Use of resources support for implementation of STEM education in schools

Resources Support

- A key factor to consider during holistic curriculum planning
- Not confined to “grant” & “manpower”
- Available from “EDB” & “non-EDB”
- (a) KLA-based resources
  (b) Web-based resources
  (c) Grant
  (d) Professional Development Programmes
  (e) School-based Support Services
  (f) QEF
  (g) Community Resources

(I) KLA-based resources

- Existing facilities / special rooms / equipment / teaching aids
- Web-based resources
- Curriculum development projects and deliverables

(I) KLA-based resources

Junior Secondary (some examples)

- Learning and Teaching Exemplar for Errors of GPS Tracking Apps
- Learning and Teaching Exemplar for Healthy Diet Menu
- Learning and Teaching Materials on STEM Education for Science Education Key Learning Area
- Learning, Teaching and Assessment Materials for Implementation of Updated Science (S1-3) Curriculum
- Unplugged Activities for Learning and Teaching of Programming
- Implementation of the Enriched TE KLA Curriculum for Secondary 1 to 3 – Learning Element Modules Related to Technological Subjects

(I) KLA-based resources

Senior Secondary (some examples)

- Learning and Teaching Exemplar for Mathematical Modelling
- Booklet on Applications of Mathematics: Analysis of Genes and Protein
- Learning and Teaching Exemplar for Medical Physics
- Learning & Teaching Resources for Senior Secondary Biology Curriculum: Problem-based Learning
- The Simplified Version of Design and Applied Technology Learning and Teaching Resources at Senior Secondary Level
- Experimental Tests for Food and Textile in Technology and Living

(II) Web-based resources

- **One-stop portal**

  http://www.hkedcity.net/edbosp/

(II) Web-based resources

- **STEM website by EDB**

  http://stem.edb.hkedcity.net/en/home/

(II) Web-based resources

Pri- Primary
JS- Junior Secondary
SS- Senior Secondary

Different levels

- **STEM Databank**
  - ➢Sorted by Category and by Level

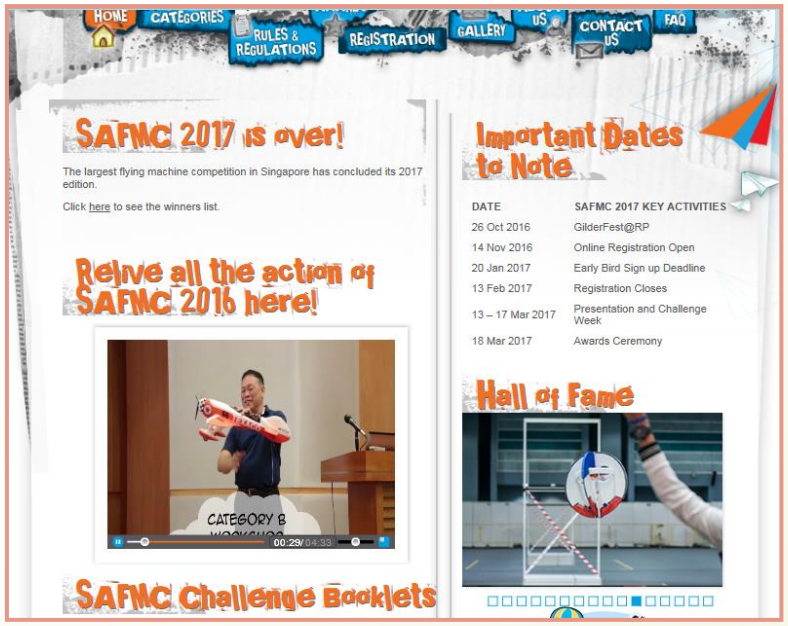
No.	Project Titles / Activities	Level	Project Descriptions	Keywords/Terms	Source of Information / Weblinks
i. Design and Make (#1-45)					
1	Using STEM to "Go Green" and Defeat Global Warming	Pri	The project introduced engineering using real world problem-based learning that interconnected STEM. Students researched the feasibility of installing a wind-turbine for their school and then built a model of their wind turbine using the engineering design process to accompany their proposal.	green technology, model making, structure, materials	http://gogreenwithstem.wikispaces.com/home
10	Design Amazing Flying Machine	Pri, JS, SS	To design and build various flying platforms to complete specific tasks	materials, mechanical engineering, control	http://www.dsoamazingcompetitions.com.sg/safmc/home.php
19	全國青少年創意工程挑戰賽 - 礦山歷險記設計方案	JS, SS	礦山歷險記共有八個關卡，包括：升降平臺、軌道、太陽能裝置、磁力開關、棘輪裝置、滾輪開關、重力輪、蝸牛凸輪等。	future world, renewable energy, mechanism	http://www.cnstedu.cn/guestbook/lypublic.jsp 在主網頁下載 2016 创意工程团体赛设计方案(范例)
28	Clamp and Click	SS	To design a device to provide convenience and stability for shooting photographs during an event	mechanical engineering, materials	https://www.tkkfoundation.org.sg/doc/uploads/yia-projects/2016/92.pdf

