



香港教育大學
The Education University
of Hong Kong



Department of
Cultural and Creative Arts
文化與創意藝術學系

STEAM Education: Virtual Reality, Creative Coding, Interactive Design

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Me



- Lee Cheng (www.leecheng.info)
- Lecturer II, CCA, EdUHK
- First cohort of PhD here (2013 graduate)
- Director of EdUHK iLOrk (www.leecheng.info)
- PhD [EdUHK], PGDE (PVE) [EdUHK], LLM (IT&IP) [HKU], BEng (Computer Science) [HKU], BBA (Information Systems) [HKU], LTCL, LMusTCL , DipABRSM



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STEAM Education TDG Application

- Faculty-level TDG (<\$400,000)
- Co-I: Chui Hin Leung Mike (MIT), Lei Ni Ni Lily (CCA Postgraduate)
- Piloting STEAM courses to strengthen creative arts students' competency in applying STEM skills for artistic solutions
- Virtual Reality, Interactive Design, ~~Creative Coding~~



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From STEM to STEAM

- ~~Because there are already too many STEM projects~~
- Drawing on design principles and encouraging creative solutions
- Transdisciplinary STEM learning for arts students
- Better integration of the disciplines for arts solutions
- Scientific, computational, interdisciplinary and design thinking



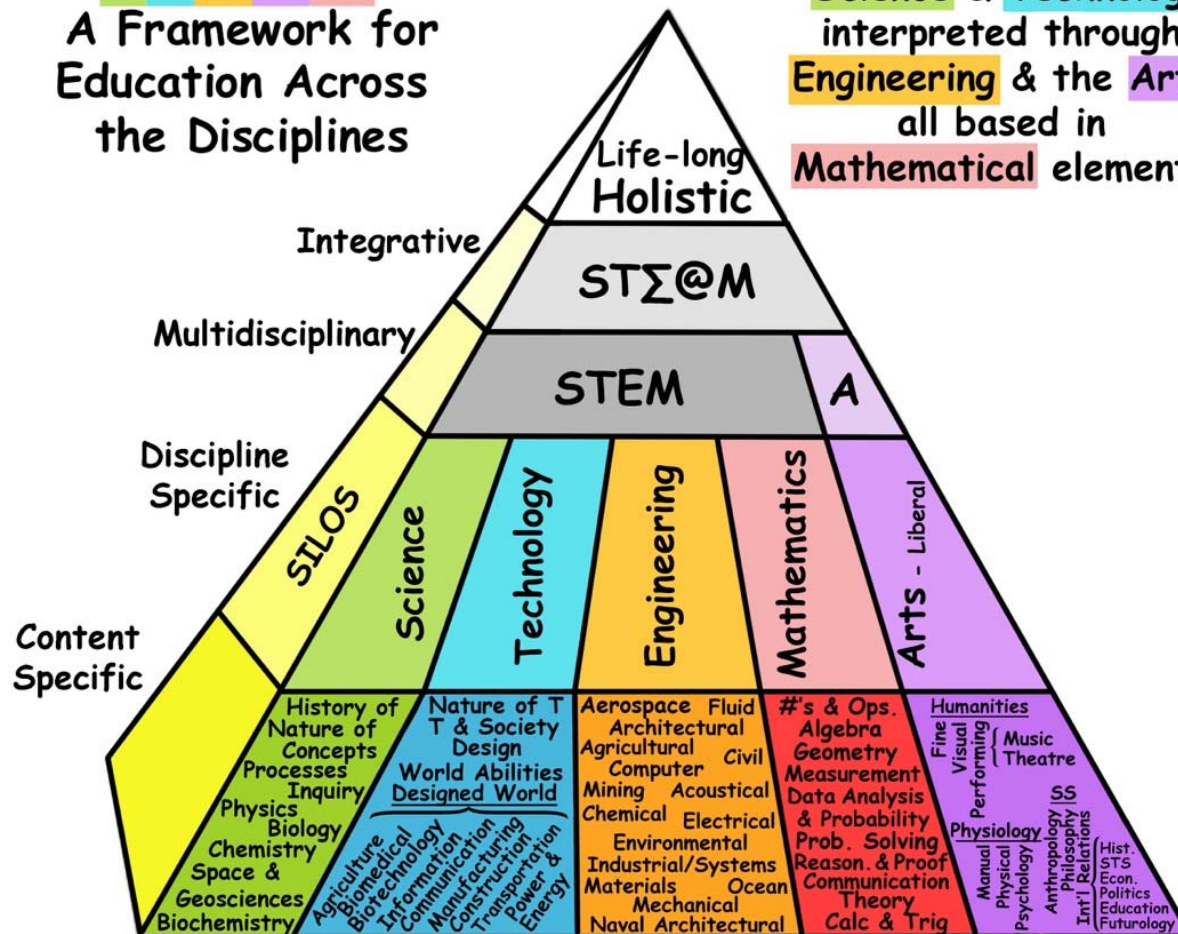
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STΣ@M:

