

# Dedicated Funding Programme for Publicly-funded Schools

Project Number:

Name of School:

Project Title:

校本 STEM 教育計劃

School-based STEM education programme

Beneficiaries:

Primary

Estimated Number of Direct Beneficiaries:

Student: 956 (P.1-6)

Teacher: 25

## 1. Project Needs

### 1.1 Project aim(s)

The project aims at developing school-based STEM education in P.1-6 students, increasing students' interest in learning STEM-related subjects and nurturing their creativity, design thinking, innovation, problem-solving and generic skills. This shall be achieved through providing students with the necessary hardware and resources and a suitable learning environment. Hence, we plan to renovate the Activity Room and convert it into a STEM room.

Moreover, the project will enhance teachers' professional capacity in implementing STEM education through the teachers' development programmes.

### 1.2 School-based innovative element(s)

The project consists of school-based innovative elements:

- Our school has been organising STEM interest classes and workshops since 2016. We have also initiated in-curriculum STEM activities in General Studies and Computer Literacy, and achieved satisfactory results. We aim to move on to the next step and are determined to incorporate STEM education into daily learning and teaching.

- Our boys will be provided with opportunities to learn relevant knowledge and skills. They will be allowed to gain more hands-on learning experience through the establishment of the STEM room with relevant equipment. Thus, they will have more opportunities to apply what they have learnt and their learning experiences will be much enriched.

### 1.3 Meeting with school-based/students' needs

#### Item: Relevance to the school development plan of this cycle/major concern

The two major concerns of 2018-2021 are 'To further enhance the effectiveness of learning and teaching' and 'To develop and enhance the mental well-being of students'. This project provides opportunities for students to acquire knowledge and skills on STEM areas. They will be engaged in learning activities which require creativity, problem-solving skills, and collaboration skills in order to tackle authentic problems. This authentic learning experience will help students learn effectively. At the same time, through acquiring knowledge from tackling authentic problems and participating in hands-on learning experience, students' awareness of the impact of STEM education and the care about their surroundings can be further enhanced. This addresses our major concerns to help students develop positive values and attitudes.

## 2. Project Feasibility

### 2.1 Key concept (s)/rationale(s) of the project

#### Item: Reference the Education Bureau curriculum documents/guidelines

The rationale of this project comes from the following documents:

- The 2015 and 2016 Policy Addresses, in which the Government pledged to renew and enrich the curricula and learning activities of Science, Technology and Mathematics, enhance the training of teachers, step up efforts to promote STEM education and encourage students to pursue the study of STEM-related subjects.
- The “Report on Promotion of STEM Education - Unleashing Potential in Innovation” (December 2016) released by the Education Bureau, which suggests renewing the curricula of the Science, Technology and Mathematics Education Key Learning Areas (KLAs), enriching learning activities for students, and enhancing professional development for schools and teachers.

The school-based STEM curriculum will be reviewed and upgraded. A range of different learning activities will be organised for our students, with a view to enriching their learning experiences.

### 2.2 School's readiness

#### Item: Relevant school experience

Our school has been organizing and developing STEM-related activities in recent years. The STEM teaching and learning activities are summarized as follows:

#### 1. School-based curriculum

Computer Literacy:

- Unplugged coding (P.2)
- Coolthink (P.4-6)
- 3D Printing (P.3)

Science:

- STEM Day
- STEM Project (P.1-6)

#### 2. Cross-curricular STEM project

- Design P.1-3 learning materials (P.4-6)

#### 3. Promotion of STEM education by taking part in competitions

- Creative Coder competition 2018, 2019
- Turbo Jet 氣墊船設計比賽 2019
- 海洋公園 STEAM 學生大賽 2020

### 2.3 Principal and teachers' involvement

#### School Staff: Principal

**Duties:** Monitor and supervise, conduct / participate in activities

#### School Staff: Project leader

**Duties:** Formulate plans, coordinate / collaborate, plan curriculum / activities, process funding

#### School Staff: Subject teachers

**Duties:** Coordinate / collaborate, conduct / participate in activities, consolidate learning and teaching

materials, plan curriculum / activities

## 2.4 Project period

Project Start Date and End Date: from 05/2022 to 12/2023

The project lasts for 1 year(s) and 8 month(s).

