

互動裝置藝術創新

# New Media Interactive Arts Innovation

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C  
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V  
A

STEAM

“when interactive technology meets arts”



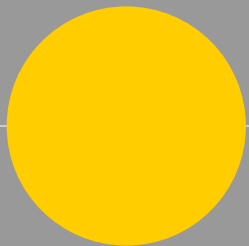
School-based Initiatives | Teaching Package for STEAM Learning



Public/Non-local Study Leave Scheme for Secondary School Teachers  
COME WITH AN INQUIRY LEAVE INSPIRED



I-journey Paid Non-local Study Leave Scheme  
for Secondary School Teachers 2018/19  
Programme A(6): STEM Education



# Hello!

朱仔

*I am* **Wyatt Chu**

Subject Coordinator/Teacher (Design and Applied Technology)

Co-create Team Committee

HKICC Lee Shau Kee School of Creativity

香港兆基創意書院

BA(Hons) Creative Media, CityU

MA Visual Culture Studies, CUHK

**Arts**

New media

# Technologies

New media

# Technologies Arts

**What?**

**Why?**

**HOW?**

**Expected Outcome?**

**What did I learnt@SG?**

**Challenges + Opportunities**



## Proposal of the School Based Initiative

### PROJECT OBJECTIVE

Study HOW **STEAM** learning across  
**DAT/VA/ICT/MATH**

Raise Student Engagement on create  
interactive artworks with latest technology

Integrate “**Technology + Science**” into current  
curriculum

**New way of Arts Expression**

### BRIEF DESCRIPTION

The whole proposal plan is estimating  
completed within **6 months**.

Students will experience around **7-10 weeks**  
**project learning** session, 3 hours per week.

They are expected to **build their own performing**  
**device** with the aid of Microbit/Basic  
Programming Coding to visualize arts concept.  
The students may have stronger link to their  
current subject learning.

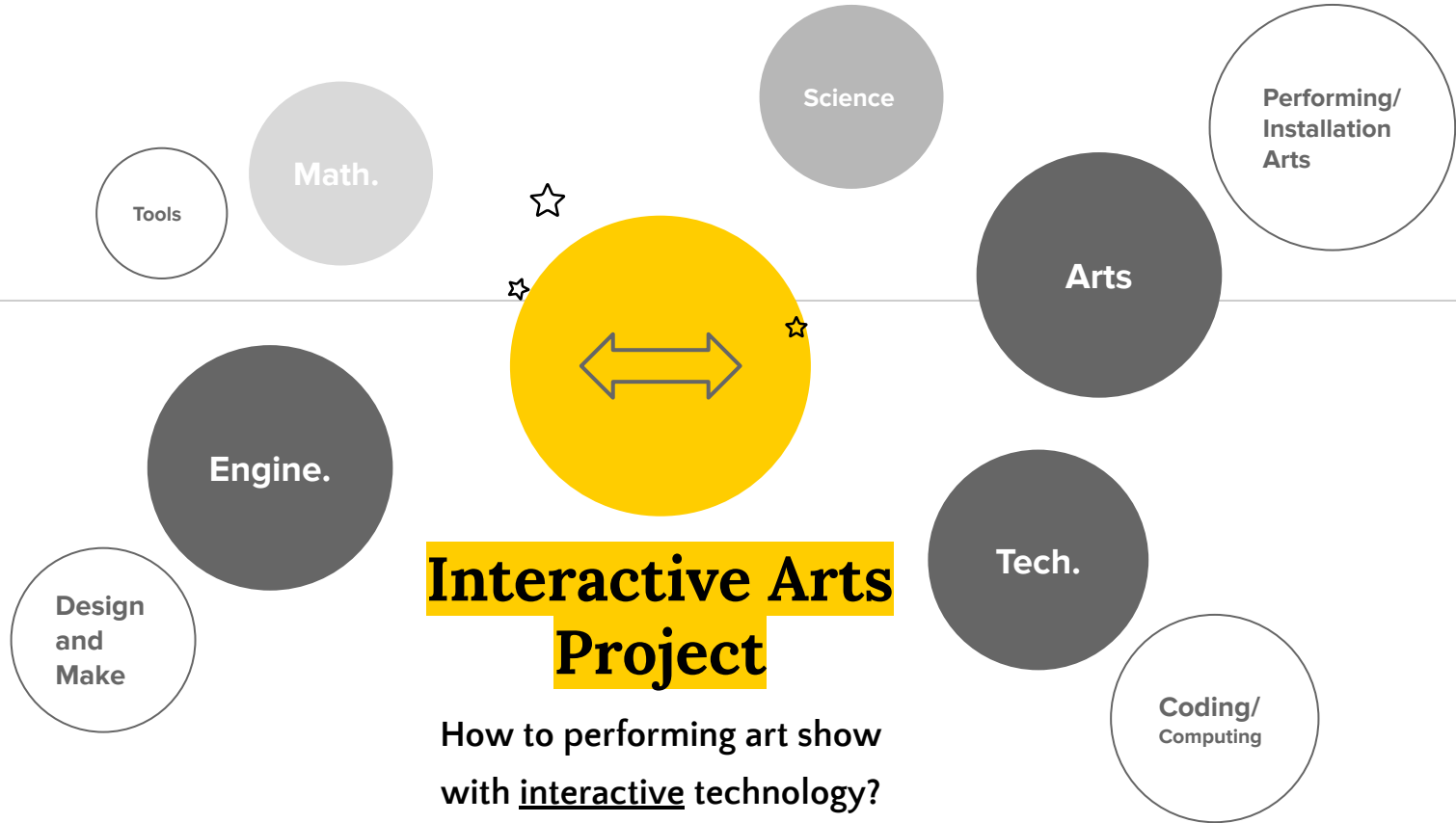
“when interactive technology meets arts”

1

# What is my School-based initiative

Interactive Media / **Technological Arts** / Visual Arts /  
Computational Thinking / Arts Sense

What is  
my School-based  
initiative



# Interactive Arts Project

How to performing art show  
with interactive technology?

sTEAM

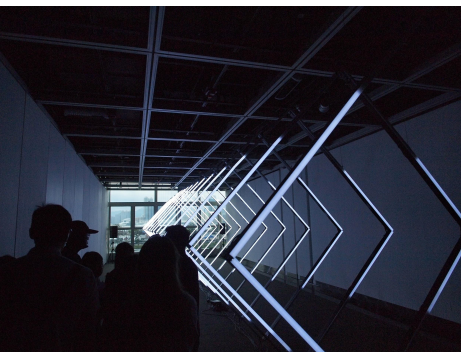
2

## Why do I want to do this?

Digital Problem Solving / Computational Thinking /  
New way of thought of Arts / Social issue Sense Making  
Further Studies and Career Pathway to Students



A 2017 Light Media based event:  
[www.lumiereshk.com](http://www.lumiereshk.com)



Interactive Arts Event in Hong Kong :

