

THE CHINESE UNIVERSITY OF HONG KONG**Special Funding Scheme for Online Learning
supported by the Teaching Development and Language Enhancement Grant for 2019-22**

Project title: Enhancement of Online Teaching and Learning with Zoom at Institutional Level

Principal supervisor and unit: Professor LAM Lai Chuen Paul, Centre for Learning Enhancement and Research

Project objectives

The project aimed to identify the challenges faced by teachers and students in the online learning environment, look for, and share good online teaching and eAssessment practices through different means.

Activities, process and outcomes

Four rounds of teacher and student survey on online teaching and learning were conducted between February 2020 and January 2021 to understand the online teaching and learning experience using Zoom and other eLearning tools. Student and teacher focus group interviews were also conducted to further investigate the challenges of online teaching and learning and collect good practices. In total, 3,882 students and 742 teachers participated in the surveys. About 50 students and 19 teachers from all faculties were interviewed.

Deliverables and evaluation

The project objectives were well achieved. The research helped us understand the challenges teachers and students faced during the pandemic and how they coped with the difficulties. Therefore, we could address their challenges properly and suggested solutions in various ways including written guides, workshops, and conference presentations. Recommendations were also provided in the reports that were presented to the Senate Committee on Teaching and Learning, so the University was better informed when allocating resources and carrying out policies to meet the needs of teachers and students.

Dissemination, diffusion and sharing of good practices

We presented the research results and good practices of online teaching and learning in various occasions. Using the good practices collected from the surveys and interviews, four guides on online assessment were published. We also conducted an online workshop to cover topics such as “virtual flipped classroom” and “active learning in virtual environment”.

Impact on teaching and learning

The four written guides on online assessment and online teaching have been widely used by faculties in designing and refining their online examination and assessment approaches.

THE CHINESE UNIVERSITY OF HONG KONG**Special Funding Scheme for Online Learning
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Project title: Evaluation of the Concerns and Barriers of Online Assessment at CUHK – Students’ Perspectives

Principal supervisor and unit: Professor LEE Wing Yan Vivian, Centre for Learning Enhancement And Research

Project objectives

The project aimed to evaluate (1) the perceived effectiveness of using ZOOM in assessment; (2) barriers and problems of using online assessment; and (3) suggestions for improvement.

Activities, process and outcomes

1. The first stage involved online questionnaires and 752 students has completed.
2. The second stage involved in-depth interviews and 43 students from 8 faculties joined the zoom interviews.
3. The third stage involved meeting 7 students for sharing of best practices or difficulties in a teacher seminar.
4. Video filming of the difficulties the students from the 8 faculties have faced in online assessment and suggestions for future improvement was done.

Deliverables and evaluation

A total of 739 (98.3%) students have taken online assessment. Only 16.6% of students were satisfied with the online assessment arrangements. The major difficulty that students faced was technical problems (52.6%). Students expressed that teachers’ feedback was essential for learning, and they wished to receive timely and detailed performance feedback. Students suggested that standardized measures should be taken to prevent cheating and maintain high level of academic honesty.

Dissemination, diffusion and sharing of good practices

The finding of the project was presented at CUHK Teaching and Learning Innovation Expo on 29 and 30 July 2020. Individual faculty report has been disseminated to the faculty office. A manuscript entitled “Rethinking Assessment during COVID-19 pandemic from the University Student Perspectives” was submitted to Cogent Education.

Impact on teaching and learning

The current study revealed the need to develop a reliable online assessment system. Online assessment could be enhanced through the provision of a comprehensive platform among teachers in curriculum design, assessment and the betterment of using technology in teaching and learning.

THE CHINESE UNIVERSITY OF HONG KONG

**Special Funding Scheme for Online Learning
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Project title: **Micro-modules to Facilitate Online Learning and Discussion**

Principal supervisor and unit: **Dr. KIANG Kai Ming, Office of University General Education**

Project objectives

We think Zoom is not only suitable for teacher-student interactions but also student-student discussions. In order to do that, we made new micro-modules that provides the guidance to the students from the teacher on the discussion topic. More specifically, the teacher in each of these micro-modules will introduce one question that is of interest, and provide more than one possible answer to it, all within 5 minutes.

Activities, process and outcomes

To prepare the micro-modules, our teacher team prepared and delivered most of the materials, together with the help of two specialists. Both of them are very experienced in generating easy to digest yet accurate popular science content for the general public. The organizing, filming and editing of the micro-modules, and updating the KEEP (CU eLearning platform) course website, was handled by a teaching assistant.

Deliverables and evaluation

We developed 20 new question-based micro-modules, remade 40 existing micro -modules, and enhanced 6 micro-modules to improve the sound quality.

Surveys to gather feedback such as the satisfactory rate and student opinions on these new micro-modules as well as the arrangement of Zoom online discussion were conducted. The result is as follow:

Overall, participating in online discussions is enjoyable.	141/197 = 71.6%
Overall, participating in online discussions is helpful in learning.	146/197 = 74.1%
The current setting for online discussion is convenient.	115/137 = 83.9%

Dissemination, diffusion and sharing of good practices

We think the method of using question-based micro-module to enable student online discussion via Zoom could potentially be adopted by many other teachers within and outside CUHK. Unfortunately, due to the Covid-19 pandemic, we didn't have the opportunity the share our project results in international conferences. We will however, share the result in the CUHK Teaching and Learning Innovation Expo 2021, locally.

Impact on teaching and learning

One of the impacts to the teachers who have prepared these new question-based micro-modules is that it helps us consolidate our ideas related to the chosen question more clearly and concisely. We also think this project, using micro-modules to facility student-student Zoom discussions, can greatly enhance students' overall learning experience and opportunities.

THE CHINESE UNIVERSITY OF HONG KONG**Special Funding Scheme for Online Learning
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Project title: A Multi-media Module for Speaking Assessment in University Chinese

Principal supervisor and unit: Professor TANG Sze Wing, Department of Chinese Language and Literature

Project objectives

The teaching of speaking is an important course component of CHLT1200 “University Chinese II”. Previously, the course lecturers taught speaking mostly by demonstrating the application of various gestures and intonations on the spot to complement the theories addressed in the written teaching materials. However, under the impact of the COVID-19 pandemic, all classes were moved online in early 2020. The difficulties faced by the course instructors when doing demonstrations through online teaching tools led to the application for this academic grant, and a total of 11 multimedia teaching videos were produced to support the teaching of speaking.

Activities, process and outcomes

The teaching videos were produced and used in pilot classes in stages before they were adopted by all course lecturers.

The teaching videos mainly comprise speeches demonstrated by students, and annotations are provided to indicate the key points worth noting in the demonstrations. The course lecturers can use the multi-media teaching materials for discussion in class or as a self-learning resource.

Deliverables and evaluation

11 teaching videos were produced; positive comments were received from teachers and students.

Dissemination, diffusion and sharing of good practices

The team explained the project details and progress to the public and frontline teachers in different events, e.g., Teaching and Learning Innovation Expo and Retreat, and provided several teaching cases as examples.

Impact on teaching and learning

The teaching videos helped students understand the contents of traditional teaching materials, and compensated the limitations of live demonstration in online teaching.

THE CHINESE UNIVERSITY OF HONG KONG**Special Funding Scheme for Online Learning
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Project title: Using Telepresence and Social Technologies to Create Social Impact

Principal supervisor and unit: Professor LEUNG Hok Bun Isaac, Cultural Management Programme

Project objectives

This project aims to document and reflect on a course that relies on telepresence technology and social media to build effective online engagement between instructors, students and the outside world. Students have adopted a networked approach enabled by social technologies, working with members from community partners to co-create content that promotes a positive message to the broader community.

Activities, process and outcomes

Students on my course have conducted extensive community projects via various social platforms in the past few months. This course demonstrates how students could empower different communities in Hong Kong via social platforms during the time of the pandemic. This course aims to improve students' understanding of the ways in which communities could be potentially empowered by curating cultural activities.

Deliverables and evaluation

There are altogether five projects that address various issues, such as the minority groups in Hong Kong, farming, the history of mahjong, neon light culture in urban settings, and local travel. Students have been using various social platforms to generate and disseminate their research concerning different issues, and they have connected with various community groups and attempted to create a positive impact for them.

Dissemination, diffusion and sharing of good practices

I have attended 2 conferences, including Online Education: Teaching in a Time of Change (AMPS, Routledge, University of Manchester) and Teaching and Learning Innovation Expo 2021(CUHK). One conference paper will be published.

Impact on teaching and learning

Through the use of blog-based and social media apps, students are given greater opportunity to gain a deeper understanding of culture by working together through global online platforms and experiencing real-world projects. The students on my course have never felt that they could create impact by conducting non-traditional cultural projects, and they believe that the course is important for them to develop skills that are necessary in the 21st century creative industries. This echoes the global trend that highlights the necessity of adapting interdisciplinary and innovative approaches – a culture that embraces fluidity, collaboration and creative mobility.

THE CHINESE UNIVERSITY OF HONG KONG

**Special Funding Scheme for Online Learning
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Project title: The Digital Human Libraries

Principal supervisor and unit: Dr. CHAN Sin Yu Cherry, English Language Teaching Unit

Project objectives

This is a project that transcends good teaching and learning practices beyond traditional and restrictive in-class settings via Zoom and other online platforms to reach out to students at all levels, and to contribute to their continual learning, developing and mastering of the English language and reflective learning on this campus. It aims to create a student-centered, collaborative online learning environment through a series of eLearning tasks and materials in two alternative communication-intensive English Language Teaching Unit (ELTU) courses, *Intercultural Communication through English* and *English through Performing Arts*.

