

## Education Bureau Circular Memorandum No. 196/2023

From : Secretary for Education

To : Heads of Government, Aided  
(including Special Schools),  
Caput and Direct Subsidy  
Scheme (DSS) Schools

Ref : (2) in EDB/CSD/SC/821/17

Date : 1 November 2023

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### **The Launch of “Science (S1-3) STEAM Learning Module” and Relevant Professional Training for Teachers**

#### **Purpose**

The purpose of this circular memorandum is to announce to secondary schools the newly developed “Science (S1-3) STEAM Learning Module” and invite teachers to participate in the relevant professional training.

#### **Background**

2. To dovetail with further stepping up the promotion of STEAM education in primary and secondary schools as advocated in the Chief Executive’s 2023 Policy Address, the Education Bureau (EDB) continues providing various support measures, including enriching the curriculum, enhancing teacher training and offering resources support, to strengthen students’ learning of Science, Mathematics and Technology and facilitate schools in creating an atmosphere conducive to the learning of Science and Innovation & Technology (I&T), thereby tapping students’ creative potential. As regards science education at the junior secondary level, three new sets of “Science (S1-3) STEAM Learning Module” are launched, with a view to integrating the learning of I&T in class, enriching students’ experience in science learning and strengthening their interest and capabilities in the subject and I&T, through the provision of “hands-on and minds-on” cross-disciplinary investigative activities.

#### **Details**

##### STEAM Learning Modules

3. The aforesaid newly launched STEAM learning modules for Science (S1-3) are divided into three modular topics, covering areas of “Innovation and Technology”, “Engineering Practices” and “Data Processing”, the content of which is closely linked with the themes in Science (S1-3) and relevant to the real-life contexts. The activities in the STEAM Learning Modules include I&T investigative activities, engineering design, problem-solving activities and data processing exercises, etc. The engaging learning activities allow students

to integrate and apply the knowledge and skills in Science, Mathematics and Technology, familiarise themselves with the basic concepts of engineering design and enhance their understanding of the application of Science and I&T in the real-life contexts, thereby cultivating their problem-solving and creative thinking abilities. For details, please refer to **Appendix 1**.

4. Teachers are encouraged to suitably incorporate the module-related learning activities into lessons so as to enhance students' learning effectiveness in Science and I&T. The STEAM Learning Modules can be downloaded from the following link: [https://cd1.edb.hkedcity.net/cd/science/SSLM/index\\_en.html](https://cd1.edb.hkedcity.net/cd/science/SSLM/index_en.html)

5. EDB would like to express its acknowledgement to Hong Kong Baptist University (HKBU), the Hong Kong Institution of Engineers (HKIE) and the Institution of Engineering and Technology Hong Kong (IET (HK)) for collaborating with the Bureau in developing the three aforesaid STEAM Learning Modules respectively and providing professional advice on the learning and teaching (L&T) materials. The trial teaching of the modular activities was conducted in late 2022/23 school year and was well-received by the participating schools.

#### Dissemination Seminar

6. EDB will hold a dissemination seminar to introduce schools to the L&T materials incorporated in the STEAM Learning Modules and facilitate the experience sharing of school personnel in the trial teaching. Details are as follows:

Date: 9 December 2023 (Saturday)

Time: 9:30 am – 11:30 am

Venue: Tsang Chan Sik Yue Auditorium (AAB201),  
Shaw Campus, the Hong Kong Baptist University

Application: Through the Training Calendar System (TCS) of EDB  
(Course ID: CSD020240295)

Other professional training activities for teachers related to the STEAM Learning Modules will be rolled out by phases starting from the current school year and details will be announced through the TCS of EDB. Schools are encouraged to nominate teachers to participate in the dissemination seminar and relevant training activities.

### Teacher Network

7. To tie in with the launch of the STEAM learning modules, EDB will kick-start the “Science (S1-3) STEAM Learning Module Teacher Network” (Teacher Network) in the current school year. Through participating in the network activities, such as the focus group meetings and lesson observation, teachers could equip themselves with the relevant teaching strategies in the subject. For details, please refer to **Appendix 2**.