# Microwave International New Media Arts Festival



**Microwave  
International  
New Media  
Arts Festival  
2017**  
微波國際新媒體  
藝術節 2017  
**Cyberia**  
電光靈生  
6-30  
Oct 2017



**GAYBIRD**

**LEUNG**

**梁基爵**



KEITH

LAM

林欣傑



# 大禹之後

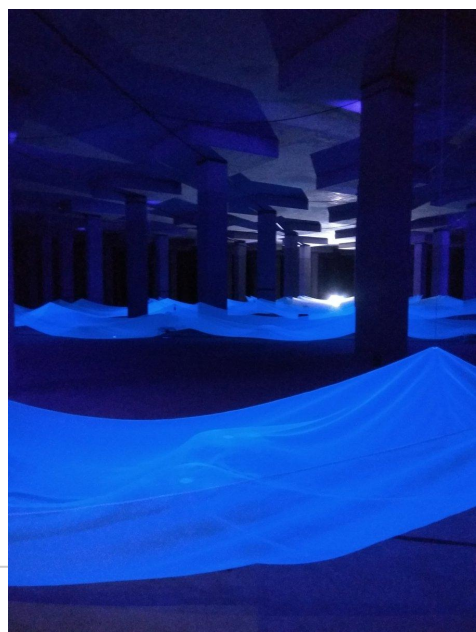
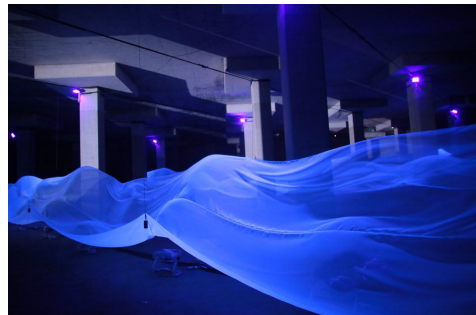
*after the deluge*