Activities, process and outcomes

Interactive based activities, namely, The Human Library, were conducted to provide students with the opportunities to interact with students from different regions. Digital narratives were created as teaching materials.

Deliverables and evaluation

All the data collected after the course (e.g., post-course questionnaires, semi-structured interviews) were analyzed. The results pointed to meaningful growth in language enhancement and intercultural competence. Perceptions of the project were positive.

Dissemination, diffusion and sharing of good practices

A course website (<https://eltu.cuhk.edu.hk/files/DHL/>) has been created for the two courses, in which students of the courses can assess the materials.

Details about this project and the findings of the activities were disseminated at local and international events.

Impact on teaching and learning

Experiential learning is crucial to promote meaningful gains in language enhancement, intercultural competence. Meaningful intercultural exchanges can be provided for local and international CUHK students to promote internationalization at home.

The short video:

https://gocuhk-my.sharepoint.com/:v:/g/personal/cherrychan_cuhk_edu_hk/EemWormUy3xGjP9M2_zwvoEBIQbh6O8IswhTLM95FA8Ivw?e=9yKC7b

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**Special Funding Scheme for Online Learning
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Project title: Co-Ordinating Student Learning Perceptions via Expanding Online Teaching Activities

Principal supervisor and unit: Professor MORLEY Ian, Department of History

Project objectives

1. To analyze why students hold particular perceptions of online teaching and learning within the context of the CUHK History curriculum; and
2. To develop learner knowledge (facts and skills) by devising new means to expand the synchronous and asynchronous modes of online teaching within the History program.

Activities, process and outcomes

In terms of project findings, a number of prominent matters were identified: History students felt teacher-student communication was vital to successful online pedagogy; assessment practices usable in the classroom needed to be amended so as to be ‘fair’ in the online setting; in accordance the overall grading system for courses needed adapting for the ‘new normal’; and, many students had problems with concentration when working at home. This affected their ability to develop knowledge given the practices used by teachers on Zoom. A conclusion of the study too was successful classroom teaching did not necessarily translate into successful online teaching. Where possible teachers encouraged student social interaction online, the learners very much enjoyed such activity.

Deliverables and evaluation

What became apparent from questioning both teachers and students was similarities in how Zoom offered a good potentially platform for teaching, but also acted as a hindrance under certain learning conditions. Given this common standpoint, students were asked as to how teachers could more effectively use Zoom. In effect the response was that Zoom works best when some teaching and learning activities are applied in conjunction with other software. However, such operation of using Zoom alongside other eLearning platforms could not detract students from their view that learning sometimes during 2020 was not as deep as in the classroom, and they were losing out thanks to the lack of opportunities to visit archives and undertake fieldtrips.

Dissemination, diffusion and sharing of good practices

The sharing of data is broadly discussed here. First, efforts were made to liaise with the Arts Faculty Office and in this regard the Associate Dean of Education took an interest in the inquiry and an email was sent out to gather staff together as a Community of Practice. Second, meetings were held with colleagues in and outside the PI’s Department to discuss teaching practices that worked well. Thirdly, to ensure dissemination of good practices was evident, efforts was made by the PI to connect with colleagues, to discuss their perceptions of student learning in an online context, and to share ideas as to practices that worked and didn’t. In doing this new discourse was established for staff in the History Department to apply for Courseware Development Grant (CDG) and TDLEG grants, thereby solidifying blended learning approaches already established.

Impact on teaching and learning

The project has supplied three principal impacts upon pedagogical practice in and beyond the Department of History:

1. It has permitted the PI to accrue new knowledge of students’ online learning perceptions, and this knowledge has been shared with colleagues, especially younger ones who have experienced a number of

pedagogical challenges in adjusting to the Zoom context, and in addition project findings have been distributed to all departmental colleagues at Board Meetings so that they can (re)think their practices as to what 'successful online teaching and learning' is;

2. To encourage dissemination of findings within the Arts Faculty the PI has held meetings with the Associate Dean of Education, and also spoken less formally with peers in other Departments as well as presented at the 15th *eLearning Forum Asia* in late-2020. Project findings also fed into a presentation given at a CLEAR (Centre for Learning Enhancement And Research) workshop in Term 2, 2020-21;
3. Outside of the CUHK context, so as to impact upon teaching and learning, a short paper was written and published in the early-2021 (vol. 43, no. 1) edition of the Australian education journal, *HERDSA-Connect*.

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**Special Funding Scheme for Online Learning
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Project title: **Enhancing Delivery Quality and Interactions on Zoom with Pre-recorded Micro-Modules for Fundamentals of Tonal Music II**

Principal supervisor and unit: **Professor CHAN Kai Young Brian, Department of Music**

Project objectives

This project addresses the major drawback of using Zoom instruction in music courses. The compressed audio in Zoom has compromised the quality of instruction when illustration with music examples is called for. This project aims to produce self-learning materials with copyright-free music examples of high audio quality, to enhance students' learning experience.

Activities, process and outcomes

This project has produced a total of three video-modules that covers three proposed topics: scale degree and harmonic function, cadences, and common progressions. Students had to go through the core concepts through videos, complete assignments, and share and discuss their work with the instructor and their peers. The modules are successfully implemented in "Fundamentals of Tonal Music II" in 2019-20, and "Materials and Structures of Music" in 2020-21.

Deliverables and evaluation

A set of micromodule videos, totaling six units and 42 minutes in duration, was uploaded as a YouTube playlist:

https://www.youtube.com/watch?v=tnkYm3PTqsM&list=PLEfnxBQLxnWLUby6CFtrpiiK_aCSHxAzu

The Course and Teaching Evaluation (CTE) scores of "Fundamentals of Tonal Music II" has improved markedly – the score for "satisfaction with course" has increased 7.3% from 5.23 in 2019 to 5.61 in 2020.

Dissemination, diffusion and sharing of good practices

Putting the videos on a centralized YouTube playlist facilitate easy access for the students as they do not have to log in to view the content – the reduced access barrier might have contributed to the popularity and positive feedback of the videos.

Impact on teaching and learning

The pre-recorded materials have allowed the instructor to free up more class time for interactions. The increased time for hands-on activities (i.e. music writing) and peer critique exercise has allowed my students to better achieve the learning outcomes.

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**Special Funding Scheme for Online Learning
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Project title: Teaching Business Statistics in an Interactive Environment via Zoom

Principal supervisor and unit: Dr. YUEN Chi Lok Andrew, Department of Decision Sciences and Managerial Economics

Project objectives

The project aims to establish an interactive environment for students learning business statistics via Zoom.

Activities, process and outcomes

Tutorials: Tutorials will be arranged for students. Senior year students will be invited to serve as tutors to answer students' questions. Three tutorials have been carried out in March and April 2020.

Deliverables and evaluation

Teaching videos: 30+ videos have been produced to cover the major topics in business statistics. The videos also teach students how to use Microsoft Excel to carry out statistical analysis. Students can watch the videos before the class for preparation, so that they can catch up the discussions easier during the Zoom classes. The videos can also help students to do revisions after the class.

Mini-cases: 6 cases are developed and adopted in the Zoom classes for business statistics. In order to facilitate the interaction and promote in-depth learning in Zoom classes, mini-case discussion will be carried out. In each case, students will be given a particular business scenario, then they are required to consider how statistical analysis can improve decision making in business.

Dissemination, diffusion and sharing of good practices

A presentation has been carried out in the Teaching and Learning Innovation Expo organized by the Centre for Learning Enhancement And Research (CLEAR) in July to share with the audience about the experience in Zoom teaching and other blended learning practices. It is noted that direct duplication of face-to-face lectures to Zoom class may not lead to effective teaching and learning outcome. Instead, it should be a well-design blended learning, with synchronous and asynchronous online activities. Students' difficulties in Zoom class, including hardware/software issues, home environment, learning habit, should also be considered.

Impact on teaching and learning

Based on the Course and Teaching Evaluation (CTE) results, the students were satisfied with zoom teaching with supporting the videos produced in the project.

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**Special Funding Scheme for Online Learning
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Project title: Online Teaching and Learning: Opportunities and Challenges

Principal supervisor and unit: Dr. KU Kei Tat Fred, Department of Decision Sciences and Managerial Economics

Project objectives

The study aims at evaluating the teaching and learning effectiveness of online teaching using Zoom at undergraduate and postgraduate levels in CUHK Business School. Given the outbreak of coronavirus, universities in Hong Kong have to switch to online teaching and learning. Using Zoom is our university-wide policy and has attracted lots of attention from educators and pedagogical specialists. The study aims to investigate the impacts of online teaching and learning using Zoom in Business School, and at the same time identify the key challenges for effective teaching and learning (T&L) and good practices.

Activities, process and outcomes

Collaborating with the Centre for Learning Enhancement And Research (CLEAR), the project team conducted surveys, focus group and individual interviews with teachers, undergraduate and postgraduate students in CUHK Business School to collect their attitude, readiness, and perception of online education. A student performance comparison study has also been carried out.

Deliverables and evaluation

Presentations have been conducted in workshops, Teaching and Learning Innovation Expo, and an international conference on learning and teaching. A survey report that summarized and analyzed feedback collected has been prepared.