## 2.5 Details of project activities

### a. Project implementation measures

#### Activity 1: STEM activity in Computer Literacy

Implementation Period:

09/2022 - 06/2023

<u>Key learning stages and key learning areas/subjects/learning elements</u>	<u>Content</u>	<u>Number of sessions</u>
<ul style="list-style-type: none"><li>• KS2 (P.4); Computer Literacy, STEM activity (technology)</li></ul>	<ul style="list-style-type: none"><li>• After learning the coding skills from Coolthink programme, all P.4 students (165 students) will carry out a project on designing a game or other forms of learning materials for junior students.</li><li>• Students will learn and practise the design cycle.</li><li>• Students will learn and practise coding in Scratch.</li></ul>	<ul style="list-style-type: none"><li>• 8 sessions per year, 30 minutes per session</li></ul>

Number of school personnel and/or appointed project staff involved and respective duties:

- Computer Literacy teachers are responsible for designing the learning and teaching materials and guiding the students to carry out the project.

Expected outcomes:

- Students are expected to:
  - Apply and integrate learnt knowledge into different subjects
  - Gain hands-on experience in coding and design
  - Develop problem-solving skills
  - Apply and integrate learnt knowledge in different subjects.

#### Activity 2: STEM activity in Computer Literacy

Implementation Period:

09/2022 - 06/2023

<u>Key learning stages and key learning areas/subjects/learning elements</u>	<u>Content</u>	<u>Number of sessions</u>
<ul style="list-style-type: none"><li>• KS2 (P.5-6); Computer Literacy, STEM activity (technology)</li></ul>	<ul style="list-style-type: none"><li>• After learning the coding skills from Coolthink programme, all P.5 and P.6 students (330 students) will carry out a project on designing</li></ul>	<ul style="list-style-type: none"><li>• 8 sessions per level, 30 minutes per session</li></ul>

	mobile apps to solve a given problem or to achieve certain aims. <ul style="list-style-type: none"> <li>• Students will practise the design cycle.</li> <li>• Students will learn to integrate knowledge across different subjects to solve problems encountered.</li> </ul>	
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Number of school personnel and/or appointed project staff involved and respective duties:

- Computer Literacy teachers are responsible for designing the learning and teaching materials and guiding the students to carry out the project.

Expected outcomes:

- Students are expected to:
  - Apply and integrate learnt knowledge into different subjects
  - Gain hands-on experience in coding and design
  - Develop problem-solving skills
  - Apply and integrate learnt knowledge in different subjects.

**Activity 3: STEM activity in General Studies**

Implementation Period:

09/2022 - 06/2023

<u>Key learning stages and key learning areas/subjects/learning elements</u>	<u>Content</u>	<u>Number of sessions</u>
<ul style="list-style-type: none"> <li>• KS1 (P.1-3); Science Education</li> </ul>	<ul style="list-style-type: none"> <li>• A set of tailor-made booklets are developed for each level, which include a lot of science experiments and hands-on activities.</li> <li>• Students will carry out scientific investigations, individually or in groups e.g. investigate the physical properties of different materials such as wood, plastic, glass.</li> </ul>	<ul style="list-style-type: none"> <li>• 2 sessions per week, 30 minutes per session for the whole academic year</li> </ul>

Number of school personnel and/or appointed project staff involved and respective duties:

- General Studies teachers are responsible for designing learning and teaching materials and guiding the students to carry out the activities.

