Design-Led STEAM for Smart Fashion

STEAM

- An integrated approach to learning which requires an intentional connection between standards, assessments and lesson design/implementation.
- True STEAM experiences involve two or more standards from *Science, Technology, Engineering, Math and the Arts* to be taught AND assessed in and through each other. (Hasanah, 2020)





Designing/ creating products with advanced functionalities, fabrication, materials and systems



- Application in daily life/scenarios
- Solving real-word needs/problems
- Future direction in all inventions

Apple iPhone





Wearable Technology/ fashion

- Circuiting textile (S)
- POF textile (T)
- Garment construction (E)
- Fashion design (A)
- Garment pattern making (M)





Design LED STEAM APPROACH

- Project- based/ studio-based learning/ Open-end project
- Solving a problem with D-STEM approach And creative practice
- Local teachers received specialized training in just one or two disciplines in universities, most (82%) of them indicated they were neither well-prepared nor well-equipped to teach multi-disciplinary STEAM. Hong Kong teachers are accustomed teaching linear content and deliver knowledge in one subject. (Research Office of Legislative Council Secretariat, 2022)

D-STEM What is it?

Conventional learning and teaching: linear thinking by following known cycles and systematic progression.

Design: reflective and adaptive, with considerations of multiple perspectives.

Design provides a flexible problem-based approach which creative and scientific disciplines naturally intersect (Henriksen, Mehta & Mehta, 2019).

D-STEM offers an adaptation of the conventional design process and aims to merge the creative aspects of design with the knowledge seeking aspects of STEM domains (Toomey &Tan, 2018).



Diamond Design Framework (DDF)

A framework describing the design process, composed of four main steps:

- Discover insight into the problem
- Define the area to focus upon
- Develop potential solutions
- Deliver Implement solutions that work



DDF Key Activities





- 1. Discover
- ▶ Key Concepts
- Source for inspiration
- Explore new
 Materials
- Brainstorming
- ▶ Sketching

2. Define

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- Identify Real-World Challenges
- Exploring Ideas via various methods (conceptualization, sketches, collages, etc.)





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- 4. Deliver
 - ▶ Evaluation
 - Presenting
 Prototypes

- **3.** Develop
- MaterialExperimentation
- Prototype Making
- Troubleshooting and Testing