Dissemination, diffusion and sharing of good practices

The project results have been shared in the following workshops / conference:

- Teaching and Learning Innovation Expo 2020: “e-Assessment - What we have learnt”
- **ATLC Online Workshop organized by Hong Kong Shue Yan University:** “Effective Online Pedagogy”
- **International Conference on Learning and Teaching:** “Student Performance in Online Classes – A Comparative Study”

Survey report: *Survey Report on Students’ Attitude, Effectiveness and Key Challenges of Online Teaching and Learning*

Impact on teaching and learning

The key findings of the project deepen our understanding on the various aspects of eLearning, including the major advantages and key challenges that students faced in online learning. More effective eLearning strategies and support can be developed by taking these findings into consideration.

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Project title: From Physical to Virtual: A Field Trip Through VR Experience

Principal supervisor and unit: Dr. LIUSMAN Ervi, School of Hotel and Tourism Management

Project objectives

The project aims to substitute physical field trip by developing a virtual tour where students can have a comparable real-world experience.

Activities, process and outcomes

A one-hour full version of VR360° video tour “A Walk in CBD and Wanchai District” was developed and delivered to CUHK students enrolling at courses HTMG3030A “Hospitality Real Estate Economics”, HTMG3030B “Hospitality Real Estate Economics” and HTMG5021 “Shopping Mall Development and Management”. Extracting from the full version, four short versions were also developed to ease the feeling of tiredness and dizziness.

Deliverables and evaluation

The VR videos were uploaded to YouTube and easily accessible by students. To evaluate students’ learning performance, the pretest and posttest method was adopted. The students’ accuracy in answering posttest questions was increased after viewing VR video. Questionnaire surveys were also developed to examine students’ perceptions of VR learning experience. About 86% of them agreed that they greatly learned from VR video and 70% of them enjoyed viewing it.

Dissemination, diffusion and sharing of good practices

This project was virtually presented at the CUHK Teaching and Learning Innovation Expo in mid-2020, and in eLearning Forum Asia and European Real Estate Society Education Seminar in end-2020. VR can be a good substitute for physical field trip when the class is conducted online or hybrid as it does not have time and geographic boundaries. With VR, student learning outcomes can still be achieved.

Impact on teaching and learning

Students consider that VR can provide rich experience given the situation where they cannot have physical field trip. Their positive responses encourage me to innovate and develop VRs for other courses.

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**Special Funding Scheme for Online Learning
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Project title: 9 Theme-Based Animated Video Cases for Classroom- and E-Learning

**Principal supervisor
and unit:** Dr. IUN Sio Kun Joyce, Department of Management

Project objectives

Produce 9 theme-based animated videos for classroom- and eLearning. These videos are designed to offer students with a holistic and step-by-step learning in change management. These videos unfold the change management process of planning, decision-making, implementation, managing stakeholders and evaluation. Students can witness and experience the joy and pain along with the characters.

Activities, process and outcomes

Partnering with the Centre for Learning Enhancement And Research (CLEAR), I produced a series of 9 theme-based animated videos between April and December, 2020. One video case was produced monthly.

Deliverables and evaluation

By the end of December, 2020, all nine animated videos were completed with high level of satisfaction. They were used on Zoom learning in Term 2, 2020-21. A total of 34 students in “Management Consulting and Change Management” (MGNT 4130) used the videos in 3 group discussions. Students feedbacked positively. The project objectives are fulfilled with high level of satisfaction. All criteria such as learning tasks, learning materials, interaction with students and student engagement are met with high level of satisfaction.

Dissemination, diffusion and sharing of good practices

These videos are used in “Management Consulting and Change Management” (MGNT 4130), an upper elective course for multiple IBBA concentrations. Other Management teachers are welcome to use these videos in various contexts, such as crisis management and leadership skills.

Impact on teaching and learning

Both classroom- and eLearning require more ‘interesting’ materials to encourage student engagement in learning. Animated videos serve such purpose.

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**Special Funding Scheme for Online Learning
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Project title: Integrated Lightboard Teaching Studio

Principal supervisor and unit: Mr. YIP Kim Fung Frankie, Department of Electronic Engineering

Project objectives

This project aims to develop an integrated light-board teaching studio to enable eye-catching presentation style in Zoom. Drawing tablet and desktop visualizer are introduced as options for illustrating key concepts by handwriting during lesson.

Activities, process and outcomes

The relevant hardware equipment was purchased and two studios were setup in Ho Sin Hang Engineering Building. The internal assessments were conducted by two lecturers from the Department of Electronic Engineering. Trial lesson with 33 undergraduate students was conducted via Zoom, positive feedback from students were obtained.

Deliverables and evaluation

Two studios were well established, which help teachers in online teaching not only by using presentation files, but also by real-time handwriting in lightboard, 3D visualization, etc at the same time. Both teachers and students can experience good teaching and learning quality.

Dissemination, diffusion and sharing of good practices

The project outcomes were promoted in CUHK Teaching and Learning Innovation Expo in Jul-2020.

Impact on teaching and learning

The teaching approach is changed by adopting this studio to conduct zoom lesson. Traditionally, teacher need to turn back to write the text on a white board; making use of lightboard, teacher can write bright, clear text when facing the students to keep eye contact. In addition, more facial expressions and body languages can be used combining with lightboard teaching.

THE CHINESE UNIVERSITY OF HONG KONG**Special Funding Scheme for Online Learning
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Project title: An "Online" Experiment Platform for IERG4100 and IEMS5701

Principal supervisor and unit: Professor CHEN He Henry, Department of Information Engineering

Project objectives

This project aims to develop an online experiment platform, particularly focusing on IERG4100 “Wireless Communications” (a year-3/4 undergraduate course) and IEMS5701 “Wireless Communication Systems” (a MSc course). More specifically, we will design and implement a software kit that empowers the students to remotely access and program the radio experiment equipment in the laboratory. A real-time video stream will also be integrated into our platform such that students can see what is happening on the experiment equipment in the laboratory. A key benefit of such an online experiment platform is that the students can access the experiment equipment 7×24 a week if they want, which breaks the limitations of conventional experiment sessions where students need to physically come to the laboratory.

Activities, process and outcomes

This project implemented the Team Viewer software, which is a popular software application for remote computer control. As examples, here we summarize three remote laboratory experiments: two remote experiments on conducting wireless experiments on the Universal Software Radio Peripheral (USRP) platform and one experiment on remote observations of biomedical samples (e.g., cells) through a wireless connected microscope.

Students’ feedback in the Course and Teaching Evaluation (CTE) was positive — They felt that the materials helped them understand the underlying knowledge.

Deliverables and evaluation

The project delivered the four planned deliverables. The performance of the project was evaluated by students’ feedback. Overall, the students found the materials developed in this project useful in helping them understand the taught concepts. The project followed the planned evaluation plan.

Dissemination, diffusion and sharing of good practices

The project team had a successful collaboration with researchers from the Department of Biomedical Engineering of CUHK to develop a portable and label-free microscope imaging system including image processing, wireless data transmission and remote control functionalities.

Impact on teaching and learning

The project deliverables was used in the teaching of IEMS5701 in Term 1, 2020-21. The students found the materials developed in this project useful in helping them understand the taught concepts.

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Project title: Flipped Online Laboratory for Making Students' First Robot

Principal supervisor and unit: Dr. HAN Dongkun, Department of Mechanical and Automation Engineering

Project objectives

1. A new eLearning pedagogical approach called *flipped online laboratory* is proposed and applied in teaching robotics for the general education course UGEB2303 "Robots in Action".
2. Lab sessions of this course can be carried out by using the constructed flipped online laboratory, and corresponding hands-on skills can be obtained by students.
3. Creatively develop a new way in conducting online laboratory by using *self-developed Arduino-based software*, Zoom, and remote control technique.
4. Develop 3 *micro-modules* for assembling and manipulating robotic arms for any related robotic courses in the Faculty of Engineering.
5. Produce 10 *sets of remote controllable robotic arms* for either online or offline lab sessions.

Activities, process and outcomes

The whole process of the project development can be generally divided into two parts: The first part focuses on the development of hardware, while the second part is concerned with software and micro-modules development. The scheduling of this project is given as follows:

No. of week	Carried out activities	deliverables/outcomes
1-2	Hardware selection, purchase, compatibility checking, online lab teaching materials development	3 micro-modules produced
2	Hardware assembling and testing	
3	Software development for Arduino controllers	1 set of Arduino based programs
4	Hardware and software compatibility checking and development	10 sets of remote controllable robotic arms with sensors
5-7	Gathering feedback from students, modifications for the proposed pedagogy	1 online robotic laboratory completed
8-12	Implementation of the proposed pedagogy to other courses, gathering feedback from participants and making positive adjustment	1 webinar for Mechanical and Automation Engineering students; 1 leaflet and 1 video for publicity of this project; 1 poster/presentation at local conference;

Deliverables and evaluation

The achieved outcomes with key deliverables are listed in the following table:

No.	achieved key activities/ deliverables/ outcomes	Key deliverables
1.	Micro-modules produced	3 micro-modules for assembling and manipulating robotic arm respectively
2.	Teaching/exhibition platform	1 online robotic laboratory with 10 sets of remote controllable robotic arms

3.	Teaching hardware produced	10 sets of robotic arms with sensors and 10 sets of Arduino controllers
4.	Teaching software produced	1 set of Arduino-based programs for laboratory teaching related to robotics
5.	Conference	1 posters/presentations in 1 local conference/exposure
6.	Workshop	N/A
7.	Seminar	1 seminars attended by 50 students
8.	Other deliverables	1 leaflet and 1 video for publicity of this project

Dissemination, diffusion and sharing of good practices

Presentations in workshops or conferences:

1. Flipped Online Laboratory for Making Students' First Robot, Teaching and Learning Innovation Expo 2019-20, 16 July 2020. (Got the Poster Award)
2. Flipped Online Laboratory for Making Students' First Robot, eLearning Forum Asia 2020, 7 December 2020.
3. Virtual competition of solar powered cars, Invited speaker at Sustainable Development Goals (SDGs) Engagement Workshop, 15 December 2020.
4. Flipped Online Laboratory, Invited speaker, Flipped Learning in the Age of COVID-19: Panel Discussion, 17 December 2020.
5. Three versions of flipped online laboratory, Invited speaker, GE Lunch Seminar – Online Teaching and Learning: Challenges and Opportunities during COVID-19, 27 April 2021.

