		
Dr Chen Yuan Department of Special Education and Counselling	Development an Adaptive Training Program Incorporating Verbal Working Memory and Auditory Training for Chinese Older Adults with Mild Hearing Impairment		
Dr Tso Ricky Van-yip Department of Psychology	A Convenient Package to Enhance the English Phonics Ability of Chinese Children with Reading Difficulties		
Dr Peggy Cheung Pui-yee Department of Health and Physical Education	Using Exergame-based Approach for the Teaching of Fundamental Motor Skills in Kindergarten		
Professor Lo Sing-kai Graduate School	Train the Trainers: Teaching in High School using English as the Medium of Instruction in the Greater Bay Area		
Dr Henry So Chi-fuk Department of Mathematics and Information Technology	Development of a VR-learning Monitoring Kit		
Dr Zou Di Department of English Language Education	Transferring Knowledge of Virtual Classroom for Teaching Writing		
Dr Kean Poon Kei-yan Department of Special Education and Counselling	Examining the Effectiveness of Working Memory Training App in Students with Attention Deficit and Hyperactivity Disorder and/or Reading Difficulties		
Dr Emma E. Buchtel Department of Psychology	Mask Wearing Behaviors and Attitudes: Cultural and Individual Influences		

## **Annex III**

## **Approved iTech Fund Projects 2020/21**

Principal Investigator	Project Title
Dr Susanna Yeung Siu-sze Department of Psychology	Applying Artificial Intelligence in Evidenced-based Intervention: Development of Digital Reading Intervention App
Professor Chiu Ming Ming Department of Special Education and Counselling	Creating an Intervention Dashboard for Maintaining Critical Infrastructure during Epidemics: Artificial Intelligence - Multilevel Diffusion Analysis (AI-MDA) of Influenza and COVID-19
Dr Leung Chi-hin Department of Cultural and Creative Arts	A System for Composing and Arranging Music in Grid Notation with Artificial Intelligence (AI) Technology
Dr Hung Keung Department of Cultural and Creative Arts	Designing a Novel Tai Chi Practice Experience by Integrating New Digital Typefaces Design and AR Technology
Dr Kevin Yuen Chi-pun Department of Psychology	The Upgrade of the Research Prototype of the MAndarin spoken word-Picture IDentification test in noise - Adaptive (MAPID-A) into a Clinical Version for Front-line Professionals in Medical, Health and Educational Settings
Dr Ricci Fong Wai-tsz Ricci Department of Curriculum and Instruction	Super-HERO Kids: Enhancing Children's Character Strengths Through Augmented Reality and Holograms
Dr Esther Lau Yuet-ying Department of Psychology	An Interactive Web-Based Tool for Enhancement of Sleep and Psycho-spiritual Health

## Annex IV

## **List of Patent Application in 2020/21**

Туре	Inventor List	Name of Patent	Serial Number of Patent	Country/ Region Granting the Patent	Date of Application/ Grant
Patent application	Dr Zou Di Department of English Language Education	System, Computing Device, and Computer Readable Storage Medium 自動情緒識別方法、系統、計算設備及計算機可讀存儲介質	Application No: PCT/CN2020/11 8887	PCT	20200929
	Professor Chou Kee-lee Department of Asian and Policy Studies		Application No: 22020017066	Hong Kong	20200929
	Dr Xie Haoran, Dr Jacky Nai Wang-kay & Ms Liu Caixia (external partners)		Application No: 202080002247.0	China	20201009
Patent application	olication WU Shiu-sun and Method for	Determining Dissolved Oxygen Content in a	Application No: 17/341,686	U.S.	20210608
			Application No: 21179728.7	Europe	20210616