Expected outcomes:

- Students are expected to:
  - Gain hands-on experience
  - Apply and integrate learnt knowledge in Science
  - Develop problem-solving skills and scientific investigation skills
  - Apply Science knowledge to build science-related models

**Activity 4: STEM activity in General Studies**Implementation Period:

09/2022 - 06/2023

<u>Key learning stages and key learning areas/subjects/learning elements</u>	<u>Content</u>	<u>Number of sessions</u>
<ul style="list-style-type: none"> <li>KS1-2 (P.1-6): Primary Science Project</li> </ul>	<ul style="list-style-type: none"> <li>Students of different levels carry out a STEM-related project in groups after attending a STEM workshop</li> <li>The project topics are:               <ul style="list-style-type: none"> <li>- P.1: Let's Build!</li> <li>- P.2: Homemade Toy</li> <li>- P.3: Eco-friendly Toy Car</li> <li>- P.4: Homemade Natural Cleaner</li> <li>- P.5: Making an Electric Device</li> <li>- P.6: Making a Simple Model</li> </ul> </li> </ul>	<ul style="list-style-type: none"> <li>2-4 sessions, 30 minutes per session</li> </ul>

Number of school personnel and/or appointed project staff involved and respective duties:

- General Studies teachers are responsible for designing learning and teaching materials and guiding the students to carry out the activities.

Expected outcomes:

- Students are expected to:
  - Gain hands-on experience
  - Apply and integrate learnt knowledge in Science
  - Develop problem-solving skills and scientific investigation skills
  - Apply Science knowledge to build science-related models

**Activity 5: STEAM Activity Day**Implementation Period:

09/2022 - 06/2023

<u>Key learning stages and key learning areas/subjects/learning elements</u>	<u>Content</u>	<u>Number of sessions</u>
<ul style="list-style-type: none"> <li>KS1-2 (P.1-6); STEAM activity</li> </ul>	<ul style="list-style-type: none"> <li>A whole-year project-based programme will be conducted.</li> <li>P.4-6: A range of activities including programming and creating with micro:bit, designing an app using App Inventor and building blocks using Tube Blocks.</li> <li>P.4-6: Online lessons will be given to enable students to design a platform to spread positive messages to peers and enable students to recognize their emotions.</li> </ul>	<ul style="list-style-type: none"> <li>2 days during the post assessment period</li> <li>12 online sessions (5-10 minutes)</li> <li>2 live sessions via Zoom (4 hours)</li> </ul>

- P.1-3: Students will be the users of the programme developed by P.4-6 students.
- P.1-3: Students will experience the use of Tube Blocks on an activity day during the post assessment period.

Number of school personnel and/or appointed project staff involved and respective duties:

- Primary Science teachers are responsible for planning and carrying out the Activity Day.

Expected outcomes:

- Students are expected to:
  - Integrate learnt knowledge of different subjects (e.g. Primary Science, Visual Arts)
  - Increase students' motivation in learning STEM-related topics
  - Enable students to recognise their emotions
  - Enable students to spread positive messages to peers

**Activity 6: STEM activity in Visual Arts**

Implementation Period:

09/2022 - 06/2023

<u>Key learning stages and key learning areas/subjects/learning elements</u>	<u>Content</u>	<u>Number of sessions</u>
<ul style="list-style-type: none"> <li>● KS1 (P.3); Computer Literacy, Visual Arts</li> </ul>	<ul style="list-style-type: none"> <li>● All P.3 students (165 students) will participate in a competition on designing 3D objects of a given theme. Some works will be printed out and displayed.</li> <li>● Students will learn and practise designing with technology.</li> <li>● Students will learn the design-to-product process.</li> </ul>	<ul style="list-style-type: none"> <li>● 4 sessions, 30 minutes per session</li> </ul>

Number of school personnel and/or appointed project staff involved and respective duties:

- Visual Arts teachers are responsible for designing the learning and teaching materials and guiding the students to design.
- Teaching assistants are responsible for assisting in 3D-printing.