Impact on teaching and learning

The results of feedback from students are given as follows:

1. Rate of positive feedback is 93.2% in the Survey on the online laboratory learning experience towards the end of the courses UGEB2303.
2. Rate of positive feedback is 82.9% in the survey on the micro-modules and eLearning materials towards the end of the courses UGEB2303.
3. Rate of positive feedback is 100% in focus group interview with a small group of volunteer students of the courses UGEB2303.
4. Rate of positive feedback is 84.6% on the course website and small group forum.

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Project title: Virtual Labs for Fluid Mechanics

Principal supervisor and unit: Professor REN Wei, Department of Mechanical and Automation Engineering

Project objectives

It becomes quite challenging to teach a fundamental course with heavy elements of laboratory and experiment when conducting online teaching. The aim of this project is to resolve such issues for an engineering fundamental course, i.e., Fluid Mechanics, by establishing fluid models and building a virtual laboratory using computational fluid dynamics tools.

Activities, process and outcomes

1. To establish fluid models to assist the conceptual explanation; and
2. To build a virtual laboratory for fluid experiments.

We use the Computational Fluid Dynamics (CFD) software to establish experimental models and virtual laboratory that can be used in Zoom teaching. We also build a virtual laboratory for simulating the water purification reactor. Such a virtual lab assists students' understanding of the turbulence flow which is a very difficult topic in fluid mechanics.

Deliverables and evaluation

We deliver all the models and animations required to assist the conceptual explanation in fluid mechanics, as well as a virtual laboratory for water purification reactor experiment. All the models, animations and the virtual experiment are used to assist the conceptual explanation in fluid mechanics during online teaching. The project delivers innovative instructional strategies and teaching materials for conducting online teaching using Zoom.

Dissemination, diffusion and sharing of good practices

The model and virtual lab experiment can be shared with colleagues at CUHK. A website is constructed to demonstrate the teaching materials.

Impact on teaching and learning

The output and achievement obtained in this project set a good example to all the other online courses involving laboratory and experiments. The CFD models can also be used for other relevant undergraduate courses.

THE CHINESE UNIVERSITY OF HONG KONG

**Special Funding Scheme for Online Learning
supported by the Teaching Development and Language Enhancement Grant for 2019-22**

Project title: **Emergency Response for Online Clinical Teaching Pedagogy and Assessment: Development and Evaluation**

Principal supervisor and unit: **Professor WONG Carmen, Office of Medical Education**

Project objectives

To support clinical teachers and students in online clinical teaching and learning and assessment

- Including surrogate training and models and development of innovative clinical pedagogies and assessment and pandemic preparedness planning in clinical teaching

Activities, process and outcomes

The project included staff and student educational and discussion forums for online learning, technical responsive team, and evaluation survey of staff and students online learning. Process indicators and outcomes include pandemic planning discussions, online clinical teaching activities and online sessions/assessments with surrogate patients and models, evaluation report and pandemic preparedness plan for clinical teaching.

Deliverables and evaluation

Evaluation survey of clinical students and teachers to assess the medical education response to COVID-19 in terms of communication, online learning, infection control, and assessments showed satisfactory response, identified effective simulation, case and surrogate online teaching practices although cannot fully replace clinical teaching in context.

Dissemination, diffusion and sharing of good practices

Lead author: Wong C et al. Continuing medical education during pandemic waves of COVID-19: Consensus from medical faculties in Asia, Australia and Europe [version 1]. MedEdPublish 2021, 10:64.

Dissemination through faculty meetings and discussions through subsequent waves of pandemic in planning curriculum and assessments.

Dissemination in 3 international medical education meetings as invited speaker, in 2 meetings with CUHK leading an international webinar in May 2020 with 194 participants from 25 countries.

Impact on teaching and learning

CU clinical medicine now provides a responsive and adaptive online curriculum and includes communication, infection control, online education and simulation, and clinical assessment contingencies.

THE CHINESE UNIVERSITY OF HONG KONG

**Special Funding Scheme for Online Learning
supported by the Teaching Development and Language Enhancement Grant for 2019-22**

Project title: Development of Video Materials for Practical Teaching of Instrumental Analysis and Application in Biomedical Sciences

Principal supervisor and unit: Professor WAN Chao, School of Biomedical Sciences

Project objectives

The objective of the project is to develop the video materials for the practical session of the BSc Programme course SBMS3210 “Instrumental Analysis and Application in Biomedical Sciences” for conducting online teaching using Zoom. The contents of video recordings include procedures for specimen preparation and biomedical instrument usage. It is expected that the video materials generated will serve as an alternative approach following cancellation of onsite practical and demonstration during special circumstances such as COVID-19 pandemic.

Activities, process and outcomes

The team performed video recordings for procedures for a variety of specimen preparation and biomedical instrument usage. Video recordings were made for student learning in online or offline classes. The team produced 9 sessions of video recordings including 3D printer, next-generation sequencer, microfluidics, histology sectioning, fluorescent and confocal microscopy, flow cytometer, TEM, SEM, microCT and in vivo imaging, UHPLC-MS/MS, and cryo-TEM.

Deliverables and evaluation

The video materials were well received by the students. Course and Teaching Evaluation (CTE) indicated that the students were satisfied with the practical teaching with the video materials. The reflection from the students indicates that showing videos is a better presentation of practicing the instruments and enhances efficient learning.

Dissemination, diffusion and sharing of good practices

The video materials were uploaded on blackboard system around one week before the scheduled class and practical session. The students could conveniently view the video materials before, during and after the class.

Impact on teaching and learning

The video materials produced could be used for long term for practical and demonstration session. The video materials facilitate the improvement of online teaching and learning.

THE CHINESE UNIVERSITY OF HONG KONG

**Special Funding Scheme for Online Learning
supported by the Teaching Development and Language Enhancement Grant for 2019-22**

Project title: Teachers Work as Inspirers to Facilitate the Hands-on Practical Using ZOOM

Principal supervisor and unit: Dr. TANG Mei Kuen Florence, School of Biomedical Sciences

Project objectives

The principle aim of this project is to evaluate how live demonstration by using Zoom can encourage student engagement in gaining experiential learning. The proposed project will organise three Zoom practical sessions performing live shooting specimens for demonstrations. We also hold interactive activities with Zoom function modes, e.g. “Whiteboard”. “Share Screen” or “Breakout room” to facilitate students’ active learning. The interactive communication can guide them to review and gain new knowledge in the virtual environment when they join the Zoom teaching activities, which provides better resources to fill the competency gap.

Activities, process and outcomes

The practical activity via Zoom is arranged to be conducted within the two-hour period in the practical session of the two courses scheduled from 11:30 to 13:15, which is the regular teaching hour in the timetable. The itinerary has to be well in order to achieve our objectives. The arrangement has been planned as below:

Duration	Activity
5 mins	Brief how the Zoom practical run
35 mins	Zoom for a live demonstration on the platinated specimen in systems
25 mins	10 Breakout rooms sessions for the group discussions (6 to 7 students per group)
40 mins	Group presentations
After the practical	Survey via the Blackboard system

Deliverables and evaluation

The deliverables and outcomes of the project will be executed and applied to the three courses as stated in our proposal. Due to the cancellation of the anatomy practical, our team has revised the planning to two courses as listed below:

Courses/Programme	Target Students	Class Size
Human Anatomy and Physiology II (SBMS1432) and Anatomy and Physiology II (PHAR1434)	Biomedical Engineering and Pharmacy Students	~100 students

Online anonymous surveys using a 5-point Likert scale ranges from (1) ‘strongly disagreed’, (2) ‘disagreed’, (3) ‘neutral’, (4) ‘agreed’, and (5) ‘strongly agreed’ have been administered to students of the two courses. Data analyses have been conducted for evaluation purpose.

Dissemination, diffusion and sharing of good practices

Based on our experience of the practical zoom activity, we can share our creative and innovative insight in using Zoom for the interactive eLearning practical teaching, including areas such as setting up interactive eLearning environment for students, encouraging team spirit among project team members, and having a good plan for execution and inspiration.

Impact on teaching and learning

Anatomy is a core subject that requires hands-on practicum. Now, its traditional delivery format for knowledge acquisition moves to unprecedentedly new normal due to restriction of face-to-face teaching in light of the COVID-19 pandemic. The video conferencing system (VCS), such as the CUHK's adopted Zoom platform, is a real-time network connecting remote participants from different locations for interactive communication. It is a good alternative for subjects requiring only didactic lectures but might not be realistic for anatomy teaching and learning.