8. Schools interested in participating in the Teacher Network should return the completed school application form (**Appendix 3**) by fax (Fax number: 2194 0670) to the Science Education Section, Curriculum Support Division, Education Bureau on or before 22 December 2023 (Friday). The selected schools will be notified by post in early 2024.

### **Enquiries**

9. For enquiries, please contact Mr TAM Ho-lun, Jacky of the Science Education Section, Curriculum Support Division, Education Bureau on 3698 3452.

Dr William LAM  
for Secretary for Education

**“Science (S1-3) STEAM Learning Module”  
Learning and Teaching Activities**

**Learning Module – “Innovation and Technology”**

<b>I&amp;T Investigative Activities</b>	<b>Learning Content</b>	<b>Topics Related to Junior Secondary Science</b>
Energy Harvesting from Walking	The investigative activities cover topics relating to the development of I&T, such as Environmental Sustainability, Artificial Intelligence, Application of Smart Devices and Renewable Energy. These activities enable students to understand the application of I&T in the real-life contexts.	Energy Conversion
Regenerative Braking System in Electric Vehicles		Electromagnetic Spectrum Heat Transfer
Testing the Effectiveness of Sun Control Films		Renewable Energy
Sun Trajectory and Solar Tracking		Healthy Lifestyles
Measuring Pulse Rate with Smart Devices		
Recognition of Yoga Poses in Mobile Application		

**Learning Module – “Engineering Practices”**

<b>Engineering Design and Problem-solving Activities</b>	<b>Learning Content</b>	<b>Topics Related to Junior Secondary Science</b>
Analysis on the Efficiency of Different Water Purification Methods	Through involving students in different steps of engineering practices, the activities enable students to ask questions, prototype, and conduct research, in order to solve engineering problems relevant to the real-life contexts.	Methods of Water Purification
Design and Make a Water Treatment Device		Renewable Energy
Engineering Considerations on Installing Solar Power Systems		Thermal Expansion and Contraction The properties of Metals
Engineering Design of Tsing Ma Bridge		Heat Transfer
Design and Make a Temporary House for a Puppy		

**Learning Module – “Data Processing”**

<b>Data Processing Exercises</b>	<b>Learning Content</b>
<p>The learning focuses include:</p> <ul style="list-style-type: none"> <li>• Unit Conversion</li> <li>• Scientific Notations</li> <li>• Significant Figures</li> <li>• Formula</li> <li>• Ratio and Percentage</li> <li>• Data Averaging</li> <li>• Line Graph and Scatter Graph</li> <li>• A Suitable Scale for a Graph</li> <li>• Reading Values in a Graph</li> </ul>	<p>The module covers a range of learning activities and data processing exercises related to Science (S1-3) Curriculum, such as “Investigating the Solubility of Table Salt at Different Temperatures”, “Designing and Making a Wind Turbine”, “Using a Microscope to Observe Cells” and ‘Using a Bicycle Speedometer’, etc. These activities and exercises could help strengthen students’ data processing skills and build solid foundation of scientific knowledge.</p>

## Science (S1-3) STEAM Learning Module Teacher Network

### Content

To tie in with the launch of the STEAM learning modules, the Education Bureau will kick-start the “Science (S1-3) STEAM Learning Module Teacher Network” in the current school year. Schools may join as the “Network School” or “Participating School” and arrange teachers to participate in the network activities, such as the focus group meetings and lesson observation, organised by the Curriculum Support Division, Education Bureau. Through the network activities, it is expected that teachers could further equip themselves with strategies in lesson planning, learning and teaching for the STEAM learning modules.