i. Design and Make
ii. Energy and Power
iii. Environmental and Green Technology
iv. Food Science and Technology
v. Mathematical Modelling and Applications
vi. Programming and Coding
vii. Robotics
viii. Scientific Investigation
ix. Structures & Building
x. Textile Science and Technology
xi. STEM Competitions / Events

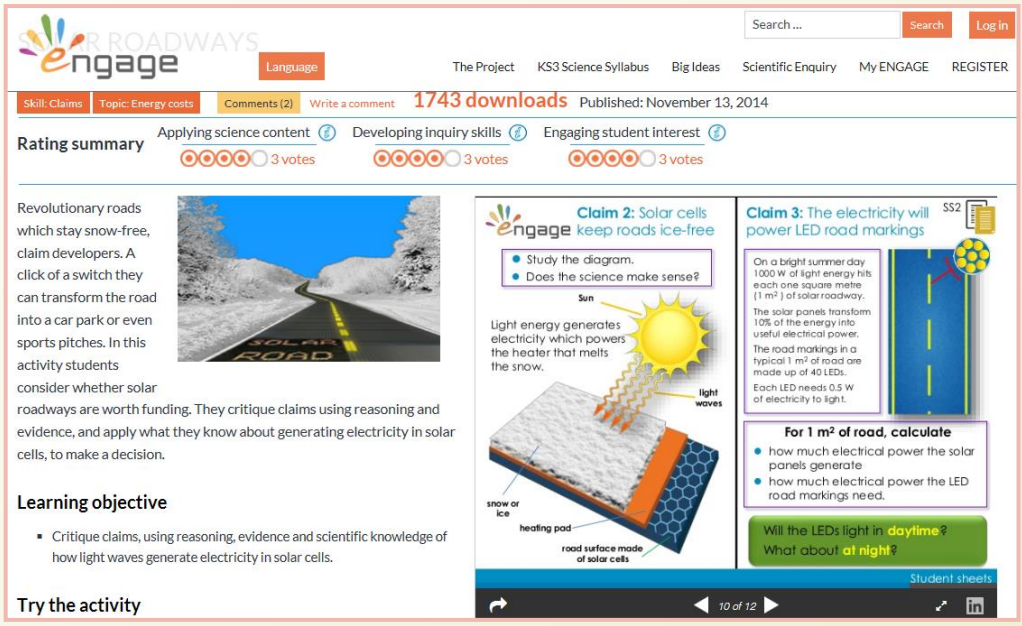
Proposed categories

(II) Web-based resources

- **STEM Databank**
  - ➢STEM projects from different countries



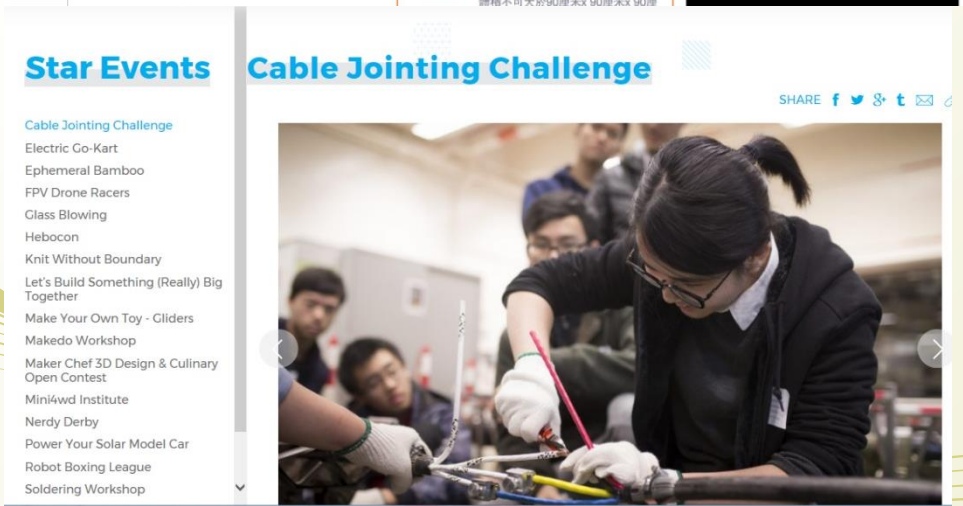
Design Amazing Flying Machine (Singapore)