This presentation describes (1) the challenges in modifying teaching materials that suit online medium; and (2) a teaching strategy – inviting senior peers from Medicine and Biomedical sciences Programs to join the session with junior students from the Biomedical Engineering and Pharmacy Programs.

Our team has investigated if students still have the opportunities to learn interactively through the live demonstration via the 'screen sharing' functional mode. We also evaluated if the senior peers work as facilitators to discuss learning initiatives with students via the 'breakout room' function mode can extend the potential clinical relevance to their learning in anatomical structures.

Our experience and students' feedback showed that stakeholders overcome the limitation with some concerns. Compared with face-to-face teaching, the demand for teaching preparation online is neither easy nor light but challenging at another escalated level. It requires a multiple-disciplinary effort in preparing video shooting ahead of the real-time class. On-sites challenges, including spatial examination of platinated specimens, didactic interpretation of the anatomical structures and the clinical significance of the structures were encountered.

Our poster presentation "[The Video Conference System Facilitates Synchronous Teaching and Learning in Anatomy Education](#)" was awarded 'People's Prize Certificate' in the Teaching & Learning Innovation Expo 2019, CUHK.

THE CHINESE UNIVERSITY OF HONG KONG

**Special Funding Scheme for Online Learning
supported by the Teaching Development and Language Enhancement Grant for 2019-22**

Project title: Artificial Intelligence (AI) Support Systems for Online Learning in Anatomy: Initial Development and Deployment

Principal supervisor and unit: Dr. SEE Christopher, School of Biomedical Sciences

Project objectives

- To provide interactive support to students undertaking the MBChB Year Two “Human Structure I” (MEDU2300) online video learning, via an autonomous AI chatbot.
- To evaluate the effectiveness of the AI chatbot in supporting learning.
- To build a starting point to develop further educational AI support for students.

Activities, process and outcomes

- Designed an architecture for an Artificial Intelligence Chatbot for teaching human anatomy for medical students and deployed via our own web-app in order to deliver chatbot teaching.
- Both “Human Structure I” (MEDU2300) and “Human Structure II” (MEDU3300) students were offered the use of this chatbot in support of their learning in pilot settings.

Deliverables and evaluation

1. Successful development and deployment of sophisticated AI chatbot for teaching and learning.
2. Supported student learning of anatomy for medical Year Two and Three students with positive qualitative rating and qualitative comments.
3. Influenced local practice, delivering one CLEAR (Centre for Learning Enhancement And Research) webinar on AI chatbots (29/3/2021) and further scholarly dissemination (below).

Dissemination, diffusion and sharing of good practices

Disseminated findings in two conferences (one local and one international), receiving two awards and one journal publication accepted.

Impact on teaching and learning

1. Students were provided with an additional tool to further their learning in a pilot laboratory setting – to stimulate educational conversation and both ask and answer questions.
2. Student users rated our tool very positively, including ratings of 5.12/6 (Enjoyed the use of chatbot), 4.96/6 (Would recommend to others to use).
3. Teachers have responded very positively this initiative and will further develop its use.

THE CHINESE UNIVERSITY OF HONG KONG

**Special Funding Scheme for Online Learning
supported by the Teaching Development and Language Enhancement Grant for 2019-22**

Project title: **The Effectiveness of Simulation-based Zoom Learning (SBZL) on Enhancing Clinical Decision Making for Nursing Students**

Principal supervisor and unit: **Professor CHAN YIP Wing Han Carmen, The Nethersole School of Nursing**

Project objectives

- To identify the influential factors to the success and failure of simulation-based Zoom teaching and learning.
- To enhance students' knowledge on clinical decision making, perception of capabilities and teaching and learning environment via Simulation-based Zoom Learning (SBZL).

Activities, process and outcomes

Students provided their plan of care (clinical decision making) through Zoom to the facilitator (laboratory staff) who operated the simulators to provide simulated feedbacks to the students.

Students were assessed for their perceived capability and teaching and learning environment, academic results in clinical decision making, and qualitative data to elicit their experiences and opinion on SBZL.

Deliverables and evaluation

The project was implemented as planned.

Positive results of SBZL in terms of students' capabilities and perceptions of teaching and learning environment and clinical decision making as reflected by academic results were shown.

Three themes emerged from the interview transcripts centring SBZL experience, challenges, and various influential factors related to the Zoom-based simulation lab class for students and teachers, respectively.

Dissemination, diffusion and sharing of good practices

A poster and video was presented in the Teaching and Learning Innovation Expo at CUHK. Two workshops were attended by 100 teachers.

Impact on teaching and learning

Overall teaching staff and students highly valued this promising strategy to tackle the constraints of social distancing and COVID-19 pandemic.

THE CHINESE UNIVERSITY OF HONG KONG**Special Funding Scheme for Online Learning
supported by the Teaching Development and Language Enhancement Grant for 2019-22**

Project title: Online Teachings of Ophthalmic Surgeries

Principal supervisor and unit: Professor YAM Cheuk Sing Jason, Department of Ophthalmology and Visual Sciences

Project objectives

- Production of surgical videos, including: (1) cataract; (2) glaucoma; (3) strabismus; (4) vitreoretinal; (5) eyelid; (6) corneal transplantation; and (7) minor operations
- Conversion to online: All surgical videos will be posted online for students' self-study prior to the tutorial for detailed discussion with the teachers
- Implementation of online teaching

Activities, process and outcomes

Different types of ophthalmic operations including glaucoma, cataract, strabismus, vitreoretinal, eyelid and corneal transplantation surgery have been produced and uploaded to the online platform for students' self-study. We have received very positive response.

Deliverables and evaluation

The online ophthalmic surgery system has been established showing different kinds of ophthalmic surgeries including cataract, glaucoma, strabismus, vitreoretinal, eyelid corneal transplantation surgeries. We have collected feedback from students via questionnaires. Most of the students used the library as a valuable tool for their study, since the online video can allow them to review the materials at any time of their convenience and have discussion with each other as well as teachers easily.

Dissemination, diffusion and sharing of good practices

Currently, there are 15 videos on the online ophthalmic surgery library made available to all 6th year students of the Faculty of Medicine online for the students' review and learning. They can make a registration to get access to the videos with their CUHK email. We have received positive feedbacks from students, including more engaging online learning experience and more interactive learning environment. We are further enriching our library by uploading more types of surgical videos.

Impact on teaching and learning

The current project serves as pilot trials on new ophthalmic undergraduate teachings approach during and after COVID pandemics. Our online ophthalmic surgery library allows students to receive ophthalmology surgical learning anytime and anywhere. The online library allows student to view the procedures repeatedly at different playback speed, enhancing the student learning experience. Moreover, students can also receive a more comprehensive coverage of the whole spectrum of ophthalmic microsurgeries. This project significantly enhance the ophthalmic undergraduate teaching.

THE CHINESE UNIVERSITY OF HONG KONG**Special Funding Scheme for Online Learning
supported by the Teaching Development and Language Enhancement Grant for 2019-22**

Project title: Online, 360-degree Video Teaching of Eye Examinations

Principal supervisor and unit: Dr. CHONG Kam Lung Kelvin, Department of Ophthalmology and Visual Sciences

Project objectives

Produce a serial of 360-degree eye examinations videos, conversion to online platform (Blackboard) and implementation of online teaching with students' feedback.

Activities, process and outcomes

A series of online 360-degree videos teaching of eye examinations for the course "Senior Surgical Dressership" (MEDU4710) as supplementary materials is uploaded from 6 September 2020 to 5 October 2020.

Deliverables and evaluation

For the result of the post activity questionnaire, with 9% agree, 27% neutral, and 64% unanswered, on the question of "360-degree video teaching of eye examinations allow me to learn without standard class timetable time constraints" and "360-degree video teaching of eye examinations allow me to conveniently review the eye examination methods and techniques".

And for the question, "360-degree video teaching of eye examinations allow me to better understand how eye examinations are done in real life", there are 9% agree on it, 18% neutral, and 72% unanswered.

Dissemination, diffusion and sharing of good practices

- Maintain infection control in eye examination filming: arranged the shooting during the non-clinical time and follow the most updated infection control measures, like checking temperature and hand hygiene.
- Strengthen the communication between the doctors and photographers: photographers to experience first-hand when shooting on-site and let them understand the key points of the actual examination step by step from the doctors' perspective

Impact on teaching and learning

Online teaching can increase the flexibility of teaching location and time, which can make learning occur at times that are more convenient and productive for both students and teachers. Teachers can work at their own pace within a given framework. The online learning and teaching engagement process can be broken into smaller, more frequent portions of time, with an opportunity for reflection in between.

THE CHINESE UNIVERSITY OF HONG KONG

**Special Funding Scheme for Online Learning
supported by the Teaching Development and Language Enhancement Grant for 2019-22**

Project title: **Avoid Zone-out in Zoom-Enhancing Engagement and Global Perspectives via Homework and Case-based In-class Activity**

Principal supervisor and unit: **Dr. LEE Chui Ping, School of Pharmacy**

Project objectives

The project aimed to (1) re-construct teaching materials and create poll questions to encourage student engagement prior to class and in the online classroom; and (2) incorporate local and overseas professional teaching sources for online teaching.