Expected outcomes:

- Students are expected to:
  - Apply learnt knowledge to designing using technology.
  - Nurture their creativity.
  - Enhance their spatial ability.

### Activity 7: External Science/ STEM Competitions

Implementation Period:

09/2022 - 06/2023

<u>Key learning stages and key learning areas/subjects/learning elements</u>	<u>Content</u>	<u>Number of sessions</u>
<ul style="list-style-type: none"><li>KS2 (P.4-6)</li></ul>	<ul style="list-style-type: none"><li>Students who are highly interested in STEM will be encouraged to participate in external competitions held by different organisations</li><li>Through these projects, students will be able to:<ul style="list-style-type: none"><li>- design and develop their own product to solve a problem chosen by themselves</li><li>- make use of the engineering design process, scientific knowledge, as well as coding or STEM knowledge they have learnt through the STEM projects e.g. smart home design project, robotic competition</li><li>- apply learnt knowledge in STEM-related subjects</li><li>- broaden their exposure to STEM</li></ul></li></ul>	<ul style="list-style-type: none"><li>Various projects, year round</li></ul>

Number of school personnel and/or appointed project staff involved and respective duties:

- Science and Computer Literacy teachers are responsible for providing guidance to the students.

Expected outcomes:

- Students are expected to:
  - Apply and integrate learnt knowledge in science, computer technology and mathematics
  - Gain hands-on experience in the latest technology, such as 3D printing and coding, and realize their application in the modern world
  - Develop problem-solving skills
  - Learn to care about others
  - Become increasingly curious about the world and feel empowered to change it for the better
- Students' exposure would be broadened by engaging in different competitions.
- The learning experiences could prepare students for their future studies and careers in STEM-related areas and other fields requiring relevant knowledge, skills and attitudes.

### Activity 8: STEM Interest Classes 1 - Discovery education coding course

Implementation Period:

09/2022 - 06/2023

<u>Key learning stages and key learning areas/subjects/learning elements</u>	<u>Content</u>	<u>Number of sessions</u>
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<ul style="list-style-type: none"> <li>• P.2-6</li> </ul>	<ul style="list-style-type: none"> <li>• Students (around 20-24 students per class) who have strong interest in STEM will be invited to join the interest classes</li> <li>• Discovery education coding course content: <ul style="list-style-type: none"> <li>- Understanding coding concepts</li> <li>- Developing computational thinking skills and creativity through block coding, HTML and Python</li> <li>- Making robotic products by applying coding knowledge, engineering design process, scientific knowledge, and creativity</li> <li>- Group project and presentation</li> </ul> </li> </ul>	<ul style="list-style-type: none"> <li>• 8 sessions for P.2-3</li> <li>• 8 sessions for P.4-6</li> <li>• 90 minutes per session</li> </ul>
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Number of school personnel and/or appointed project staff involved and respective duties:

- To be taught by external professional providers. Number of instructors per session: 1

Expected outcomes:

- Students are expected to:
  - Increase interest in coding and design
  - Acquire skills and knowledge in coding and design
  - Develop sustained self-learning skills for the future
  - Be equipped with the necessary knowledge and skills to participate in relevant competitions in the future

**Activity 9: STEM Interest Classes 2 – Create your own immersive tour: video making and editing course**

Implementation Period:

09/2022 - 06/2023

<u>Key learning stages and key learning areas/subjects/learning elements</u>	<u>Content</u>	<u>Number of sessions</u>
<ul style="list-style-type: none"> <li>• KS2 (P.4-6)</li> </ul>	<ul style="list-style-type: none"> <li>• Students (around 15 students per class) who have strong interest in STEM will be invited to join the interest classes</li> <li>• “Create your own immersive tour: video making and editing course” content: <ul style="list-style-type: none"> <li>- Understanding virtual reality concepts</li> <li>- Understanding the application of VR/AR technique</li> <li>- Learning how to take videos with the 360° camera</li> <li>- Editing videos using different</li> </ul> </li> </ul>	<ul style="list-style-type: none"> <li>• 8 sessions per level (P.4-6)</li> <li>• 90 minutes per session</li> </ul>



software, making video finishing, and creating a virtual tour  
 - Presenting the virtual tour in VR glasses, and doing group presentations (theme: promotion of school events, highlights of school events etc.)