伍韶勁 作品  
a work by kingsley ng

KINGSLEY

NG

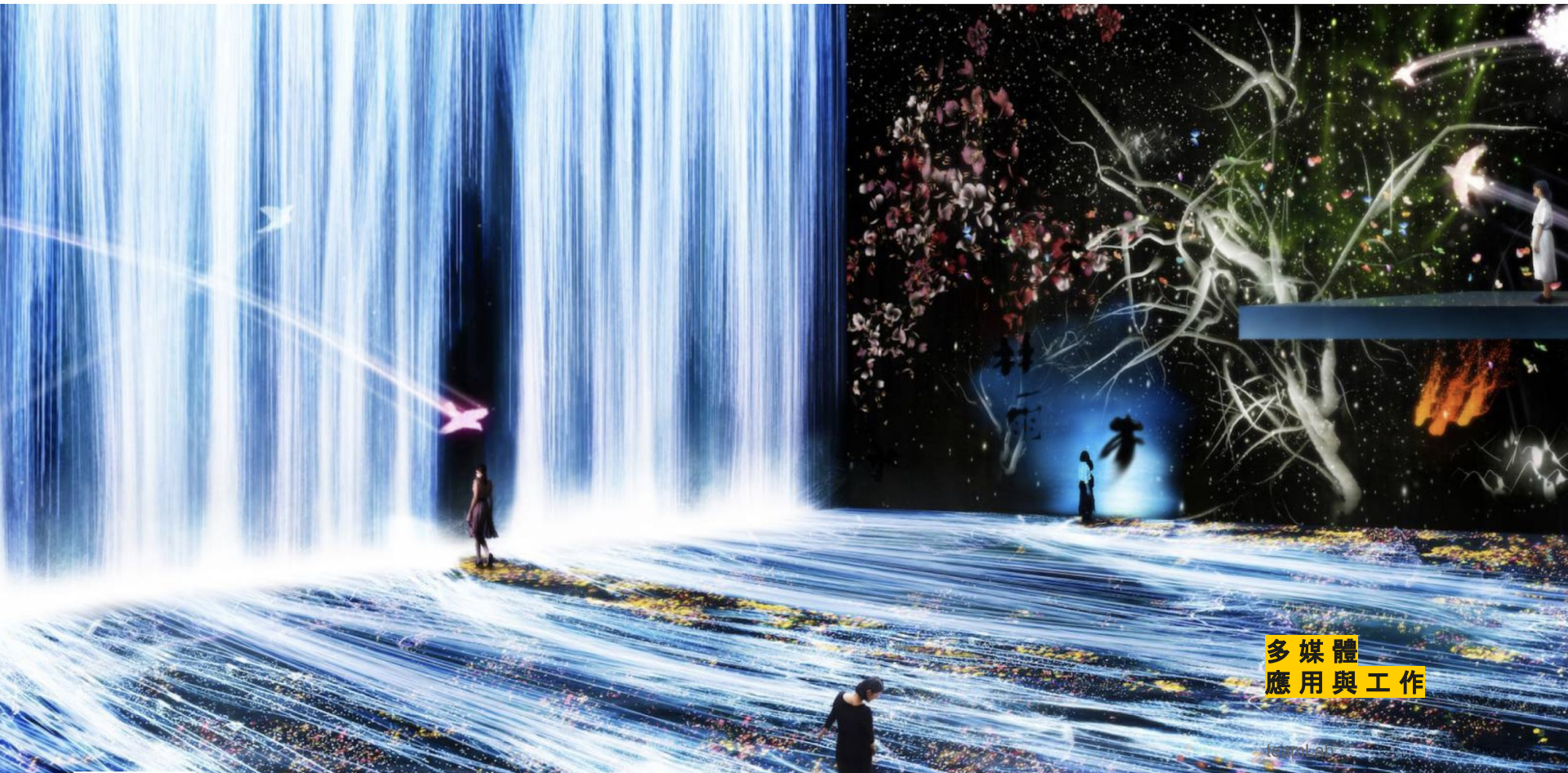
伍韶勁







多媒體  
應用與工作



多媒體  
應用與工作

3

**How??**

**Implementation**

**Plan of the project**

Project Schedule /  
Idea of Implement the STEAM Learning



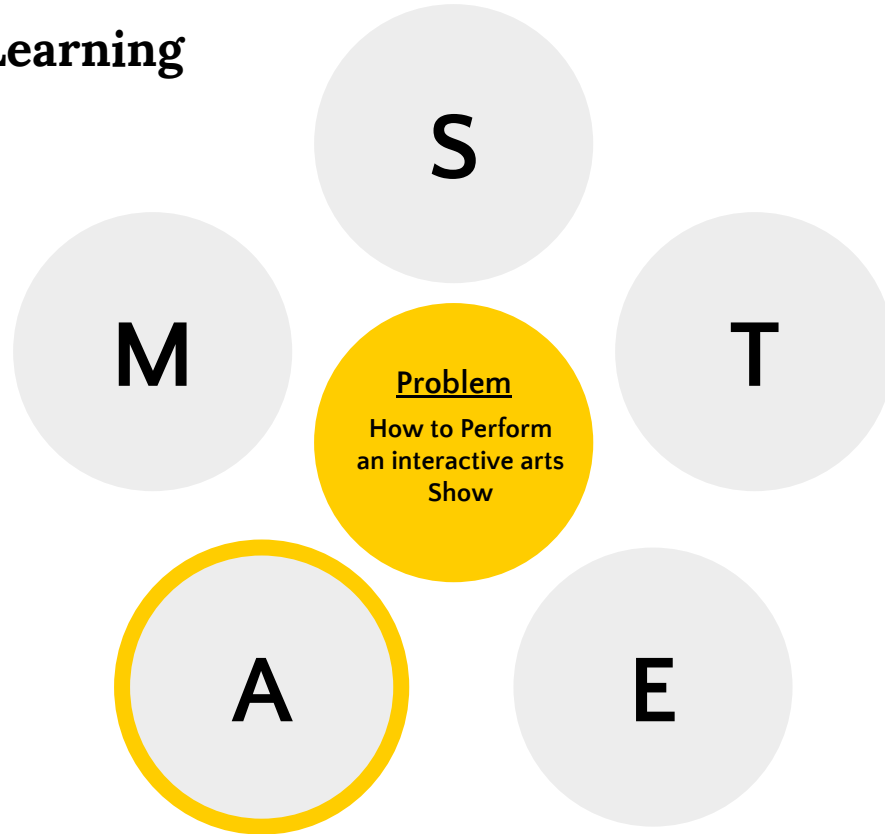
## Project Schedule Implementation Plan

- ◉ **May/19:** Summaries + Sharing Oversea Learning Exp.
- ◉ **Jun-Jul/19:** Coordinate related subject panel, integrated current curriculum / Explore possibilities to implement the project
- ◉ **Aug/19:** Drafting Learning Plan + Teaching Plan of the project
- ◉ **Sep-Dec/19:** Active Engage with the Project Teaching
  - (Invite New Media Artist as Artist-in-Residence Project)
- ◉ **Jan-Feb/20:** Analyze the effectiveness of the project and Evaluation

Subject Coordinator (DAT + VA + ICT + Math) + Curriculum Development  
>> Forming **STEAM Task Force**