Activities, process and outcomes

- Local and overseas patient cases of disease states in psychiatry, oncology and pediatrics were collected, standardized and reformatted into drug-focused case handouts.
- Poll questions derived from the cases were created for pre-class assignment and in-discussion. A combination of multiple choice questions and open-text questions of various difficulty levels were used.
- The first draft of the poll questions created were reviewed by postgraduate students who have experienced the same clerkship courses in undergraduate studies. Constructive feedback were incorporated.
- Finalized poll questions were completed by students before clerkship. The questions were reviewed and discussed in class.

Deliverables and evaluation

Eighteen patient cases and ninety poll questions were created. The evaluation consists of: (1) student engagement/ participation during case discussions; (2) student's responses in Zoom / uReply polls; and (3) student survey. Students' feedback was very positive.

Dissemination, diffusion and sharing of good practices

The project will be presented in the next Teaching & Learning Innovation Expo and future pharmacy educational conferences. The exercises created may also be used for student's self-practicing for OSCE (Objective Structured Clinical Examination) exam.

Impact on teaching and learning

The project deliverables have been used in three courses in Spring 2021. The feedbacks from the students were positive. Besides, teachers observed that students were much more engaged during the case discussions. The average Course and Teaching Evaluation (CTE) score was 5.67.

THE CHINESE UNIVERSITY OF HONG KONG**Special Funding Scheme for Online Learning
supported by the Teaching Development and Language Enhancement Grant for 2019-22**

Project title: A Recorded Objective Structured Clinical Examination (OSCE) : Mixed eLearning and Face-to-face Assessment

Principal supervisor and unit: Dr. LAM Tai Ning Teddy, School of Pharmacy

Project objectives

The primary objective of the project is to conduct an objective structured clinical examination (OSCE) with both face-to-face and online/remote assessment. Secondly, we aim to provide training materials and individual feedback to students with the help with Zoom, produce preparation materials for future students and assess test validity based on duplicate assessments with recording.

Activities, process and outcomes

- Conducted mixed-mode OSCE, provided feedback, conduct exit survey
- Prepared teaching and demonstration videos for future students
- Duplicate scoring to evaluate assessment reliability and validity
- Presentation in CUHK Teaching and Learning Innovation Expo 2021

Deliverables and evaluation

- 21 students completed the OSCE, all given feedback, 17 completed exit survey
- 3 teaching and demonstration videos were made available on Blackboard for future students
- 28 independent duplicate score, which revealed satisfactory agreement between assessors
- 2 abstracts were submitted for presentation in CUHK Teaching and Learning Innovation Expo 2021

Dissemination, diffusion and sharing of good practices

- Both abstracts were accepted, including 1 oral presentation and 1 poster presentation
- The poster was selected for silver award on educational impact

Impact on teaching and learning

The School has gained valuable experience in organizing the mixed-mode OSCE. The assessment evaluation helped us further optimize the assessment checklists. The OSCE helped the students better prepare for their internship training and identify their area of further development. In summary, the project has informed improvement in the Programme's curriculum and the School's inaugural OSCE held in May 2021.

THE CHINESE UNIVERSITY OF HONG KONG

**Special Funding Scheme for Online Learning
supported by the Teaching Development and Language Enhancement Grant for 2019-22**

**Project title: Developing Pharmacy Students' Clinical and Critical Thinking: A
Multi-modal Case-Based eLearning Approach**

**Principal supervisor Dr. EWIG Lom Ying Celeste, School of Pharmacy
and unit:**

Project objectives

This project aims to enable teachers to create a more engaging Zoom learning environment of clinical cases through redesigning teaching materials to utilize the features of Zoom and Blackboard

Activities, process and outcomes

1. Redesign patient cases based on learning map
2. Upload materials onto Blackboard and post questions on discussion board
3. Meet with focus group student leaders
4. Conduct interview
5. Disseminate questionnaire
6. Collect responses

Deliverables and evaluation

- Learning map, patient cases, students' feedback

Dissemination, diffusion and sharing of good practices

- We hope to present the results of our project in future healthcare related conferences. Experiences from the project will pave way for online clinical teaching in a multidisciplinary approach.

Impact on teaching and learning

- Better understanding of teaching clinical aspects of patient care in an online environment. Improved understanding of the needs of students.

THE CHINESE UNIVERSITY OF HONG KONG**Special Funding Scheme for Online Learning
supported by the Teaching Development and Language Enhancement Grant for 2019-22**

Project title: Using the Zoom Platform to Conduct Virtual Laboratory Class for a Pharmaceutical Chemistry Course

Principal supervisor and unit: Professor TO Kin Wah Kenneth, School of Pharmacy

Project objectives

The project aims to design virtual laboratory classes for a Pharmaceutical Chemistry course (when face-to-face class is not feasible or to serve as a self-learning module before attending on-campus labs)

There are three major objectives:

1. Prepare videos and photos for lab simulations
2. Conduct pilot virtual lab session via Zoom to a small cohort of students
3. Run the revised virtual lab to regular class

Activities, process and outcomes

Preparation work: Videos (about numerous experimental procedures) and photos (of different experimental data/end-points) were prepared for lab simulations. Both optimized procedures and their deviated version (with missing/defective steps intentionally built in) were simulated.

Pilot virtual lab session via Zoom: A small cohort of students to participate in a pilot virtual lab session and provide feedback in a focus group interview.

Provision of revised virtual lab to regular class: Instructor used the “share screen” and “poll” functions and asked students to choose a procedure to conduct the virtual experiments. Students were asked to form small groups and conduct the virtual labs using the “group discussion” function in Zoom. “Chat room” was used to allow students and instructor to discuss the activities and reinforce the learning of materials. Using the developed Zoom platform, students viewed introductory materials, followed the instructions to use the online simulations, and recorded their observations and discussed data analysis.

Deliverables and evaluation

Favorable learning outcomes from the virtual labs were reflected by a few key performance indicators: (i) Over 90% students rated their learning experience in our survey “excellent” or “very good”; (ii) Positive comments from students in focus group interview; (iii) 100% students participated in online poll during virtual labs; (iv) 95% students participated in chat room discussion for at least one time; (v) Average marks from student lab assignment were not significantly different from historical data from traditional on-campus labs in previous 3 years.

Dissemination, diffusion and sharing of good practices

The project outcome has been presented as an ePoster in CUHK Teaching and Learning Innovation Expo 2021 (ePoster #008) in July 2021. There are a few science courses within the Pharmacy Program. Some of these courses will also consider making use of a similar Zoom-based platform to conduct pre-lab session for the students before they come back to the campus for face-to-face lab classes.

Impact on teaching and learning

Due to the similarity in the nature of most lab classes in basic sciences subjects, our virtual lab arrangement can be readily applied to other biomedical and basic science programs.

THE CHINESE UNIVERSITY OF HONG KONG**Special Funding Scheme for Online Learning
supported by the Teaching Development and Language Enhancement Grant for 2019-22**

Project title: Production of Psychiatry Teaching Videos

Principal supervisor and unit: Professor TANG Wai Kwong, Department of Psychiatry

Project objectives

We proposed to, based on real patient records, produce nine teaching videos. The objectives of these videos is to demonstrate interviewing skills and symptoms of common psychiatric diseases. All academic teachers will participate in this project. They will select topics, prepare scripts and train patients and student helpers for video shooting. The actual filming will be conducted by the Audio-Visual Division of The Chinese University of Hong Kong (CUAV). CUAV will also perform post-shooting editing, such as adding chapters and captions.

Activities, process and outcomes

The following activities were carried out:

- Briefing of project and allocation of duty amongst teaching staff
- Contact University CUAV for filming logistics
- Selection of topics and drafting of scripts for videos
- Training of patients, professional actors and student helpers
- Filming of videos
- Post-shooting editing of videos
- Post the completed videos into the teaching website
- Collect feedback from students

Deliverables and evaluation

A total of nine teaching videos were produced. We collected feedback from students. By the end of March 2021, these videos were watched 62 times. Amongst students who had watched the videos, 98% of them would like to watch similar videos on other diagnoses. 80% / 77% / 72% / 69% / 67% / 69% of the respondents rated “very satisfied” on picture quality / sound quality / interviewer performance / patient performance / explanation of concepts / and overall quality.

Dissemination, diffusion and sharing of good practices

All nine teaching videos have been posted on the teaching website (Blackboard). Teachers and Year Five medical students can view them.

Impact on teaching and learning

This project has proven that we have the ability to produce good quality teaching videos which can be used by current and future students. We plan to obtain further teaching grants to produce more videos and edit existing collection of video clips prepared by teachers.

THE CHINESE UNIVERSITY OF HONG KONG**Special Funding Scheme for Online Learning
supported by the Teaching Development and Language Enhancement Grant for 2019-22**

Project title: **Zooming into the Clinical Practice of Urology**

Principal supervisor and unit: **Professor TEOH Yuen Chun Jeremy, Department of Surgery**

Project objectives

Our project aimed to facilitate the learning process by ‘Zooming into the Clinical Practice of Urology’. We developed case scenarios covering various urological conditions including prostate cancer, bladder cancer, kidney cancer, benign prostatic hyperplasia and urinary stone. All cases were adopted from real life scenarios in order to replicate what a doctor would be facing in real life situation.

Activities, process and outcomes

We developed 30 case scenarios covering various urological conditions including prostate cancer, bladder cancer, kidney cancer, benign prostatic hyperplasia and urinary stone. A total of 6 online sessions were conducted. Problem-based learning via the case scenarios was guided by the supervisors in a step-by-step manner.