Number of school personnel and/or appointed project staff involved and respective duties:

- To be taught by external professional providers. Number of instructors per session: 2

Expected outcomes:

- Students are expected to:
  - Integrate their knowledge and skills in art and technology to create videos
  - Learn and apply video-editing skills
  - Enhance their sense of belonging to the school
  - Be equipped with the necessary knowledge and skills to participate in relevant competitions in the future

### **Activity 10: STEM Gifted Programme**

Implementation Period:

09/2022 - 06/2023

<u>Key learning stages and key learning areas/subjects/learning elements</u>	<u>Content</u>	<u>Number of sessions</u>
<ul style="list-style-type: none"> <li>● P.3-5</li> </ul>	<ul style="list-style-type: none"> <li>● Students (around 12 students per class) who have good performance in STEM will be invited to join the class</li> <li>● “STEM Gifted Programme” content:               <ul style="list-style-type: none"> <li>- Participating in hands-on and experiential STEM workshops and activities</li> <li>- Participating in the DIY maker project</li> <li>- Making creative products such as smart home devices and smart city devices</li> <li>- Group projects and presentations</li> </ul> </li> </ul>	<ul style="list-style-type: none"> <li>● 16 sessions per level (P.3, 4, 5)</li> <li>● 90 mins per sessions</li> </ul>

Number of school personnel and/or appointed project staff involved and respective duties:

- To be taught by external professional providers. Number of instructors per session: 1
- Only 8 sessions will be sponsored by QEF.

Expected outcomes:

- Students are expected to:
  - Excel in fast track STEM disciplines via hands-on, evidence-based and experiential workshop activities
  - Develop soft skills in critical thinking, creative thinking, communicating, and collaborating

- Increase their awareness in project management and develop relevant skills
- Be equipped with STEM knowledge and skills to participate in relevant competitions in the future
- Nurture their teamwork and sportsmanship
- Foster their craftsmanship using hand tools and power tools

## b. Teacher training (if applicable)

### Activity 1: Teacher training workshop

#### Implementation Period:

09/2022 - 06/2023

#### Content:

- Training for teachers in STEM related-subjects. Proposed topics:
  - STEM Coding education (I)  
Content: to equip teachers with basic coding education knowledge e.g. micro:bit block coding
  - STEM Coding education (II)  
Content: to equip teachers with advanced coding education knowledge e.g. coding and VR scene production

#### Number of sessions:

- 2 sessions per year, 2 hours per session

#### Teacher training conducted by school personnel/external instructor(s):

- Conducted by external training instructor/speaker

#### Expected outcomes:

- Equip teachers with relevant knowledge and skills to teach STEM-related subjects.

## c. Other measures and activities (if applicable)

- In order to promote STEM at school, the STEM room will be open for students across levels during recesses and lunch breaks.

## 2.6 Budget

### a. Service cost

Item	Service details	Unit cost	Quantity	Unit	Amount(\$)	Justification
Instructor (for teacher training)	Teacher training: - STEM Coding education (I) - STEM Coding education (II)  Number of instructors per session: 2  Unit cost: \$780 x 2 instructors = \$1560 Total no of hour: 2hr x 2 sessions = 4hr Total amount: \$1560 x 4hr =6240	1,560	4		6,240	Conducting teacher development workshops to equip them with knowledge and skills in designing and promoting school-based STEM education.