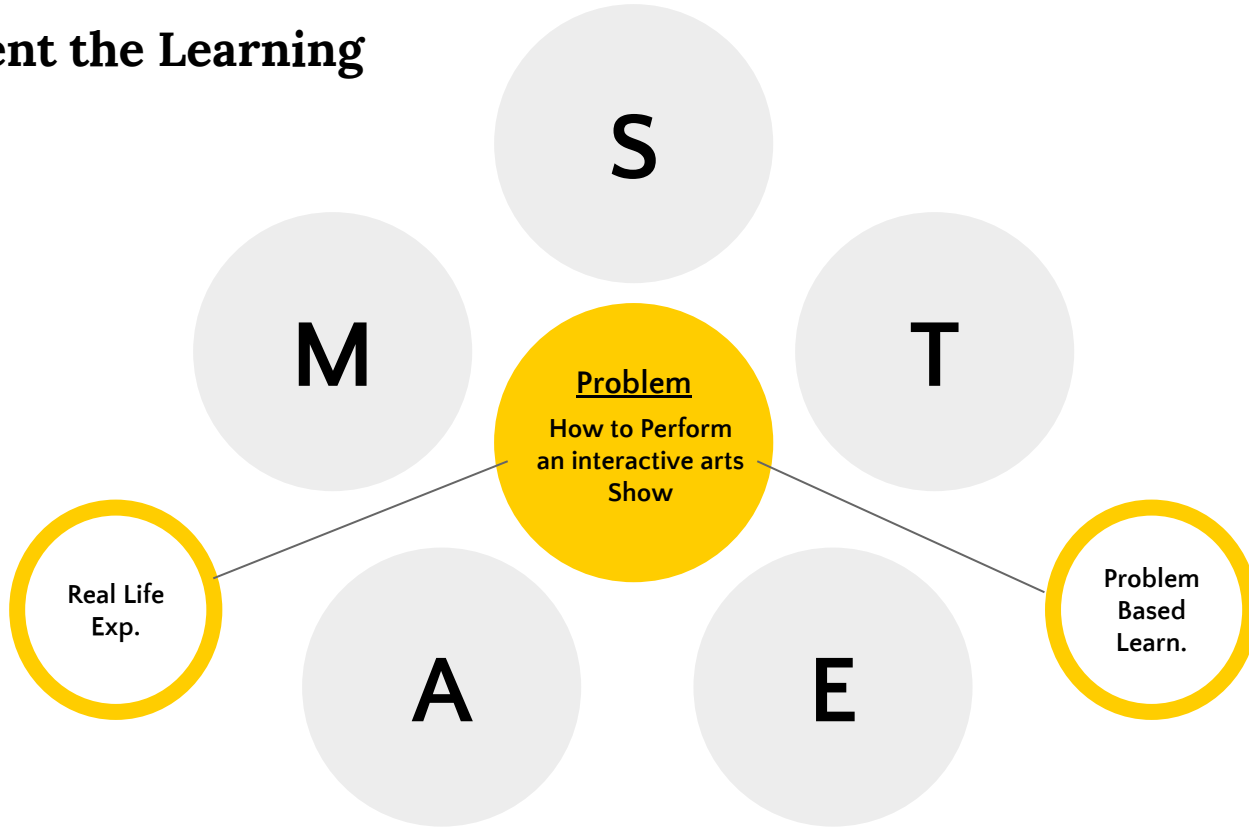


# Idea on Implement the Learning





# Idea on Implement the Learning





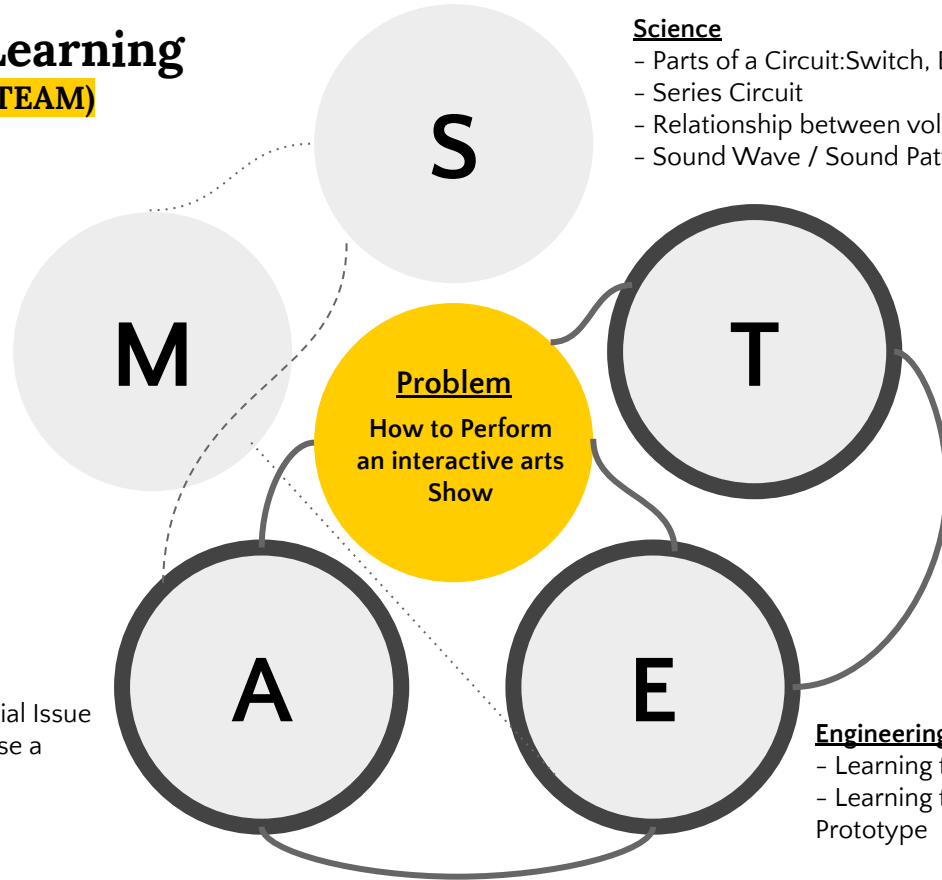
# Idea on Implement the Learning (Relationship between STEAM)

## Mathematics

- Graphic Pattern
- Calculation of Length, Depth, Height, Area of Volume

## Arts (Interactive Arts)

- Expressing Emotion
- Making sense to Social Issue
- Performing/Showcase a interactive arts show



## Science

- Parts of a Circuit: Switch, Batteries, Wires
- Series Circuit
- Relationship between voltage, current and Power
- Sound Wave / Sound Pattern

## Technology

- Applying Technology to resistance of materials
- Learning to use micro:bit/Coding for interactive control

## Engineering / Design

- Learning to Sketch to Design
- Learning to Make to Create Prototype

s T E A m



# Idea on Implement the Learning (Conceptual Learning among Subject)

## A <-> T

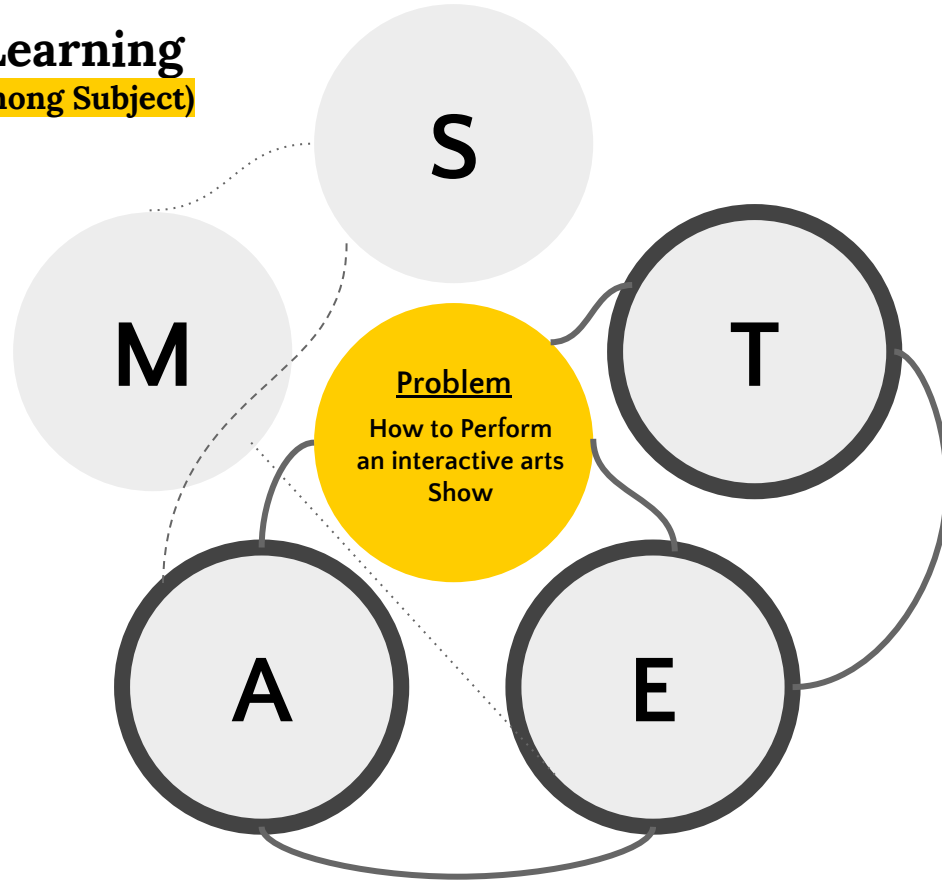
Technological Arts / Interactive Arts  
Mixed Media  
Ways of Seeing

## M -> E

Application of Math /  
Computational Skills and  
Measurement in Designing the  
Controller(Prototype)

## T <-> E

Understanding and apply the  
different ways of approach in  
design.  
Trail from prototype to actual  
product.



## S -> A

Theory of Sound Wave  
Research on the Phenomenon  
of Sound

## M <-> S

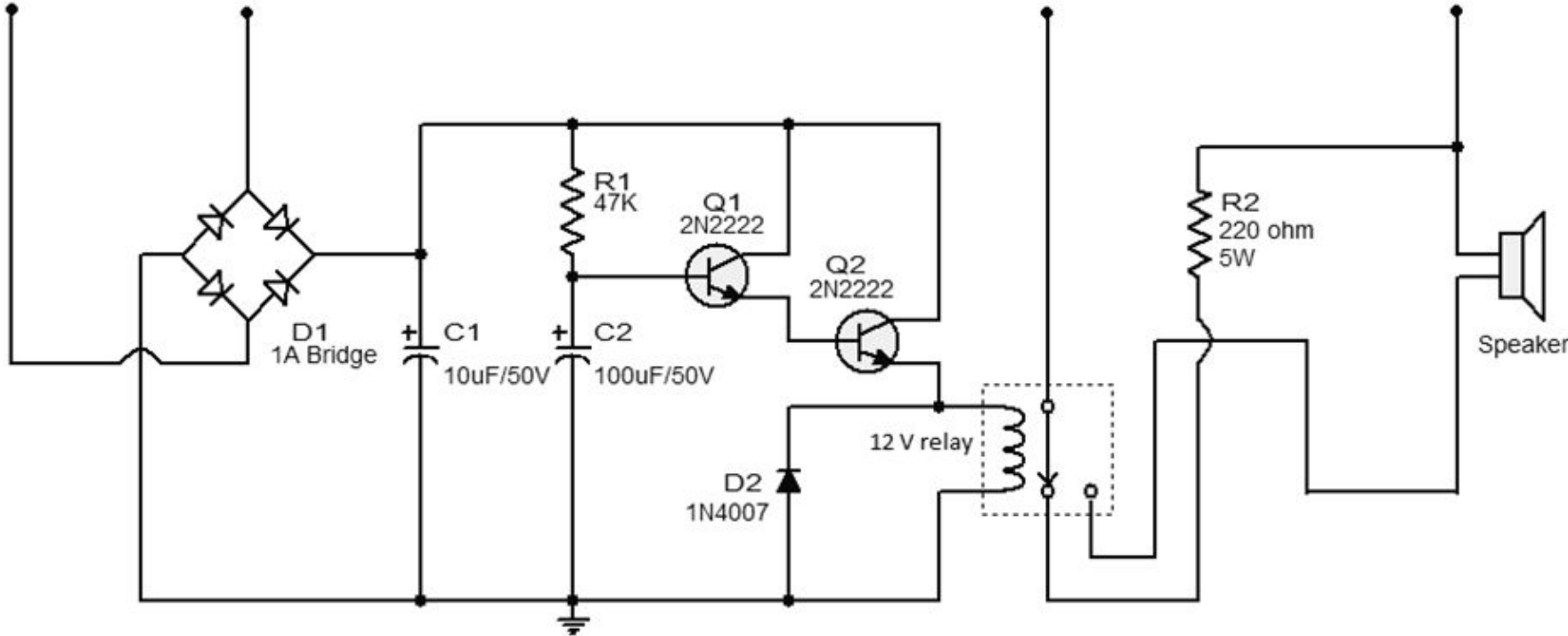
Fitting the parts of Circuit within  
the computed area, height and  
volume  
Understand the relationship  
between of Electronic Circuit