A Framework for
Education Across
the Disciplines

STΣ@M =
Science & Technology
interpreted through
Engineering & the Arts,
all based in
Mathematical elements.



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Project Objectives

1. To design and develop three undergraduate STEAM courses oriented to the areas of virtual reality, interactive design, and creative coding;
2. To adopt innovative pedagogies and interdisciplinary approaches for enhancing the learning experience of creative arts students
3. To equip students with STEAM skills including analytical skills, programming and skills, problem solving skills, creativity, cognitive flexibility, and logic
4. To build the capacity of arts students in applying computational thinking and computer-mediated creativity for arts solutions



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CAC3026

Virtual Reality and Immersive Space in Practice



Major elective for BA(CAC) /
Elective for others



Offered from 2018-19 Semester I



360° video shooting and editing

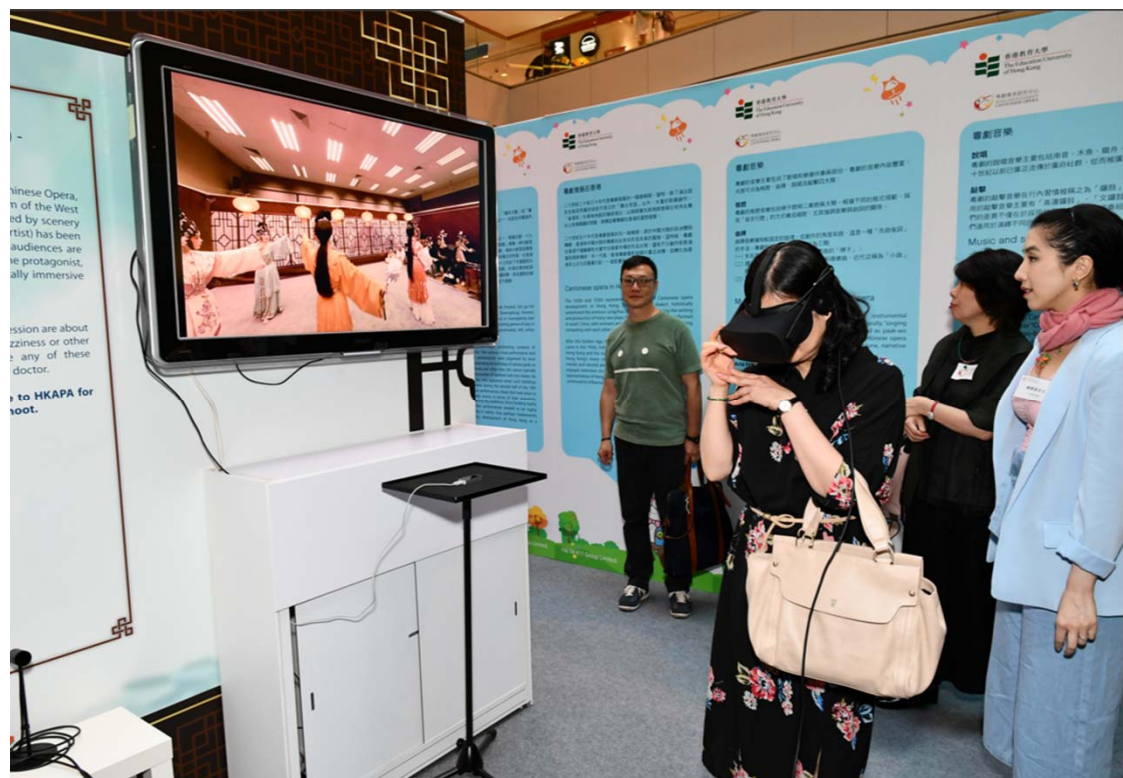


Exhibition for students' VR artwork



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Pre-work: 360° Cantonese Opera