						The trainer should hold a bachelor's degree in STEM-related disciplines, and have 2 years of post-qualification working experiences, and preferably with a Postgraduate Diploma of Education
Instructor (for students interest class and STEM gifted programme)	<p>STEM Interest Classes:</p> <p>1) Discovery education coding course Unit cost: \$400 x 1 instructor = \$400 Total no of hour: 1.5hr x 8 sessions x 2 classes = 24hr Total amount: \$400 x 24hr = \$9600</p> <p>2) Create your own immersive tour: video making and editing course Unit cost: \$400 x 2 instructors = \$800 Total no of hour: 1.5hr x 8 sessions x 3 classes = 36hr Total amount: \$400 x 2 x 36hr = \$28,800</p> <p>- STEM Gifted Programme Unit cost: \$400 x 1 instructor = \$400 Total no of hour: 1.5hr x 8 sessions x 3 classes = 36hr Total amount: \$400 x 36hr = \$14,400</p>	<p>1) 400</p> <p>2) 800</p> <p>3) 400</p>	<p>1) 24</p> <p>2) 36</p> <p>3) 36</p>		<p>1) 9600</p> <p>2) 28800</p> <p>3) 14400</p>	
<b>Sub-total on service cost:</b>						<b>59,040</b>

### b. Equipment cost

Item	Specifications	Unit cost	Quantity	Unit	Amount (\$)	Justification
Computer	High configuration computer	6,000	33		198,000	For STEM coding, 3D drawing, and STEM Interest Classes use, high configuration needed to process video/image making and editing, etc.
Pro apps bundle for education license	Pro apps bundle for education license	1,600	33		52,800	For STEM Interest Classes use; Video/image creating and processing
360 Virtual reality camera set	Including 360 camera, virtual reality glasses, and mobile phone viewer	6,260	10		62,600	For STEM Interest Classes use; photo/video taking; after making a virtual tour, the product can be viewed in VR glasses with mobile phone viewer. Each group of 3-5 students will

						share one set of equipment
3D Printer	3D Printer	15,000	2		30,000	For 3D printing learning activities
3D Printer filament	3D Printer filament	2,500	1		2,500	For 3D printing learning activities
IOT system in classroom	IOT controlling system in STEM room, including IOT cloud system and teachers & student account license	80,000	1		80,000	For making a real IOT environment in STEM room; helping students to learn IOT concept and do testing in a real context; facilitating students in making IOT real life products. To facilitate <b>Activity 10: STEM Gifted Programme</b> . After learning to make creative products such as smart home devices and smart city devices. Students can learn IOT concept with real smart home/classroom devices in the STEM room. We will also set up special scene and hands-on experience with the IOT system for P1-6 students on <b>STEAM Activity Day</b> , in order to let students learn and experience IOT concept.
Interactive whiteboard	Interactive whiteboard with movable stand	50,000	1		50,000	For multi-media teaching and learning activities; facilitate teaching and learning activities by allowing teachers to show multi-media teaching materials, and students to share their computer or tablet screen. Interactive whiteboards also allow teachers to note, save and share screen simultaneously in the lessons.
storage cabinets	Wall mounted, wooden	90,000	1		90,000	For storing different teaching equipment
Display shelf and cupboard	Wall mounted, glasses	75,000	1		75,000	For displaying students' work or products
Work benches	Wooden benches	8,000	6		48,000	For students' DIY work use
Movable tables and chairs		2,000	35		70,000	To facilitate collaboration and group discussion
<b>Sub-total on equipment cost:</b>					<b>758,900</b>	