Solar Roadways – smart paved roadway powered by solar energy (UK)

(II) Web-based resources

- **STEM Databank**
  - ➢Major competitions and activities for students



(II) Web-based resources

- *EDBCM 68/2017:*

  Provision of One-off Grant to Secondary Schools for the Promotion of STEM Education

  - *Annex 1: Contact Persons for Science, Technology, Mathematics Education Key Learning Areas, IT in Education and/or STEM Education Reply Form*
  - *http://applications.edb.gov.hk/circular/upload/EDBCM/EDBCM170668E.pdf*

Annex 1

Contact Persons for
Science, Technology, Mathematics Education Key Learning Areas,
IT in Education and/or STEM Education

Reply Form

(Please return by fax on or before 10 April 2017)

[Fax no.: 2877 7954]

To：Administration Team (Kowloon Tong Education Services Centre)
Curriculum Development Institute

The names and email addresses of the contact persons for Science, Technology, Mathematics Education Key Learning Areas, IT in Education and/or STEM education (panel heads/coordinators/teachers) are as follows:

Contact Persons	Name (in English)	Name (in Chinese)	Commonly used email address *	e-Services account *
Science				@eservices.hkedcity.net
Technology				@eservices.hkedcity.net
Mathematics				@eservices.hkedcity.net
IT in Education				@eservices.hkedcity.net
STEM education.				@eservices.hkedcity.net

* *Please use block letters.*

Signature of Principal：

Name of Principal：

Name of School：

Tel. No.:

School stamp

(III) Grant

Recurrent Grant

- Consolidated Subject Grant
  綜合科目津貼
- Composite Furniture and Equipment Grant
  綜合家具及設備津貼
- Composite Information Technology Grant
  資訊科技綜合津貼

Non-recurrent Grant

- One-off Information Technology Grant for e-Learning in Schools
  在學校推動電子學習的一筆過資訊科技津貼
- One-off STEM Grant
  一筆過STEM津貼