Science <-> Arts



# Science <-> Technology

To 12 VAC amplifier traformator



To amplifier audio out

To amplifiers ground

Speaker

3

## Expected Outcome

Benefits to Self / Students / School /  
Education Community

Interactive  
Instrument / Installation

+

Performing Arts Show



in order to produce sounds and live interactive visuals on the bar



## Benefit to 3 Different Layers

### Self

Integrated STEAM Teaching Approach.

Strengthen **the role** of DAT related Subject.

### Students

More understanding about Science

Connected Arts & Technology

New Way of Thought on Arts Making

Strengthen on Technology Skillset

Enhancing Computational Mindset on their learning

### School / Education Community

Integrated STEAM Curriculum  
(Whole School Approach)

Gain more STEM related resources to the School

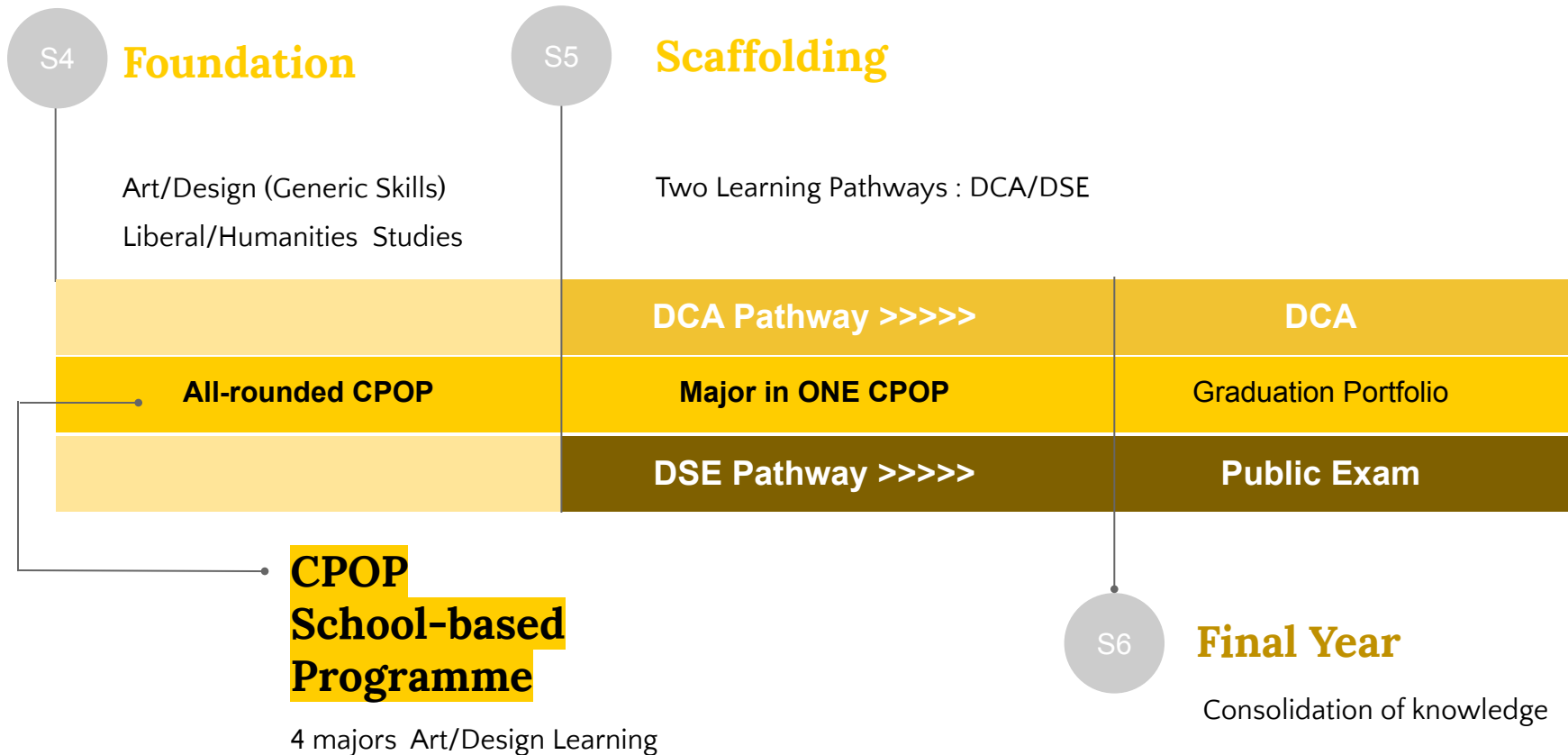
Leading “New Media Arts” Education among Secondary Arts Education

4

## Challenges & Opportunities

Constraiht on Tight Curriculum /  
Completely **NO SCIENCE** Subject /  
Students shows **no interest in Mathematics**  
Students are **low interest in technology** related topic

# Challenges#



## Diploma of Creative Arts (DCA)

Advance Topics on Language / Humanities Learning  
Art Studios / Workshops  
Consolidation of Creative Portfolio

## Preparation of HKDSE

Consolidation of Core/Elective Subjects Knowledge  
Completion of SBA / Individual Projects

S6

### Final Year

#### Languages:

Practical English

Arts Appreciation & Creativity

Culture and Life

#### Humanities:

Hong Kong Culture

Philosophy & Thinking / Readings

#### Specialized DCA Steam:

Studios/ Workshops  
Self Learning

Field Trips & Outings for  
Action Learning

#### Core Subject:

Chinese Language

Mathematics

English Language

Liberal Studies

#### Elective Subject (5 Options):

V / Λ

D / T

IOIC  
OIOI  
IOTO

Ethics & Religious Studies

Chinese Literature

S5

### CPOP

### Scaffolding

DCA Pathway or DSE Pathway

S4

### Foundation

Humanities Studies | Generic Skills

### CPOP

# Challenges#

Student

## No Science Subject Low Interest on Technology

What the challenges I may face?