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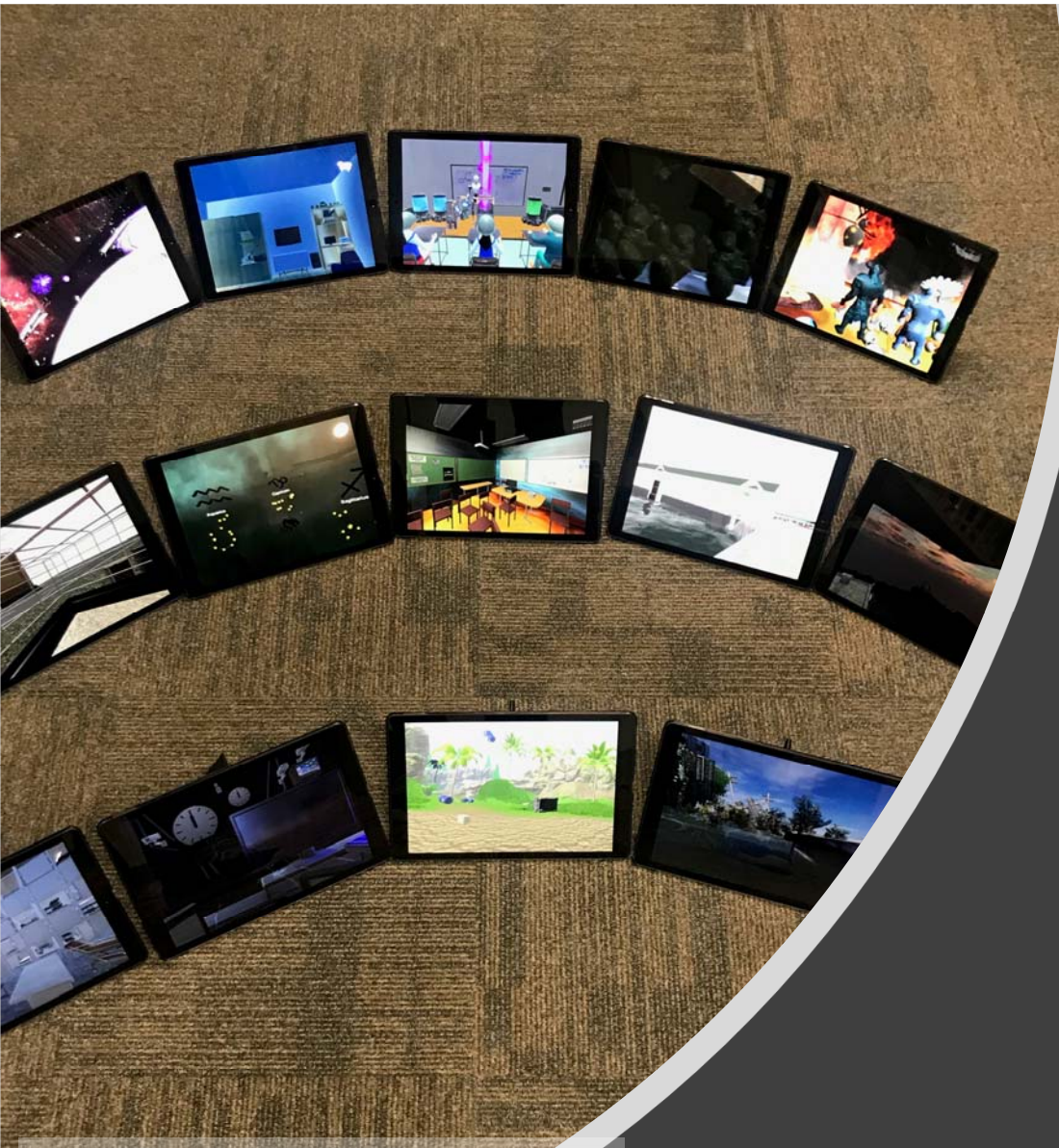
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Online Teaching & Learning Materials for *Unity*



