MakerMindset@i-Space Programme as a Pioneering Approach of Self-directed Learning by Students

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Library as a place for Learning Experience
Library for learning experience

- Information is evolving. It is not only about text, but all kinds of digital media and modalities.

- Library space transformation realizes the ideas of information literacy, and link space to learning.

- The Library built i-Space in September 2017. It provides a learning space and digital equipment for students to freely access, create, express and share information.
Why i-Space in the Library?

• Entry-level Digital Equipment and Facilities

Uniquely positioned to lower the barrier to entry for students from all disciplines and family background.

• Easily Accessible Experiential Learning Space

With Digital Makerspace available at the i-Space, students can freely use and explore different emerging technologies such as Internet of Things (IoT), Virtual Reality (VR), 3D scanning & printing, laser cutting/engraving, vinyl cutting, poster printing, videos recording and editing.
About PolyU Library i-Space

Inspiration Zone
Inspiration
Inspiring & stimulating ideas generation

Ideation Zone
Ideation
Building ideas through sharing & collaborative discussion

Implementation Zone
Implementation
Actualising creativity & imagination to create prototypes & digital content

Digital Makerspace
Digital Visualisation Room

i-Space 4/F, North Wing
Link Library’s space to support learning with Emerging Technology
The i-Space’s **MakerMindset Programme** is a pioneer approach of **self-directed learning with emerging technologies** by students. The Programme aims to:

- Cultivate a creative, curious and can-do mindset;
- Develop the spirit of innovation in students by bridging emerging technologies with their study disciplines; and
- Build community by gathering students to knowledge sharing sessions, and bringing in industrial experts and other successful makers to share their stories.
Overview of MakerMindset@i-Space Programme

Recognizing students achievement
- International Children VR film fest
- Media interview
- Exhibitions

Knowledge transfer (Community)
- Organize Inter-secondary School competition
- Offer community services

Cultural Elements - embrace innovation while preserving tradition

Seek collaboration with/support by Faculty

Offer workplace for students taking Work Integrated Education (WIE) internship programme

Bring in Industrial Partners/Experts

Self-directed Learners on emerging technology

Library Digital Makerspace’s equipment and facilities:

#OCLCLibraryFutures
Workshops and Seminars
Workshops and Seminars

• Hands-on workshops for students to take up skills and to prepare for their self-directed learning with emerging technologies.

• Minds-on seminars for students to explore the feasibility of using emerging technologies in their projects or service learning.

• Students can join competitions or interest groups organised by i-Space.
CAN-DO : Hands-on workshops

• Learn theory from doing and take part in activities
• Aim to Cultivate Can-do Mindset
• Uphold small class size for workshops
• Keep duration within 1.5 to 2 hours
• Workshops include:
  • How to use Laser Cutting
  • Programming Internet of Things (IoT) device
  • Build an elementary VR application
  • Assemble 3D Printer
CAN-DO : Hands-on workshops

- Laser cutting & engraving workshop
- Assembling a 3D-printed hand (Prosthetic)
- Assembling 3D Printer and learn the theory of fused deposition modeling (FDM) printing
- Build a VR application using Unity software
- Learn how to program an Internet of Things (IoT) device

#OCLCLibraryFutures
Kung Fu Robot Learning Experience

• Robotic Programming for Kung Fu brings together robotic technology with Chinese martial arts (Kung Fu).

• Students can try out robotic programming while transmitting and safeguarding the intangible cultural heritage of Kung Fu.
CURIOSITY : Minds-on Seminars

• Hands-on doesn’t assure minds-on
• Organize cultural seminars with the theme on Tech Culture projects
• Invite industrial experts to deliver insightful technological talks to explore new ideas of using emerging technologies
• Follow up with hands-on workshops when applicable
Creativity has no limits! Learn new skills of VR software and fabrication tools to actualize ideas.

A series of cultural seminars to facilitate student contestants to develop a storyboard for their VR Contest.
CURIOSITY : Minds-on Seminars

Minds-on Seminar: Get to know how simple to collect environmental data using Internet of Things (IoT) and send data to Cloud services. (2019.04)

VR animation and the latest development in Digital Entertainment market (2019.10.03)
Virtual Reality Contest

• Virtual Reality Contest is a key event of MakerMindset@i-Space programme to bring Technology and Culture together.

• **Promote Interdisciplinary Collaboration**: It seeks to engage students from various disciplines working together to adopt emerging VR technology into Chinese Culture.

• Keep seeking collaboration with faculty members to organize more contests and competitions.
Virtual Reality Contest about Ancient Chinese stories

PolyU student contestants, faculty and industrial partners attending the Award Presentation Ceremony of VR Contest – Stories from ancient China. (2019.07.17)

Finalist student teams of the VR Contest presented and demonstrated their VR games!

VR Contest seeks to engage students from various disciplines working together in to adopt emerging VR technology into Chinese Culture.

Champion entry of the VR Contest 2018/19 – VR game on Chinese Tea Culture.
Self-directed Learning with Emerging Technologies
Emerging Technology as a Library Service

- **Library service:** The emerging technology facilities and services are readily available service for students of all disciplines.

- **Digital equipment loan service:** Students can checkout digital equipment at a Self-service Kiosk anytime during library opening hours. Just like you checkout a book!

- **Staff consultation:** The i-Space provides Technical Support Desk services to assist users.

- **Peer-to-Peer support:** The i-Space regularly organizes student sharing sessions for idea exchange; builds up student interest groups to work on their own ideas and projects.
Self-service Kiosk

• Students can borrow Notebook computers, MacBooks, iPad Pro, 3D Scanner, 360 camera, etc.

• Over 17,000 loan of digital equipment per year.

• Self-service Kiosk’s software is developed by i-Space staff ourselves.

Packed in transparent plastic bags for easy identification
Media Creation and Editing Services

• Provide a variety of video production studios
• Provide multimedia workstations for sound and video editing
• Equip with various software for creation of different video formats
  – 360 Video – 360 video camera
  – 3D Image & Video – 3D scanner or photogrammetry software
  – VR Game Production – Unity software
# Studios@Library i-Space

<table>
<thead>
<tr>
<th>Digital Studio (Staff-managed)</th>
<th>One Button Studio (Self-service)</th>
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</thead>
<tbody>
<tr>
<td>Contact staff for booking arrangement</td>
<td>Online booking; 2-hour per session</td>
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Student Projects
Project Created by Student’s Interest Groups

Smart Home Prototype (2019.06 - 08)

Using a mobile phone/device to control home appliances, and capture temperature info.

Dept. of Building & Real Estate
Dept. of Electrical Engineering
Dept. of Computing
School of Design

Stimulating an air-conditioner
Simulated a VR cycling tour in the Hong Kong Velodrome (2019.04)

Installed a solar panel for students to embed energy feature into Smart Home prototype (2019.10)

3D printed blooming flower with moving petals and changing LED colours. (2019.05)
Student Sharing@i-Space Programme

Establishing a peer-to-peer learning platform. UG student sharing “Wikipedia for Project-based Learning” with students & staff, and industrial partners. (2019.10)
Pioneering Self-directed Learning with Technology

To summarize, students can:

• Borrow and use digital devices and facilities regardless of their disciplines and family backgrounds

• Identify, learn and pick up new skills of emerging techniques

• Develop self-directed learning competence with emerging technology

• Set their learning pathway, setup evaluation criteria, constructive use of comments and feedback for further improvements
Thank you

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