Deliverables and evaluation

From March to July 2020, a total of 30 case scenarios were developed and 6 online sessions were conducted using the Zoom software. Comments and feedback from the students were excellent. They appreciated the learning opportunities despite the COVID-19 pandemic. From the supervisor’s perspective, Zoom teaching via the case scenarios is feasible, useful and efficient.

Dissemination, diffusion and sharing of good practices

We shared our experience to the other teams within the Department of Surgery. Online teaching using case scenarios have become a major component of our teaching as we encounter repeated waves of COVID-19 cases.

Impact on teaching and learning

Throughout the process, I believe our teaching have improved in several ways as follows:

1. Pre-preparation of case scenarios can ensure the quality and comprehensiveness of teaching materials. We can ensure certain learning objectives can be achieved throughout the case scenarios.
2. Hospitals, clinics and wards are considered high-risk areas of infection. Using case scenarios and online teaching sessions can minimize the risk of COVID-19 infection
3. Online teaching is also much more efficient than traditional face-to-face teaching. Students can observe how their peers perform when going through the case scenarios and they can reflect on themselves accordingly.

THE CHINESE UNIVERSITY OF HONG KONG

**Special Funding Scheme for Online Learning
supported by the Teaching Development and Language Enhancement Grant for 2019-22**

Project title: **Experiential Open Surgery Learning Through Surgeon's Eyes**

**Principal supervisor
and unit:** **Professor FUTABA Kaori, Department of Surgery**

Project objectives

To allow students to see what the surgeons see during open surgery, to enhance their understanding of Surgery, especially during the COVID pandemic with limited clinical exposure for students.

Activities, process and outcomes

Student focus group was formed, to assess the needs of the students. Open surgery was recorded using various wearable high-definition cameras for different types of surgery by different surgeons. Feedbacks were obtained from the surgeons and captured images were reviewed. Short video clips of important stages of the operations were used to supplement online teaching during COVID pandemic to enhance Year 6 medical student's surgical teaching.

Deliverables and evaluation

Short video clips and images captured were used for online teaching by surgeons. It is also being used to produce online teaching modules. The pros and cons of using different cameras were identified after feedback was obtained from different surgeons using different systems for different operations. Students appreciated the video clips of the essential steps of surgery.

Dissemination, diffusion and sharing of good practices

The cameras are continuing to be used to record more videos for students and trainee teachings within the Department of Surgery. The manuscript is currently being prepared for submission to a peer reviewed journal for dissemination of good practice.

Impact on teaching and learning

Students were not allowed to enter operating theatre during the COVID Pandemic, limiting their exposure to surgery. Therefore, this greatly enhanced their online surgical teaching and improved their understanding.

THE CHINESE UNIVERSITY OF HONG KONG

**Special Funding Scheme for Online Learning
supported by the Teaching Development and Language Enhancement Grant for 2019-22**

Project title: Online Video Atlas of Surgery

Principal supervisor and unit: Dr. YEE Chi Hang Samuel, Department of Surgery

Project objectives

The project is for the preparation of surgical videos covering urological surgery and procedure. The objectives are to give the students background knowledge of the procedure, and to bring the view of surgery to students as if they are in the operating theatres.

Activities, process and outcomes

Activities of the project included video shooting during surgeries, animation production for illustration, recording sessions for video voice over, and student tutorials for surgery background information and online video sharing. The process enhanced surgical exposure and teaching by semi-live surgical videos and illustration. In the end, students were more aware of the essence of the surgery and the relevant anatomy.

Deliverables and evaluation

Two videos covering 2 major urological procedures and 3 common urinary diversion techniques were produced. Evaluation by student survey on the project's success of knowledge transfer, appropriateness of delivery and ease of access were found to be satisfactory.

Dissemination, diffusion and sharing of good practices

The online surgical videos were uploaded to the blackboard platform towards the end of the project. Any medical students in the junior and senior surgical dressership, as well as any colleagues in the team, could access the videos for learning and teaching purposes.

Impact on teaching and learning

Conventionally surgery was taught through live exposure. The online surgical video library provides an efficient way to bring a concise surgery experience by focusing on the essential steps of the surgery, as well as enhancing the learning experience through illustration and animation. The general responses from the students were positive.

THE CHINESE UNIVERSITY OF HONG KONG**Special Funding Scheme for Online Learning
supported by the Teaching Development and Language Enhancement Grant for 2019-22**

Project title: Use of 3D Virtual Reality Technology for Online Lab Demonstration with ZOOM

Principal supervisor and unit: Dr. NGAI Hung Kui Patrick, School of Life Sciences

Project objectives

The objective of this project is to overcome the limitations of online teaching with ZOOM for laboratory courses and University General Education (UGE) courses with lab demonstration elements.

Activities, process and outcomes

Five online micro-modules enhanced with 3D virtual-reality technologies were developed. Each micro-module comprises online and face-to-face learning activities. In the online mode, students are engaged in learning the theoretical framework of DNA fingerprinting technologies using the 3D 360 VR videos. In the face-to-face demonstration, students have the chance to gain hands-on experience in the use of common equipment and apparatus for molecular biology research. The major outcomes of this project include: (a) a VR-facilitated pedagogy for facilitating the integration of online teaching and face-to-face teaching; (b) enhancement of students' understanding in biotechnologies and their applications in modern society.

Deliverables and evaluation

The deliverables include (i) a set of pedagogy to facilitate students' learning via a series of online activities and face-to-face activities in laboratory; (ii) five sets of VR-enhanced video clips and learning materials. The five sets multimedia materials including the extraction of human DNA, Polymerase Chain Reaction, preparation of agarose gel and casting of gel, analysis of DNA fragment using agarose gel electrophoresis, and imaging techniques and analysis of DNA profile. Students' learning was evaluated via course assessment tasks, questionnaires and focus-group meetings. The feedbacks from student users and their performance were generally positive.

Dissemination, diffusion and sharing of good practices

The project results and experience in implementing VR-enhanced projects were presented in the CUHK Teaching and Learning Innovation Expo 2021. The poster entitled "*From Virtual Reality to Mixed-Reality: Application of Extended Reality Technologies for Biochemistry and Cell Biology Education*" was also received the Commendation award.

Impact on teaching and learning

The motivation of students' learning and attitude towards the use of combined learning mode were improved in UGEB courses (i.e. UGE courses on Nature, Science and Technology). This project also found that a combination of online and face-to-face learning experience can bring about synergistic effect on different aspects of students' learning. It includes but not limited to their motivation, high-order thinking and academic attainment, etc. The deliverables and experience derived from this project also shed lights to the project team's work to develop other VR/MR technologies-enhanced learning packages for other GE courses (e.g. GESC2390 "Genetic Engineering and Its Impacts on Our Society") and junior year laboratory courses (e.g. LSCI2002 "Basic Laboratory Techniques in Life Sciences").

THE CHINESE UNIVERSITY OF HONG KONG**Special Funding Scheme for Online Learning
supported by the Teaching Development and Language Enhancement Grant for 2019-22**

Project title: Modules for Learning Invertebrate Diversity

Principal supervisor and unit: Miss YAM Kwan Mei, School of Life Sciences

Project objectives

1. To make a digital collection of selected invertebrate specimens.
2. To prepare learning modules with learning materials and self-assessment tasks.
3. To allow student helpers to enhance their knowledge in the subject as well as demonstrate their creativity during the production process.

Activities, process and outcomes

Four undergraduate students were recruited in summer 2020 to build an educational website for learners to learn about invertebrate diversity. The site was prepared and rolled out to all students and teaching assistants of BIOL3012 “Biodiversity Laboratory I” in 2020-21 Term 1 to help them self-learn and get prepared for class. End-users’ feedback was collected through online survey and focus group discussions. Most visitors found the site useful as learners can now study selected specimens away from the lab anytime, anywhere. Our student co-creators have enhanced their subject knowledge, and had become more capable in communication, teamwork, critical thinking and problem solving.

Deliverables and evaluation

A website with 8 learning modules on invertebrate diversity was created and hosted on our School server. Altogether, we have >50 student-written texts, ~65 selected videos, ~50 links to other reference pages, information on >100 invertebrate members, hundreds of slides about our specimens, and >180 self-assessment items. About 78% of the respondents had visited the site and most of them found it useful.

Dissemination, diffusion and sharing of good practices

Our work was presented in the “Teaching and Learning Innovation Expo 2021” jointly organised by CLEAR (Centre for Learning Enhancement And Research), ELITE (Centre for eLearning Innovation and Technology) and ITSC (Information Technology Services Centre) of CUHK.

Impact on teaching and learning

Students can now study the invertebrate specimens with annotated photos anytime, anywhere, even when they cannot come back to the lab. The website created provided valuable resources for them to self-learn and better get themselves prepared before class. Around 96% and 87% of the student visitors agreed that the site was useful and had facilitated their learning.