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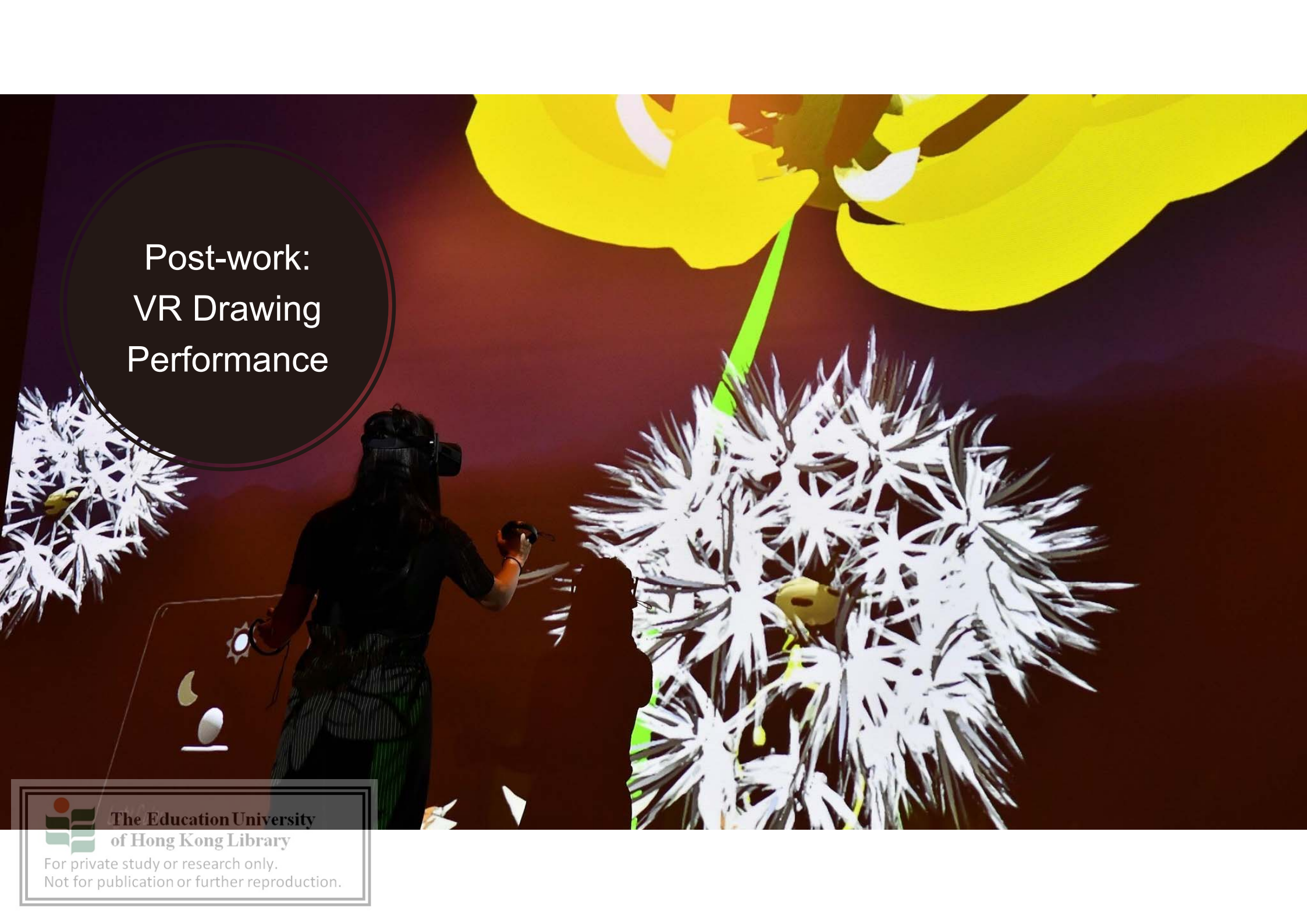
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360° Photography and Drawing



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A person wearing a VR headset and holding a controller is seen from behind, interacting with a virtual environment. The environment features a large, bright yellow flower at the top and two large, white, spiky, plant-like structures on the left and right. The background is a dark, reddish-brown color. A semi-transparent dark circle is overlaid on the left side of the image, containing the text "Post-work: VR Drawing Performance".