### c. Works cost

Item	Works details	Amount(\$)	Justification
Construction preliminary	Room demolished and emptied	50,000	STEM room

work			<p>construction work:</p> <p>To build a more flexible and versatile learning space for teachers and students. Re-design the room setting for group study, discussion, and collaboration. STEM room will also provide display space for students' works to inspire students' creativity and enhance their self-confidence.</p>
Electrical works	Including room network cable, socket configuration, power socket modification and lighting system	80,000	<p>STEM room construction work:</p> <p>To build a more flexible and versatile learning space for teachers and students. Re-design the room setting for group study, discussion, and collaboration. STEM room will also provide display space for students' works to inspire students' creativity and enhance their self-confidence.</p>
PA system	Including speakers and microphones	50,000	<p>STEM room construction work:</p> <p>To build a more flexible and versatile learning space for teachers and students. Re-design the room setting for group study,</p>

			discussion, and collaboration. STEM room will also provide display space for students' works to inspire students' creativity and enhance their self-confidence.
Painting and finishing	Floor covering and repainting	80,000	STEM room construction work:  To build a more flexible and versatile learning space for teachers and students. Re-design the room setting for group study, discussion, and collaboration. STEM room will also provide display space for students' works to inspire students' creativity and enhance their self-confidence.
Painting and finishing	Wall, ceiling finishes	85,000	STEM room construction work:  To build a more flexible and versatile learning space for teachers and students. Re-design the room setting for group study, discussion, and collaboration. STEM room will also provide display space for students' works to inspire students' creativity and enhance their self-confidence.

Construction work safety measures, after work cleaning and miscellaneous tasks		55,000	STEM room construction work:  To build a more flexible and versatile learning space for teachers and students. Re-design the room setting for group study, discussion, and collaboration. STEM room will also provide display space for students' works to inspire students' creativity and enhance their self-confidence.
<b>Sub-total on works cost:</b>		<b>400,000</b>	

**d. General expenses**

Item	Amount(\$)	Justification
Miscellaneous (Booklet, file, stationary, banner, poster for sharing session or open day)	10,022	Miscellaneous cost
<b>Sub-total on general expenses:</b>		<b>10,022</b>

**e. Contingency**

Item	Amount(\$) (Round down to the nearest integer)	
Works contingency	40,000	
General contingency	24,838	
<b>Sub-total on contingency:</b>		<b>64,838</b>

**f. Audit fee**

	Amount(\$)	
Audit fee	15,000	
<b>Sub-total on audit fee:</b>		<b>15,000</b>
<b>Total amount of funding sought:</b>		<b>1,307,800</b>

### 3. Expected Project Outcomes

#### 3.1 Deliverables/positive impact on the school's development

**Item: Development of student's knowledge and skills**

The project will help our school to plan and develop STEM education systematically and nurture students to be learners in the 21<sup>st</sup> century through the establishment of the STEM room and the school-based curriculum.

#### 3.2 Evaluation

**Evaluation Method: Questionnaire for teachers****Success criteria:**

- 70% of the teachers agree that the project helps the school promote STEM education
- 70% of the teachers agree that the project helps arouse students' learning interest in STEM-related subjects
- 70% of the teachers agree that the project can help enhance students' creativity, collaboration and problem-solving skills
- 70% of the teachers agree that the project can help enhance their confidence in implementing STEM education

**Evaluation Method: Questionnaire for students****Success criteria:**

- 70% of the students agree that the project helps the school promote STEM education
- 70% of the students agree that the project helps arouse students' learning interest in STEM-related subjects

#### 3.3 Sustainability of the project (only applicable to applications with total funding sought exceeding \$200,000)

- The curriculum will continue to be implemented and enhanced after the completion of the project.
- The relevant facilities and equipment will be properly used for learning and teaching activities after the completion of the project.
- Sharing sessions through different teacher professional exchange activities and networks will be organised for transfer of successful experience.

#### 3.4 Dissemination (only applicable to applications with total funding sought exceeding \$200,000)

**Item: Seminar/sharing session**

Our school will continue with the practice of sharing and learning in our acquired knowledge and experience in the promotion and implementation of the project.

We will share our achievements and experiences with different stakeholders by conducting open day, share sessions, or different STEM activities with third parties.

**When writing this proposal, did the school refer to the sample proposal/project(s) approved with funding support at the Quality Education Fund (QEF) website?**

No.