#### Annex V

#### **Internal Award Winning Projects in 2020/21**

## Faculty of Liberal Arts and Social Sciences The 8th round of Dean's Research Fund

#### **Impact Case Study Prize**

Awardee(s) / Department	Title of the Impact Case Study		
Dr Lewis Cheung Ting-on Department of Social Sciences	Promoting Sustainable Tourism Development for Wolong National Nature Reserve, Sichuan Province, and Hong Kong		
Professor Stephen Chiu Wing-kai Department of Social Sciences	The Development of Chinese Medicine in Hong Kong: Professionalization, Utilization and Policies		
Dr Sze Tak-on The Academy of Hong Kong Studies			
Dr Deng Wenjing, Professor Rudolf Wu Shiu-sun & Professor Ho Wing-kei Department of Science and Environmental Studies	UV-filters and plasticizers contamination in the urine and hair of preschool children, airborne particles in kindergartens, and drinking water in Hong Kong		
Dr Ling Man-ho Department of Mathematics and Information Technology	Advanced statistical models in data analysis for reliability and safety assessment		
Dr Man Yu-bon & Professor Wong Ming-hung Department of Science and Environmental Studies Dr Mo Wing-yin School of Science & Technology, OUHK	Development of high-grade pellets using food wastes for safe and quality fish production		

#### **Knowledge Transfer Prize**

Awardee(s) / Department	Title of Research Project	
Dr Tsang Yiu-fai Department of Science and Environmental Studies	Environmental Pollution Control and Management: From "Waste" to "Treatment"	
Dr Zhang Qiaoping Department of Mathematics and Information Technology	Design of Picture Books in Learning Mathematics in Primary Mathematics Classrooms	

# Faculty of Education and Human Development Research Awards 2020/2021 Dean's Research Award: Research Engagement and Impact

Principal Investigator(s)		Research Area	
		Creating an Impact: Setting up a Green Skills Hub at the EdUHK	





## **International Award Winning Projects in 2020/21**

Project Title Principle Investigator(s)		Award(s)	
2021 Special Edition – Inventions Geneva Evaluation Days (March 2021)			
Online Assessment System for Individual Scores (OASIS)	Principal Investigator: Professor Woo Chi-keung Department of Asian and Policy Studies Co-investigators: Dr Henry So Chi-fuk Department of Mathematics and Information Technology Dr Alice Shiu, Dr Liu Yun (external partners)	Gold Medal	
Portable Interactive Meditation Mirror	Dr Hung Keung Department of Cultural and Creative Arts	Gold Medal	
CanPro - Data-driven Cantonese Pronunciation Practice through Common Daily Expressions	Dr Chin Chi-on Department of Linguistics and Modern Language Studies Mr Nicky Ng Chun-yick ( <i>EdUHK Former Student</i> )	Silver Medal	
Drug-Related Attentional Bias in Drug Abusers and Rehabilitated Drug Abusers	Professor Leung Chi-hung Department of Special Education & Counselling Mr Chao Chac-kei The Integrated Centre for Wellbeing Mr Chan Hiu-fai (external partner)	Silver Medal	
Innovative Indoor Air Quality Monitoring and Education Kit	Dr Deng Wenjing Department of Science and Environmental Studies	Silver Medal	
Utilization of Waste Residues as Resources in Producing Sustainable Construction Materials	Dr Tsang Yiu-fai, Mr Cheng Wai-nam Department of Science and Environmental Studies	Silver Medal	
Tree Assessment for Life Education (TALE) Project	Professor Jim Chi-yung, Dr Alice Chow Sin-yin Department of Social Sciences Professor John Lee Chi-kin TALE project team Centre for Religious and Spirituality Education	Silver Medal	
11th International Innovation and Invention Competition (November 2020)			
Online Assessment System for Individual Scores (OASIS)	Principal Investigator: Professor Woo Chi-keung Department of Asian and Policy Studies Co-investigators: Dr Henry So Chi-fuk Department of Mathematics and Information Technology Dr Alice Shiu, Dr Liu Yun (external partners)	Gold Medal	