# Challenges#

中四 基礎課程 (Foundation) | 技藝與創作 ..... 多元性延伸

HKSC a.k.a  
**STEAM** (NMAI)

1819  
年度

	<u>CCA</u>	V / / Λ	D / T	I O I C O I O I I O T O	+ - X ÷
Term 1	DVC	插畫 素描	設計 文化	數碼 玩意	QEF Project
Term 2	FDA	行為 藝術	電腦 繪圖 CAD	自生 媒體	求積法 課題
Term 3	ESS	陶瓷	工具 運用	電腦 架構	幾何
Term 4	MMPA	攝影	模型 製作	Coding 編程	

# Opportunities#

中四 基礎課程 (Foundation) | 技藝與創作 ..... 多元性延伸

HKSC a.k.a  
**STEAM** (NMAI)

1920  
年度

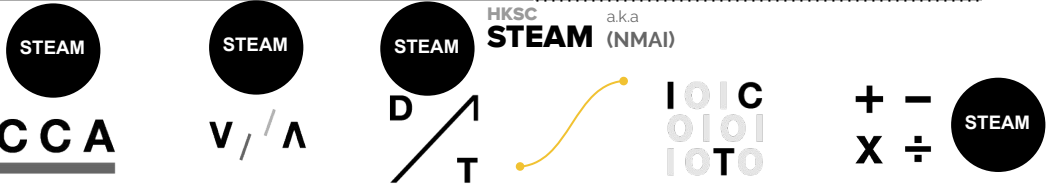
	<u>CCA</u>	V / / Λ	D / T	I O I C O I O I I O T O	+ - X ÷
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<b>Term 4</b>	MMPA	攝影	模型 製作	Coding 編程	

# Opportunities#

# HKSC Curriculum

1920 年度

中四 基礎課程 (Foundation) | 技藝與創作 ..... 多元性延伸



Term 1

DVC	插畫素描	設計文化	STEAM Project	QEF Project
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Term 2

FDA	行為藝術	電腦繪圖 CAD	STEAM Project	求積法課題
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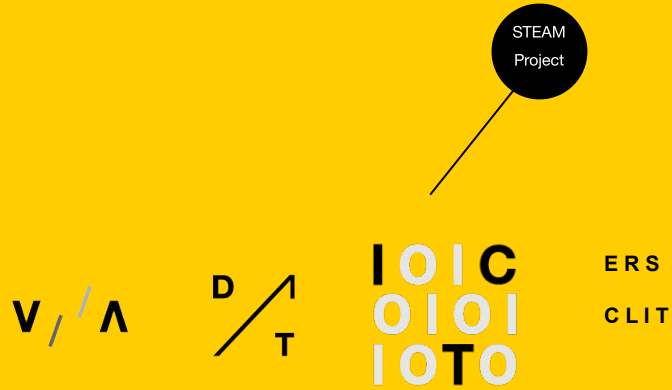
Term 3

ESS	陶瓷	工具運用	電腦架構	幾何
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Term 4

MMPA	攝影	模型製作	Coding 編程
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# School Based Curriculum#



# Bundle 1

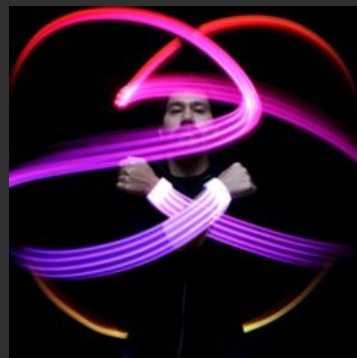
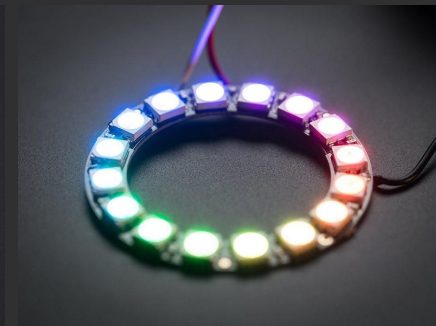
## Cyber Gadget 數碼玩意

Cyber **模控** = Cybernetics, System of Input Output and Feedback, a forgotten term. In English, means to “Steer”(Drive).

**學習:** 透過創做 Gadget ,學習電腦/數碼裝置 Input,Output 的概念,以及入門 Coding + Interactivity.

**延伸應用:** 舞台, 表演, Product/Experience Design, 媒體藝術裝置...

**工具&平台:** BBC Micro:Bit , Makecode by Microsoft, Micro Python



## Bundle 2

# Creative Computer Architecture 創意電腦架構

(Hardware, Software, Build systems of Computer, Digital Problem Solving)

學習: 透過建構一台微型電腦學習Hardware, Software等 Foundation和關係

延伸應用: IOT (internet of things), Smart Product Design, Digital Installation Art

工具&平台: Raspberry Pi (Linux) - Constructing a Nano Computer



# Bundle 3

# Generative Media Arts

# 自生媒體

學習: 用 **Coding** 去制作 Visual Art, Animation

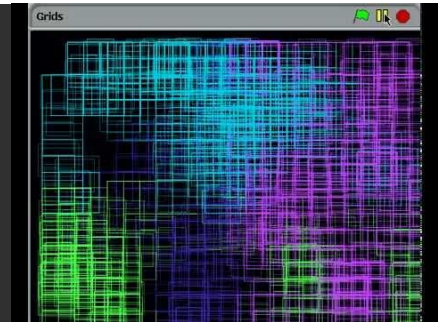
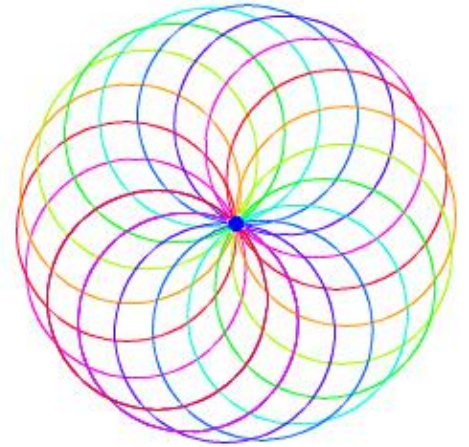
延伸應用: 舞台, VJ, 表演, VA, 動畫特效, Math Art . . .