(IV) Professional Development Programmes

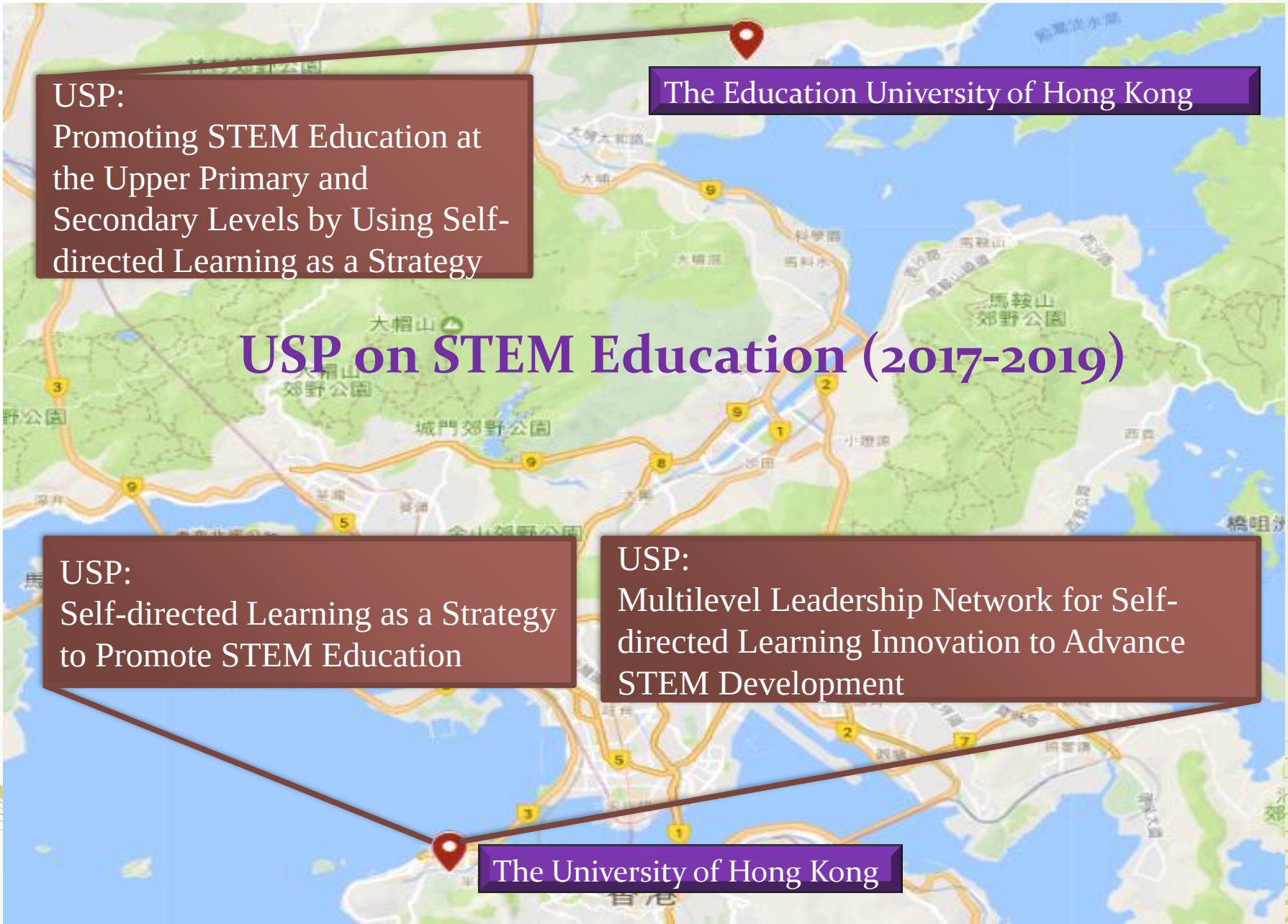
- KLA and cross KLA programmes
- Symposia
- Knowledge Enrichment Programmes
- Experience sharing session on STEM
- Intensive training programmes for curriculum leaders and middle managers

(V) School-based Support Services

University-School Support (USP) Programmes

- The programmes aim at providing diversified SBSS to cater for schools' development needs through connecting research-based pedagogy with classroom practices.
- Programmes provided by *The University of Hong Kong* and *The Education University of Hong Kong* in 2017-19

Learning Landscape



(V) School-based Support Services

Professional Development Schools (PDS) Scheme

- Each PDS will form a network with partner schools focusing mainly on specific pedagogical themes to foster an interactive collaborative culture and to enhance the effectiveness of learning and teaching through various exchange activities.

- Four PDS in 2017/18 are as follows
  - *CCC Tam Lee Lai Fun Memorial Secondary School*
  - *Ho Yu College and Primary School (Sponsored by Sik Sik Yuen)*
  - *Lok Sin Tong Yu Kan Hing Secondary School*
  - *Maryknoll Fathers' School*

(V) School-based Support Services

Quality Education Fund Thematic Networks (QTNs)

- Inviting outstanding/award-winning schools/organisations to establish thematic network of a smaller scale
- *QTN in 2017/18*
  - *Shun Tak Fraternal Association Yung Yau College*

PDSs & QTNs (STEM Centres)

PDSs on STEM Education (2017/18) ● Primary ● Secondary

QTNs on STEM Education (2017/18) ● Primary ● Secondary

(V) School-based Support Services

- *EDBCM 55/2017:*
  - *Briefing and Application for School-based Support Services, University-School Partnership Projects and Sharing Networks (2017/18) Primary, Secondary and Special Education*

- *Online Application: 10 April 2017 to 7 May 2017*

(VI) Quality Education Fund (QEF)

- QEF aims to support innovations, enrich students' learning experiences and encourage school-based initiatives
- STEM education has been included in the "Priority Themes" of the QEF to encourage the education sector to apply for funding to foster innovativeness

(VII) Community Resources

- Tertiary Institutions
- Government Organisations
- NGOs
- Professional bodies
- Public Organisations

Major Community Partners in the Promotion of STEM Education

Tertiary Institutes | Government Organisations | NGOs | Schools | Professional bodies | Public Organisations

Thank You!