Project Title	Principle Investigator(s)	Award(s)	
11th International Innovation and Invention Competition (November 2020) [Continued]			
The MAndarin spoken word-Picture IDentification test in noise - Adaptive (MAPID-A)	Dr Kevin Yuen Chi-pun Department of Special Education and Counselling	Gold Medal	
VocabGO – An Augmented Reality English Vocabulary Learning App	Dr Song Yanjie Department of Mathematics and Information Technology	Gold Medal	
Portable Interactive Meditation Mirror	Dr Hung Keung Department of Cultural and Creative Arts	Gold Medal	
Eco-concrete Block Utilizing Waste Sludge	Dr Tsang Yiu-fai Department of Science and Environmental Studies	Silver Medal	
An Emotion Recognition System Based on The Deep Neural Network	Principal Investigator: Dr Zou Di Department of English Language Education Co-investigators: Professor Chou Kee-lee Department of Asian and Policy Studies Dr Xie Haoran (external partner)	Silver Medal	
International Invention Innovation	on Competition in Canada 2020 (August 2020)		
Environmental Pollution Control through Practices: From "Waste" to "Treatment"	Dr Tsang Yiu-fai Department of Science and Environmental Studies	Gold Medal, Special Award, Top 20 Best Invention of iCAN 2020	
The MAndarin spoken word-Picture IDentification test in noise - Adaptive (MAPID-A)	Dr Kevin Yuen Chi-pun Department of Special Education and Counselling	Gold Medal, Special Award, Top 20 Best Invention of iCAN 2020	
Remote-controlled Digital Hydrometer	Miss Leyla Liu-yan ( <i>EdUHK former student</i> ) Professor Yeung Yau-yuen Department of Science and Environmental Studies	Gold Medal, Special Award	
Automatic Children Hearing and Listening in Noise Ability Screening System	Dr Anna Kam Chi-shan Department of Special Education and Counselling	Silver Medal, Special Award, Best Woman Inventor Award	
Computerized Working Memory Training for Students with ADHD and RD	Dr Kean Poon Kei-yan Department of Special Education and Counselling	Silver Medal, Special Award, Best Woman Inventor Award	
m-Orchestrate: A Mobile App for Teacher Orchestration in Collaborative Science Inquiry	Dr Song Yanjie & Mr Cao Jiaxin Department of Mathematics and Information Technology	Silver Medal, Special Award	

## **Summary of Performance Indicators**

#### **Annex VII**

Performance Indicators for Knowledge Transfer Activities			2019/20 (1/7 – 30/6)	2020/21 (1/7 – 30/6)
1	Continuing Professional Development (CPD) Courses	Number of CPD courses	25	41
		Income from CPD courses	\$10,639,944	\$14,173,590
1		Number of key partners	28	41
		Number of student contact hours	1,260	1,886
	Local/ International Professional Conferences	Number of local/ international conferences	16	32
2		Income from conferences	\$1,226,111	\$2,257,171
2		Number of key partners	34	65
		Number of presentations	460	872
		Number of professional workshops/ seminars	234	381
3	Professional Seminars/ Workshops	Income from seminars/ workshops	\$558,560	\$569,760
		Number of key partners	237	460
		Number of commissioned/ contract projects	119	135
4	Commissioned/ Contract Projects	Income from projects	\$95,848,862	\$104,649,853
	,	Number of key partners	473	549
		Number of partnership projects	101	98
5	Partnership Projects	Income from partnership projects	\$30,112,924	\$20,875,882
		Number of key partners	593	481
_	G	Number of consultancies	42	37
6	Consultancies	Income from consultancies	\$1,336,335	\$1,152,871
		Number of programmes involved	44	43
_	Professionals Engaged in Academic/	Number of teachers engaged	37	121
7	Professional Programmes	Number of principals engaged	15	147
		Number of other professionals engaged	79	121
0	Commercialised R&D Products and	Number of commercialised R&D products/ IPs	48	46
8	Intellectual Properties(IPs)	Income from the R&D products/ IPs	\$312,350	\$1,222,316
9	Social, Community and Cultural Engagement	Number of public lectures/ symposiums/ exhibitions and speeches to a community audience	224	385
9		Number of performances and exhibitions of creative works by staff or students	11	68
10	Staff Engaged as Professional Consultants or Members of External Advisory Bodies	Number of staff engaged	176	189
11	Student Engagement	Number of student internships/ placements	2,783	3,188
12	Publicity or Media Exposure	Number of publicity or media exposure related to KT, including print, on-line and electronic media	713	784
	Nexus between Research and Teaching	Number of academic staff using research in teaching/ course activities	258	259
13		Percentage of academic staff using research in teaching/ course activities	95.6%	96.3%
-		Number of academic staff using teaching as research	153	154
		Percentage of academic staff using teaching as research	56.7%	57.2%
14	Publications with Local and Regional Impacts <sup>Note 1</sup>	Number of publications directly relevant to improvement, innovation and development of professional/ educational practices/ policy development	868	992

#### Notes:

1. All the incomes generated are in HK\$.