Post-work: VR Drawing Performance



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Extra work: Lunar New Year Media Reception



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Conference Presentation



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GEL1004

Exploring Interactive Design

Experiential Learning Course (ELC)

For the new GE curriculum

Offered from 2019-20 Semester I

Lecture – 9 hours

Experiential Learning – 24 hours

Sharing/Presentation – 6 hours



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Experiential
Learning
Activities

Activity

Content

Workshops on
Electronics

Arduino, Raspberry Pi

Visit to Exhibition

Microwave New Media Festival

Let's go shopping 😊

Apliu Street to purchase
electronics for their project

Artwork making

Design and implementation

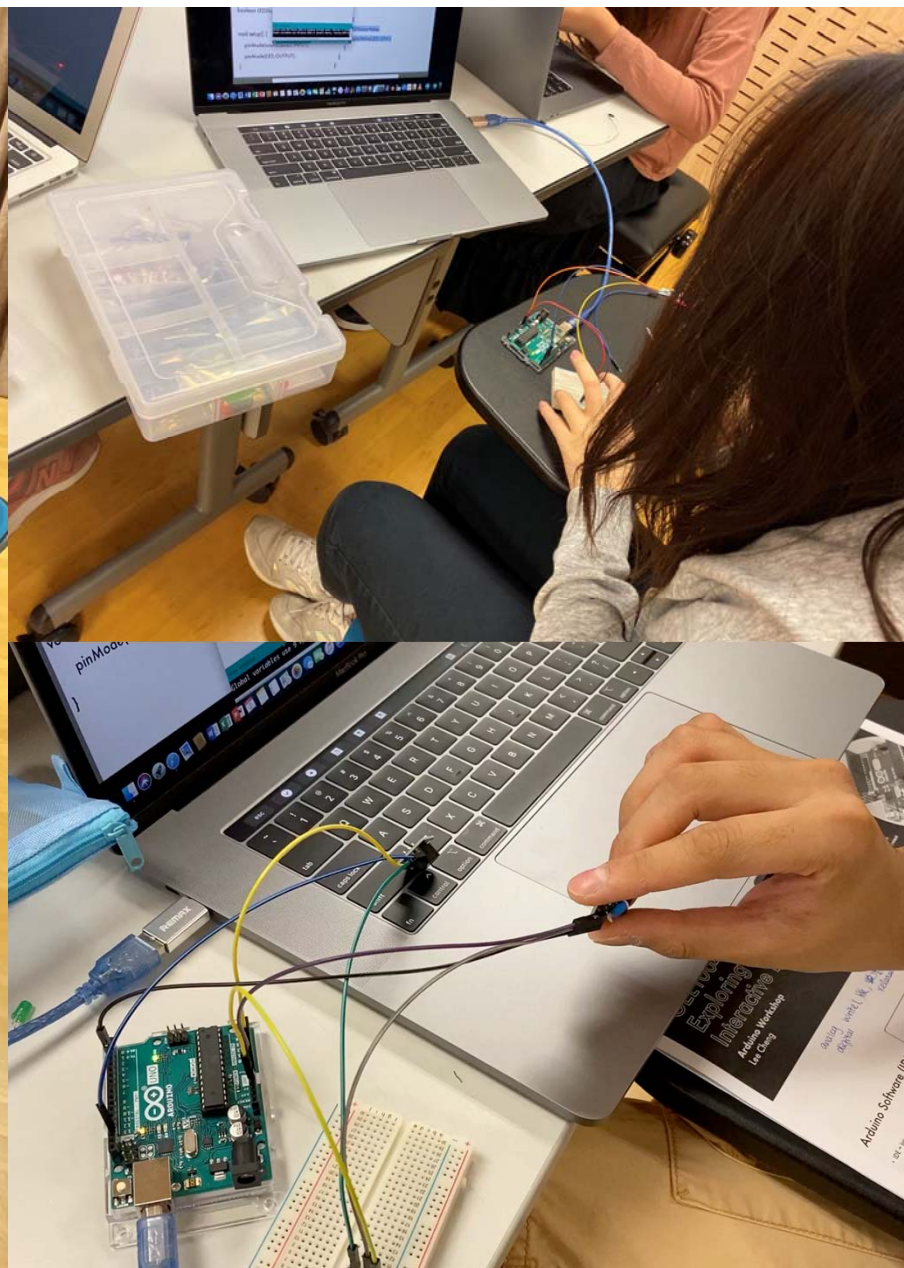
Exhibition

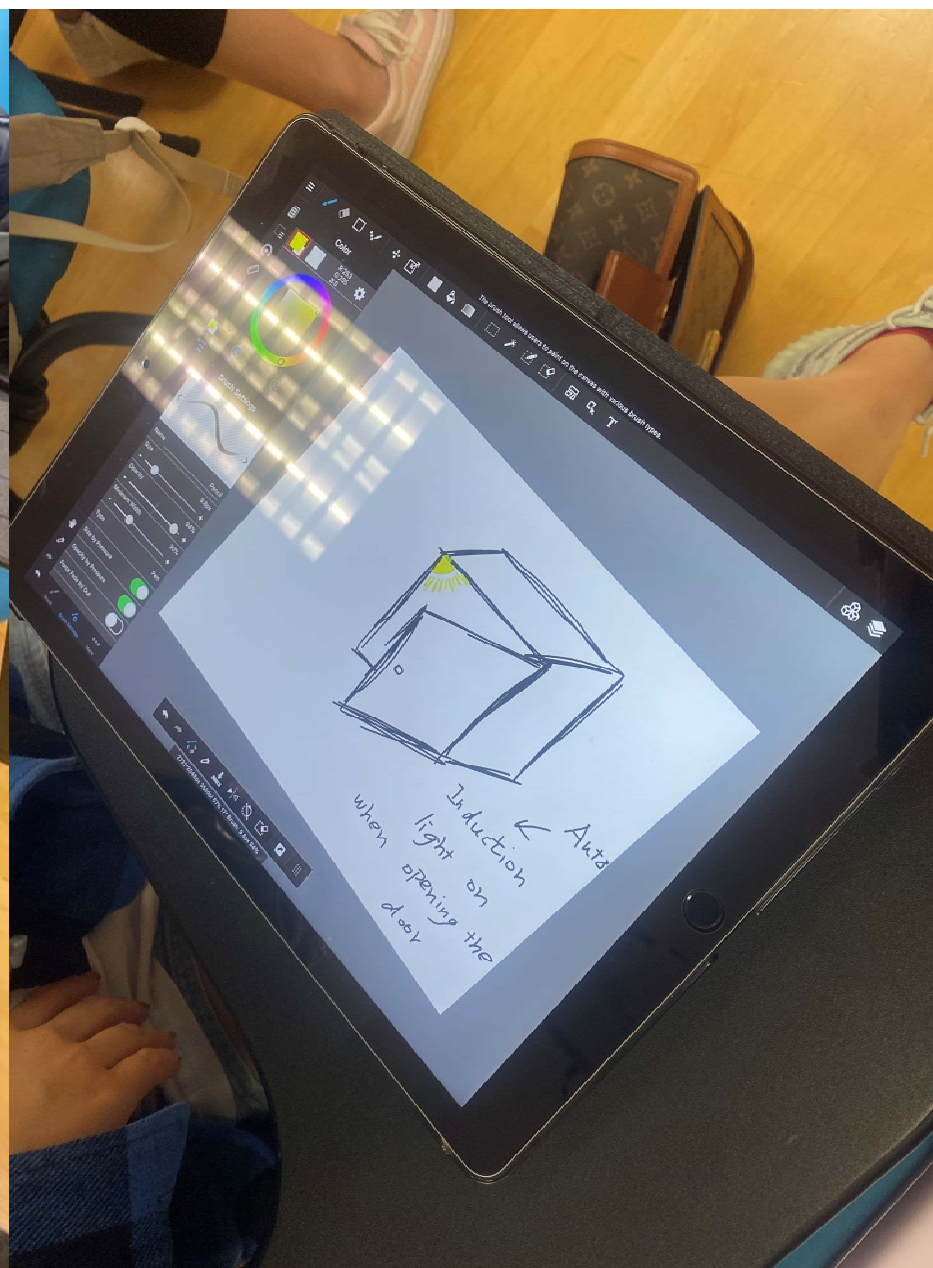
EdUHK CCA Gallery



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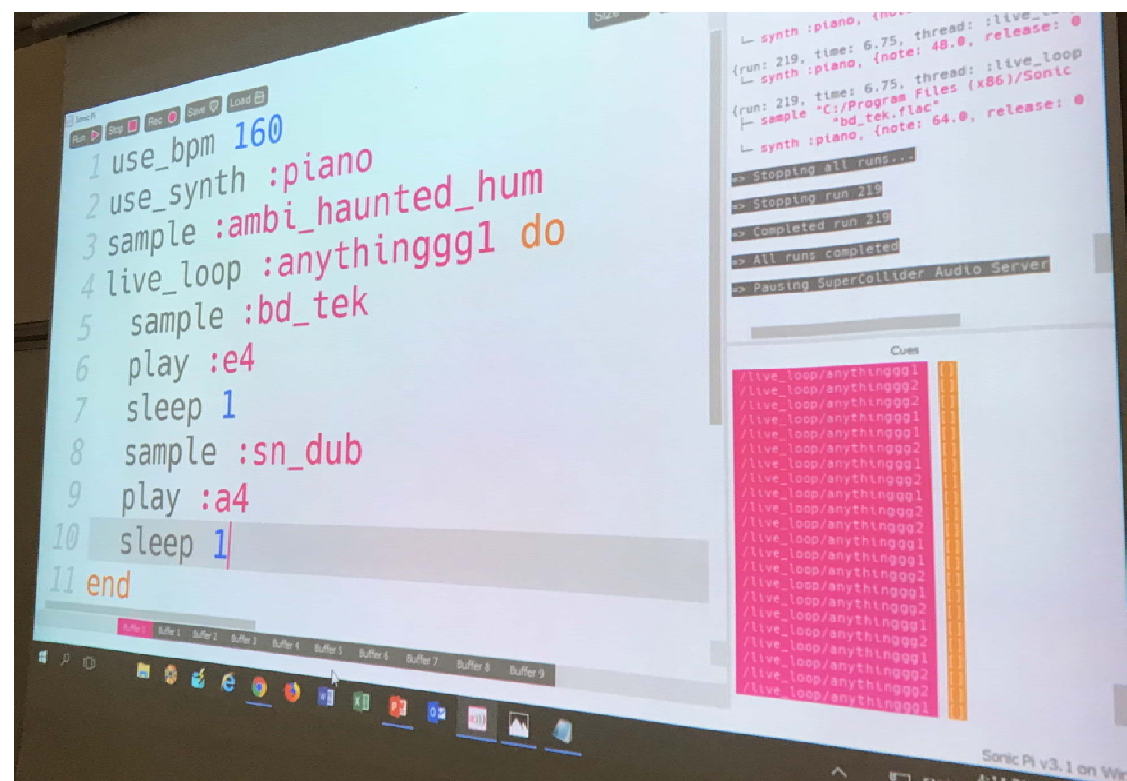




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Sonic Pi Coding Workshop

Coding Fair 2019