工具&平台:

入門: Scribble ( Scratch) -Generative Visual(based on MIT Scratch,by Monash Uni 2012)

```
go to x: 0 y: 0
clear
pen down
repeat 20
  draw circle
  turn 20 degrees
  change pen color by 25

define draw circle
repeat 90
  move 4 steps
  turn 4 degrees
```



# Bundle 4

## Expanded Computing

### 擴伸運算

Virtual Space:

VR / 360 / Utility/ Green Screen

AR, Mixed Reality

Audio Editing/ Mixing/ midi/

Kinetic Typography(?)

/Human Computer Interface/ App

Computer History, Digital Literacy



校本 ICT  
課程計劃

S4

1819  
年度

## HKSC School Based ICT Curriculum

### Bundle 1

#### Cyber Gadget 數碼玩意

Interactivity & Physical Computing  
(Human-Computer Interface, Basic Electronics & Coding )  
Arduino / Micro:bit / Makey Makey / Processing

### Bundle 2

#### Creative Computer Architecture 創意電腦架構

Raspberry Pi (Linux) - Constructing a Nano Computer

### Bundle 3

#### Generative Media Arts 自生媒體

Visual Creation  
(Processing/Java )

### Bundle 4 Expanded Computing 擴伸運算

Virtual Space: VR / 360 / Utility/ Green Screen  
AR, Mixed Reality

## HKDSE ICT Curriculum

### ICT Core

#### **Section B. Computer System Fundamentals**

- Basic Machine Organisation (15hrs)
- System Software (4hrs)
- Computer Systems (6hrs)

#### **Section D. Basic Programming Concepts**

- Problem-Solving Procedures (4hrs)
- Algorithm Design (13hrs)
- Algorithm Testing (3hrs)

### ICT Elective (Paper 2C)

- the benefits of multimedia applications;
- the different kinds of multimedia elements;
- the integrated use of multimedia elements in a simple multimedia application;

校本 ICT  
課程計劃

S5

1920  
年度

## HKSC School Based ICT Curriculum

### Project A

#### Digital Media in Web Development

Software and Coding to Internet Application  
Interactive Website Building  
Website Publishing

### Project B

#### Collaboration with DAT SBA / HKSC Grad Project

IOT (Internet Of Things)  
Web page Visual Effect  
Digital Portfolio

## HKDSE ICT Curriculum

### ICT Core

#### **Section C. Internet and Its Applications**

- The Networking and Internet Basics (9hrs)
- Internet Services and Applications (7hrs)
- Elementary Web Authoring (12hrs)

#### **Section A. Information Processing**

- The Use of Office Automation Software (40hrs)
- Presentation of Information (5hrs)

### **Elective (Paper 2C) SBA [20%]**

Multimedia Production and Web Site Development

- design factors for presenting information effectively on the Internet;
- web authoring and web site publishing; and
- dynamic and interactive web pages.

校本 ICT  
課程計劃

S6

2021  
年度

## HKSC School Based ICT Curriculum

Project A / B Extension

Digital Media in Web Development /

Collaboration with DAT SBA / HKSC Grad Project

Digital Portfolio

DSE Preparation

## HKDSE ICT Curriculum

### Section A. Information Processing

- a. Introduction to Information Processing 5hrs
- b. Data Organisation and Data Control 4hrs
- c. Data Representation 10hrs

### Section E. Social Implications

- a. Equity of Access 2hrs
- b. Work and Health Issues 2hrs
- c. Intellectual Property 9hrs
- d. Threats and Security on the Internet 15hrs

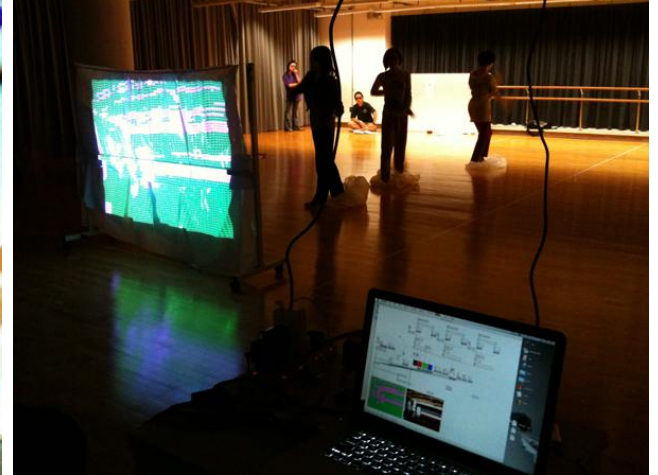
# Opportunities#



## Experienced on related Projects

形 / 感 互動 Multimedia Performance Workshop  
Artist: Chris Cheung x HKSC x Y-space | ADC Funding

1011  
年度



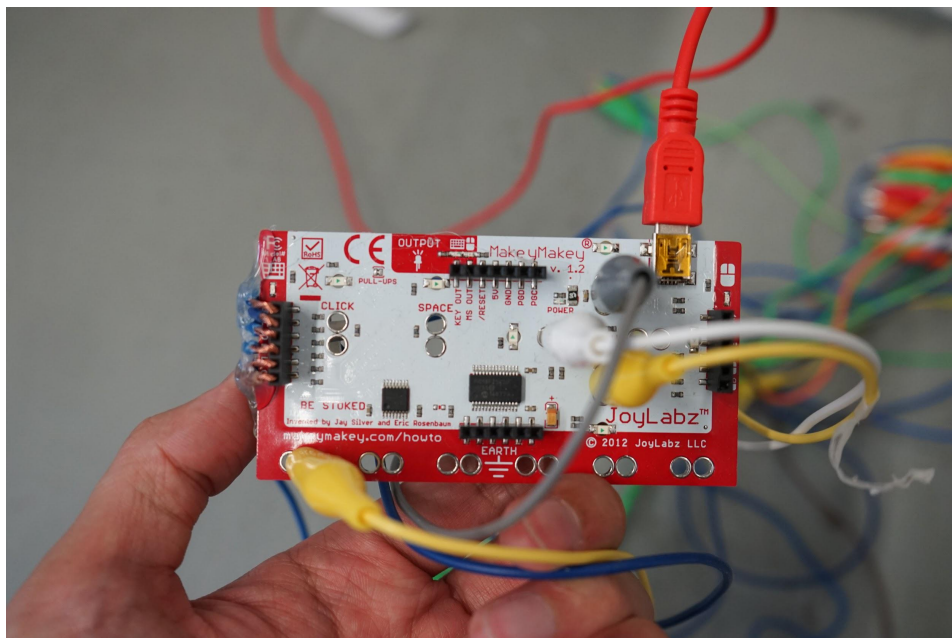
# Opportunities#



## Experienced on related Projects

1516  
年度

DAT Artist-in-residence Project: makey-makey Interactivity Workshop  
Artist: Sam Yip