#### 4. Asset Usage Plan

Category	Item/ Description	No. of Units	Total Cost	Proposed Plan for Deployment
computer hardware	Computer	\$6000 x 33	\$198,000	For STEM coding, 3D drawing, and STEM Interest Classes use
computer software	Pro apps bundle for education license	\$1600 x 33	\$52,800	For STEM Interest Classes use; Video/image creating and processing
Others	360 Virtual reality camera set	\$6,260 x 10	\$62,600	For STEM Interest Classes use; photo/video taking; after making a virtual tour, the product can be viewed in VR glasses with mobile phone viewer.
	3D Printer	\$15,000 x 2	\$30,000	For 3D printing learning activities
	3D Printer filament	\$2,500 x 1	\$2,500	For 3D printing learning activities
	IOT controlling system in STEM room, including IOT cloud system and teachers & student account license	\$80,000 x 1	\$80,000	For making a real IOT environment in STEM room; helping students to learn IOT concept and do testing in a real context; facilitating students in making IOT real life products.
	Interactive whiteboard with movable stand	\$50000 x 1	\$50000	For multi-media teaching and learning activities; facilitate teaching and learning activities by allowing teachers to show multi-media teaching materials, and students to share their computer or tablet screen.
Furniture	Storages cabinets	\$90,000 x 1	\$90,000	For storing different teaching equipment
	Display shelf and cupboard	\$75,000 x 1	\$75,000	For displaying students' work or products
	Wooden benches	\$8,000 x 6	\$48,000	For students' DIY work use
	Movable tables and chairs	\$2,000 x 35	\$70,000	To facilitate collaboration and group discussion

## 5. Declaration

1. Our school will ensure that the teachers involved will master not only the use of the tools, but also the pedagogy and lesson design to conduct relevant student activities.
2. Special attention will be drawn regarding the safety issues in operating the 3D printers. The safety guidelines and related information for Technological subjects are provided at <https://www.edb.gov.hk/en/curriculum-development/kla/technology-edu/resources/safety.html>.
3. Our school will ensure that the learning and teaching materials to be developed meet students' learning needs, levels, age and abilities. Moreover, the content and information should be correct, complete, objective and impartial.
4. Our school will ensure that all procurement of goods and services is conducted on an open, fair and competitive basis with measures taken to avoid conflict of interests.
5. Our school will bear all possible consequences resulted from the related school premises alteration/improvement works, including but not limited to the provision of relevant grants, repair works, etc.
6. Our school confirms that the copyrights of the deliverables/ materials should be vested with the QEF. Any reproduction, adaptation, distribution, dissemination or making available of the deliverables to the public by the service provider(s) for commercial purposes is strictly prohibited.
7. Our school observes all the rules and regulations on alteration to school premises (including structural alteration and conversion, change of room, etc.) and seek approval from the respective Regional Education Office before project commencement.

## 6. Report Submission Schedule

Our school will submit proper reports to the Quality Education Fund Secretariat in strict accordance with the report submission schedule below:

<b>Project Management</b> (Should be submitted via the “Electronic Project Management System” (EPMS) )		<b>Financial Management</b> (Hard copy together with supporting documents should be submitted to the QEF Secretariat by mail or in person)	
<b>Type of report and reporting period</b>	<b>Report due on</b>	<b>Type of report and reporting period</b>	<b>Report due on</b>
Progress Report 01/05/2022 - 31/10/2022	30/11/2022	Interim Financial Report 01/05/2022 - 31/10/2022	30/11/2022
Progress Report 01/11/2022 - 30/04/2023	31/05/2023	Interim Financial Report 01/11/2022 - 30/04/2023	31/05/2023
Progress Report 01/05/2023 - 31/10/2023	30/11/2023	Interim Financial Report 01/05/2023 - 31/10/2023	30/11/2023
Final Report 01/05/2022 - 31/12/2023	31/03/2024	Final Financial Report 01/11/2023 - 31/12/2023	31/03/2024