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CACxxxx ~~Creative Coding~~

Technology and Coding for Creative Industry

- Proposed course in progress, to be offered next academic year
- Both coding and hands-on development platform
- e.g. HTML vs. Website Builders (Wix, Google site...)
- Internet of Things (IoT), live streaming and broadcasting, audio and visual systems, visual and audio coding



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Research Output on Music Coding Education

[HOME](#) / [ARCHIVES](#) / [VOL 10 NO 1 \(2018\): ALGORITHMIC EDM](#) / [From the Floor](#)

Teaching Live Coding of Electronic Dance Music: A Case Study

Lee Cheng

The Education University of Hong Kong

Keywords: EDM, live coding, pedagogy,
music education, performance
technology

VOLUME 10 NUMBER 1 2018

ALGORITHMIC ELECTRONIC DANCE MUSIC

McLean, Fanfani & Harlizius-Klück explore rhythmic patterns in ancient Greek weaving & live coding • Joanne Armitage negotiates gender, community & technology in algorave • Richard Savery analyses an interactive algorithmic system • Smith and Lawson reflect upon The Force

FROM THE FLOOR • Lee Cheng teaches live coding • Ocelotl, Del Angel and Teixido introduce RGGTRN • Renick Bell explores limits of algorithmic dance music • ALGOBABEZ write code and push buttons • Alexandra Cardenas composes with live code • Chris Keifer performs between code and controllerism • Esteban Betancur Guiterrez algoraves in Medellin

REVIEWS of Girl; Weekend Societies; Frankenstein Goes to Holocaust; Popular Music, Digital Technology and Society; and Playing with Something That Runs

with Guest Editors Shelly Knotts and Nick Collins



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Dissemination & Deliverables

Three STEAM courses	2/3
TDG Seminar	Doing it now
Workshop	✓
Conference Presentation	✓
Teaching & Learning Package (Website)	✓
Journal Publication	✓
Exhibition	✓



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Self-reflection / Recommendation

- Be realistic in the TDG application
- Quality more important than quantity
- Is the amount of budget applied a problem?
- Keep the project progress in mind
- Sustainability for further development



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