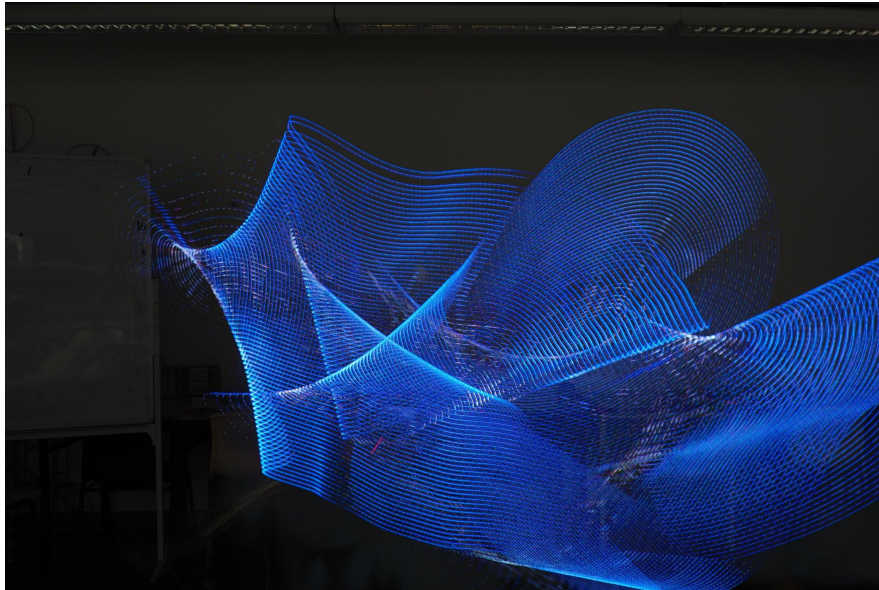
# Opportunities#



## Experienced on related Projects

Public Life Innovation(PLI): Light-painting Workshop  
Instructor: Andio Lai at Maker Lab

1718  
年度



# Opportunities#

Human  
Resources

## DAT Team

**Chuchai** Creative Media | Graphic Design

**Andio** Creative Media | Electronic

**Zach** Experienced DAT Teacher | Curriculum

**Kenneth** Product Designer

**Terence** Product Designer

**Kirk** 3D Drawings | 3D Printing

+

**Lydia & the VA Team**

+

**Steven @Math**

+

**Rico @Performing Arts**

5

## What did I Learnt?

@ NIE | NTU

@ HKBU

@ EDB i-journey

# WELCOME TO THE HEART OF EDUCATION



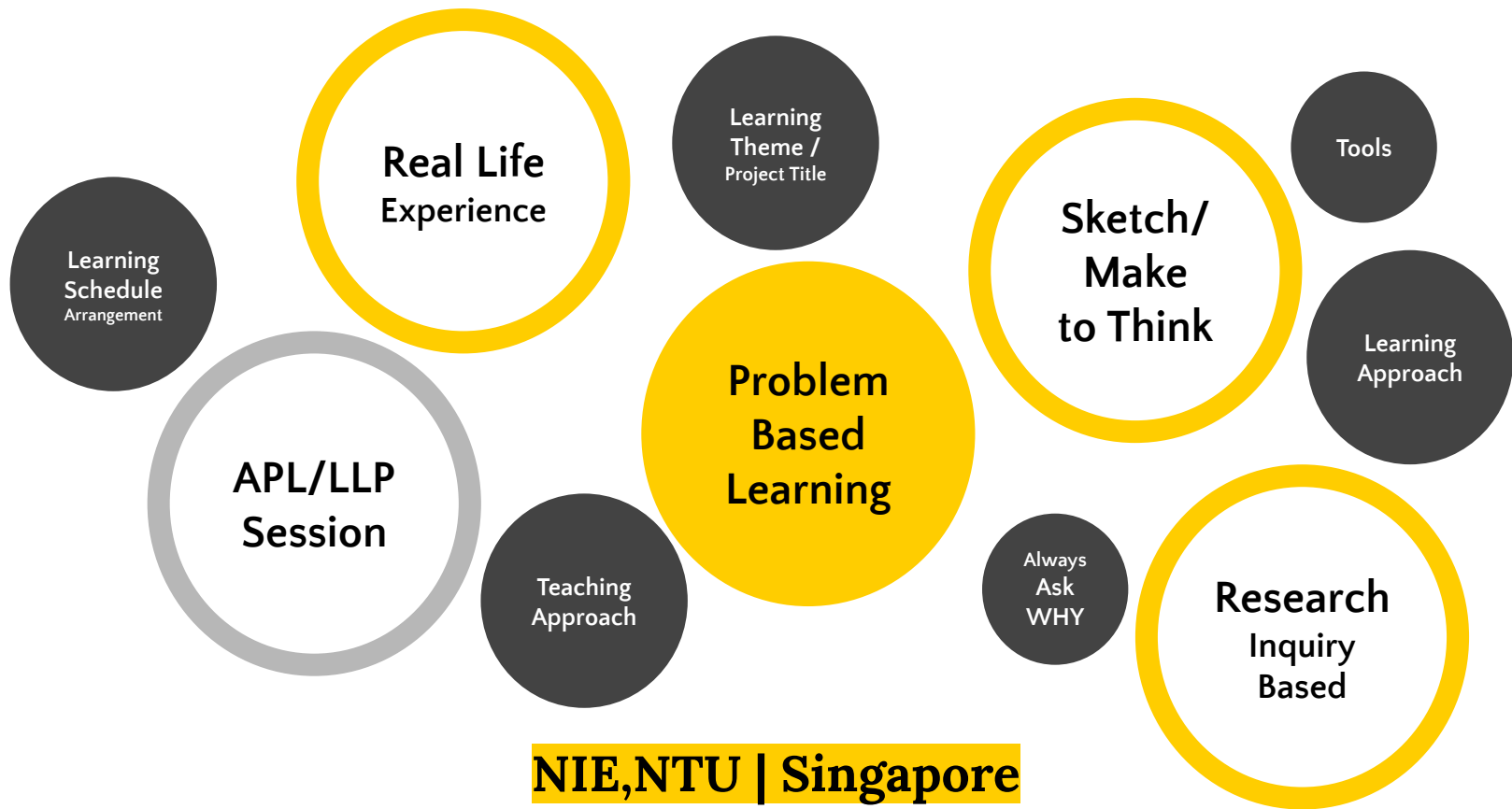
In our pursuit of **EXCELLENCE**,  
we must continue to **BREAK NEW GROUND**  
and develop alternative models of **TEACHER EDUCATION**  
to meet the different needs of our **STAKEHOLDERS**.



**NIE VISION**  
An Institute of Distinction:  
Leading the Future of Education



**Big impact!**  
**@NIE | NTU Singapore**  
**HKBU Hong Kong**



**NIE,NTU | Singapore**



Learning  
Schedule  
Arrangement

Learning  
Community

Learning  
Theme /  
Project Title

Research  
Method

Modification  
Evaluation

Mentor  
Resources/  
Management  
level Thinking

Tools

Actual  
Implement

Research  
Inquiry  
Based

**HKBU | Hong Kong**





# Thanks!

Any **questions** ?

“when interactive technology meet arts”