Upon being selected as the “Network School” or “Participating School”, schools are advised to make appropriate arrangement for delegating teachers to participate in the following professional development activities:

	Arrangement for Schools Joining the Teacher Network
Network School	<ul style="list-style-type: none"> <li>• Schools should arrange teachers to collaborate closely with the officers from Curriculum Support Division as appropriate. The collaboration involves lesson planning for the STEAM learning modules in the Junior Secondary Science and conducting relevant L&amp;T activities.</li> <li>• Through sharing on the teaching practices and observation of open lessons, the professional exchange among participants is enhanced.</li> </ul>
Participating School	<ul style="list-style-type: none"> <li>• Schools should arrange teachers to join the lesson observation and focus group meetings to facilitate the experience sharing and evaluation on conducting the L&amp;T activities related to the STEAM learning modules.</li> <li>• Participants may try out teaching strategies disseminated in the Teacher Network in their schools. Sharing sessions and open lessons may be arranged among subject teachers for sharing of insights gained from participating in the network activities.</li> </ul>

### Enrolment

Schools interested in participating in the Teacher Network should return the completed school application form (**Appendix 3**) by fax (Fax number: 2194 0670) to the Science Education Section, Curriculum Support Division, Education Bureau on or before 22 December 2023

(Friday). The quota for “Network Schools” is capped at 20. EDB will make reference to the information submitted by schools and take into consideration different factors including schools’ preference in joining the Teacher Network, teaching experience of the school personnel, etc, before arriving at the final decision of selection. Selected schools will be notified by post in early 2024.

### **Enquiries**

For enquiries, please contact Mr TAM Ho-lun, Jacky of the Science Education Section, Curriculum Support Division, Education Bureau on 3698 3452.

**“Science (S1-3) STEAM Learning Module Teacher Network”  
School Application Form  
(Application Deadline: 22 December 2023)**

To : Science Education Section  
Curriculum Support Division  
Education Bureau  
(Attn : Mr TAM Ho-lun, Jacky)  
(Fax No. : 2194 0670)

We intend to enrol in the “Science (S1-3) STEAM Learning Module Teacher Network”, with details as follows:

Name of School : \_\_\_\_\_

School Address : \_\_\_\_\_

School Tel. No. : \_\_\_\_\_ Fax No. : \_\_\_\_\_

Name of Teacher-in-charge : \* Dr / Mr / Ms / Mrs \_\_\_\_\_

Contact No. : \_\_\_\_\_

Position Held : \_\_\_\_\_

Email Address : \_\_\_\_\_

**Teachers Nominated (At least two Junior Secondary Science teachers)**

Name	Position	Years of Experience in Teaching the JS Science	Email Address

**1. Intended mode of participation**

[Please indicate and number (1-2) your preference of participation. (“1” being the most preferable.)]

Network School       Participating School

**2. The total number of periods per week in JS Science (Each Class)**

S1 : \_\_\_\_\_ periods      S2 : \_\_\_\_\_ periods      S3 : \_\_\_\_\_ periods

**3. The number of practical periods per week in JS Science (Each Class)**

[Remark: A practical period taught in a double lesson will be counted as two periods.]

S1 : \_\_\_\_\_ periods      S2 : \_\_\_\_\_ periods      S3 : \_\_\_\_\_ periods

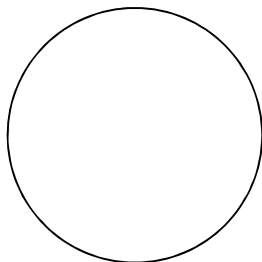
**4. The duration of each period in JS Science**

\_\_\_\_\_ minutes per period

**5. In 2022/23 s.y., the following learning and teaching activities were conducted in my school: [Please check the appropriate box(es).]**

- “The Use of Mobile Devices for Conducting Science (S1-3) Practical Activities” \*
- “Video-based” Self-learning Pack (Science Experiments)\*
- Junior Secondary Science Online Self-learning Scheme\*
- Science (S1-3) “Hong Kong Wetland Park Self-directed Outdoor Learning” \*
- Others (e.g. “Design and Make” or “Scientific Investigation” activities)

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School Chop

Name of Principal : #Dr/Mr/Ms/Mrs \_\_\_\_\_

Signature of Principal : \_\_\_\_\_

Date : \_\_\_\_\_

# Please delete if inapplicable.

\* Relevant learning and teaching resources are accessible on the Science (S1-3) Learning and Teaching Resources Portal (Science Education Section, Curriculum Support Division, Education Bureau)  
<https://cd1.edb.hkedcity.net/cd/science/jsscirp/en/index.html>