THE CHINESE UNIVERSITY OF HONG KONG**Special Funding Scheme for Online Learning
supported by the Teaching Development and Language Enhancement Grant for 2019-22**

Project title: Development of a Prototype for Preparing an Online Laboratory Course

Principal supervisor and unit: Dr. CHOW Cheung Ming Cherry, School of Life Sciences

Project objectives

- To provide an online learning experience with quality comparable to the traditional lab teaching
- To produce detailed labelled videos with narration which can be used during ZOOM teaching and also as stand-alone learning materials
- To set an example of preparing an online lab course and integrating the multimedia-based learning materials into different online learning systems

Activities, process and outcomes

- Production of specimen-based videos for 4 lab sessions of BIOL3022 “Biodiversity Laboratory II” to substitute specimen tours in traditional face-to-face lab course and flower dissections for demonstration and for completing e-worksheets
- Delivery of Zoom sessions which are made available as Panopto videos
- Production of videos and a Zoom session for the campus walk activity of BIOL3570 “Biology of Vascular Plants”

Deliverables and evaluation

- 29 specimen-based videos have been produced and 4 Zoom sessions have been held for online learning of BIOL3022 “Biodiversity Laboratory II”
- 4 campus walk videos have been produced and one Zoom session has been held for online learning of BIOL3570 “Biology of Vascular Plants”
- View data from Panopto and users’ feedback were collected

Dissemination, diffusion and sharing of good practices

- Zoom sessions are uploaded to Panopto and can be accessed by CUHK users
- Poster presentation was held in CUHK Teaching and Learning Innovation Expo 2019/20
- A user manual for preparing an online lab course is uploaded to OneDrive and can be accessed by CUHK users

Impact on teaching and learning

- The project allowed the lab course to continue with quality teaching and learning when the teaching mode had to be switched from face-to-face to online due to COVID-19 outbreak in Hong Kong.
- It has laid the foundation for teachers to practise flip classroom in future teaching, by turning part of the teaching time into knowledge-based and even skill-based videos, allowing more time for technical skill training and higher flexibility on course design.

THE CHINESE UNIVERSITY OF HONG KONG**Special Funding Scheme for Online Learning
supported by the Teaching Development and Language Enhancement Grant for 2019-22**

Project title: Implementation of Online Tutorials

Principal supervisor and unit: Professor YANG Hongfeng, Earth System Science Programme

Project objectives

The objectives are to enhance the learning experience through better engaging students and encouraging student participation in class by conducting online tutorials, which can help engage students and offer them experience as good as in the classroom.

Activities, process and outcomes

In total four online tutorials have been conducted during the teaching semester from February to May 2020. As planned and supported by this Special Funding for Online Learning, a few postgraduate students have been recruited as student helpers. For each tutorial, student helpers prepared in advance and went over the tutorial materials to ensure that it was easy to digest from students' view. Before the tutorial, student helpers organized additional sessions to offer technical help for students to build the packages. During the tutorial, they assisted the instructor to offer hands on skills.

The students have significantly improved their subject knowledge by gaining hands-on experience. They also learned how to build a computer code from scratch, which will benefit them for future career.

Deliverables and evaluation

Online tutorials were listed at the Principal Supervisor's webpage, http://www.cuhk.edu.hk/sci/essc/yang/teaching/course/ESSC_4140/ESSC_4140.html. Based on the survey conducted after the tutorials, most students were very satisfied with the implementation of online tutorials complementing lectures.

Dissemination, diffusion and sharing of good practices

In the past, we opened the course registration for postgraduate students in other local universities, where relevant courses were not available. However, the participation rate was very low, partly because of logistical challenges such as transportations. Such online teaching makes a course available across institutions easily. We are hopeful that our online teaching materials will be beneficial for other local and nonlocal students, which will in turn enhance the reputation of CUHK.

Impact on teaching and learning

Although online teaching was a big challenge for both instructors and students, it offers certain unique advantages as well. Such online tutorials offer hands-on experience for students to learn with a flexible schedule and can be used to combine with classroom teaching.

THE CHINESE UNIVERSITY OF HONG KONG**Special Funding Scheme for Online Learning
supported by the Teaching Development and Language Enhancement Grant for 2019-22**

Project title: Studying Public Space in Global Perspective from Home

Principal supervisor and unit: Professor TIEBEN Hendrik, School of Architecture

Project objectives

The objective of this project was to develop a learning format to study remotely urban issues in different parts of the world at occasion of the COVID-19 pandemic and co-produce place-sensitive solutions aligned with the global framework of the UN Sustainable Development Goals.

Activities, process and outcomes

To meet this objective the team co-developed with partners from University of Auckland, Parsons New School (New York), and the *Journal of Public Space*, a 6-days online workshop format which included lectures, group work and review. Beyond urban design knowledge the workshop taught Remote Ethnography approaches, Web-GIS, and included inputs by frontline social workers. With the continuing pandemic, a follow-up workshop was organized in 2021, calibrating and enriching the earlier approach and including also Federal University of Rio De Janeiro as additional partner from the Global South.

Deliverables and evaluation

Deliverables: 15 video lectures, virtual guided tours, pdfs, and an e-book of the design projects.
Evaluation: Course and Teaching Evaluation (CTEs), polls, and written reflections which demonstrated a highly positive student feedback (CTEs around 5.83 of 6.0). Projects were also evaluated by an international jury.

Dissemination, diffusion and sharing of good practices

Results were disseminated in a trailer video, a public webinar, talks and an e-book freely accessible online, as part of the larger initiative “2020 – A Year without Public Space under the COVID-19 Pandemic”, co-developed with the Journal of Public Space (a partner of UN Habitat).

Impact on teaching and learning

The developed learning format allowed students developing place-sensitive solutions for complex issues in different parts of the world in an engaging collaboration with international peers “from home”.

THE CHINESE UNIVERSITY OF HONG KONG

**Special Funding Scheme for Online Learning
supported by the Teaching Development and Language Enhancement Grant for 2019-22**

Project title: Creating an Innovative Virtual Field Trip Platform for Online Teaching-learning Enhancement in Tourism Education

Principal supervisor and unit: Professor CHAN Chung Shing, Department of Geography and Resource Management

Project objectives

This project develops one Virtual Reality (VR) interactive field trip platform and one Augmented Reality (AR) mobile app for the enhancement of teaching-learning process of tourism education.

Activities, process and outcomes

The project outcomes include a VR platform for virtual site investigation and an AR app for Yim Tin Tsai (YTT) in Sai Kung, Hong Kong. The VR platform allowed students to conduct virtual trips to YTT through innovative features such as self-administered route and attraction selection, eLearning of questions-and-answers, group discussion and user-friendly sharing of visitor experience. The AR part contains a PDF booklet and a downloadable mobile app for users to scan the pictures in the booklet with additional pop-up information.

Deliverables and evaluation

The project deliverables include a web-based VR field trip platform in 3 themes: religious, cultural, ecological, an AR mobile app with pop-up YouTube videos and 3-D images of saltpans and St. Joseph Chapel, 2 conference presentations in the CUHK Teaching and Learning Innovation Expo 2019-20 and the 15th eLearning Forum Asia, 2 courses using the platform, 1 round of experiential session and student feedback. The post-use survey results indicate that the overall performance of the platform is satisfactory and encouraging.

Dissemination, diffusion and sharing of good practices

Two formal webpages of the VR platform and the AR mobile app are created. Experience and good practice sharing were conducted through conference presentations.

Impact on teaching and learning

This project is impactful on teaching-learning enhancement by stimulating the idea of integrating field trips, location-based study and VR/AR applications. The project experience sets a good example to mobilize the innovative movement of online or mixed-mode teaching in the future. The evaluation results clearly show the benefits by not removing the field trip component from the courses.

THE CHINESE UNIVERSITY OF HONG KONG**Special Funding Scheme for Online Learning
supported by the Teaching Development and Language Enhancement Grant for 2019-22**

Project title: Contextualizing the Use of Zoom Online Platform in Teaching and Learning

Principal supervisor and unit: Professor MARAFA Lawal Mohammed, Department of Geography and Resource Management

Project objectives

The project objectives were (1) to identify and document opportunities offered by Zoom vis-a-vis what has been used like Blackboard, Moodle, uReply; (2) to study the commitments and initiatives that are put in place for partnerships between instructors and students seeking to achieve a successful teaching and learning environment; (3) to identify appropriate online assessment techniques using Zoom; (4) to characterize the successes and challenges encountered in the processes of teaching and learning, and (5) to ascertain the impact of the online courses on the student's learning and performance.

Activities, process and outcomes

The project started in May 2020 when the school term ended. We however, sent out online questionnaires to selected courses including one main undergraduate Course (GRMD2402 "Natural Resource Management"), one University General Education Course (UGEC2226 "Discovering Africa: Environment, Society and Prospects") and one TPg Course (SUTM5006 "Ecotourism Practicum and Management"). Questionnaires were administered on the Blackboard. The response rate was about 30%.

Deliverables and evaluation

The data was analysed and small insights were discovered (see Impact on teaching and learning).

Dissemination, diffusion and sharing of good practices

A poster was presented at the CUHK Teaching and Learning Innovation Expo 2020. A paper was also submitted at the same event. Following from this, a manuscript was drafted and submitted to a peer review journal for consideration.

Impact on teaching and learning

Although the sample size was small, small insights from the studies are relevant. Overall, students were slightly unsatisfied with the learning experience on Zoom, and there was no significant difference of satisfaction level between female and male, or between undergraduate and postgraduate students. Female students however, tended to feel more isolated and lonelier as a result of the Zoom class than male students. While the students generally like the functions of Zoom in their learning experience, they prefer to meet with instructors and classmates face-to-face rather than on Zoom. The postgraduate students though, spent more time on studies and felt more isolated, and less efficient in Zoom learning than undergraduate students indicating that they preferred to meet with instructors and classmates face-to-face rather than on Zoom.