

HKMA David Li Kwok Po College
Incorporate Management Committee 2019/20
Report on the Use of the Promotion of STEM Education Grant (2017/18 to 2018/19)

Part 1: Evaluation of the Effectiveness

1. The major objectives for Promotion of STEM Education are:
 - 1) To incorporate STEM education into cross-subject curriculum;
 - 2) To organize STEM-related activities which focus on application of inter-disciplinary knowledge and skills;
 - 3) To nurture students' talents and enthusiasm to join various STEM-related competitions, exhibitions and programmes;
 - 4) To procure resources and upgrade some existing resources for the implementation of school-based STEM-related activities (including projects and competitions).

2. Evaluation of the strategies used:

Area	Programme	Evaluation
Curriculum	School-based Support Scheme in STEM	<ul style="list-style-type: none"> ● STEM was introduced into the S1 IS, ICT and Mathematics curricula with the support provided by the EDB School-based Support Scheme in 2017/18. Three projects (portable microscope, fruit lamp and solar coffee distiller), which required students to apply the knowledge and skills learnt from IS, ICT and Mathematics, were done in S1. Another two projects (making a buzzer game and a balloon car) which involved cross-KLAs collaboration between IS and Mathematics were done in S2 in 2018/19. <ol style="list-style-type: none"> i. Most students performed well in project learning and positive feedback from teachers was received. ii. The cross-KLAs collaboration will continued in 2019/20 in which Visual Arts will be involved in the STEAM project. ● Besides the above cross-KLAs collaboration, 16 STEM projects were done in other Science subjects. Some examples are listed below: <ul style="list-style-type: none"> <u>IS</u>: Making a wind turbine for generating electricity, a sound barrier and an ultrasonic distance measuring device <u>Physics</u>: Making a homemade thermometer, and a solar cooker <u>Chemistry</u>: Making a self-heating beverage container <u>ICT</u>: Coding for piano program, and game design using Scratch
	Junior Form ICT Curriculum	Coding has been infused into the ICT curriculum since 2016/17. The curriculum was reviewed and revised every year in order to meet our students' needs and keep up with the

Area	Programme	Evaluation
		latest developments in STEM. <ul style="list-style-type: none"> ● Hopscotch (S1) in 2016/17; ● Hopscotch (S1), Scratch and App Inventor 2 (S2) in 2017/18; ● Scratch (S1), App Inventor 2 (S2) and Arduino (S3) in 2018/19
Extra-curricular Activities	STEM Workshops and Seminars	<ul style="list-style-type: none"> ● A total of 21 STEM-related workshops and 2 seminars (“STEM, Makers and the Future by” PolyU; “Creating a Green Smart Future” Talk by CLP Power) were held in these three years. ● Coding courses were arranged for S1 students during the post-exam period every year. Students learnt basic concepts of programming (mBot and microbit) in the courses. ● Positive feedback was received from students and teachers. Most students agreed that these activities provided them with the opportunities to apply inter-disciplinary knowledge and skills.
	Inter-House Invention Competition	The Inter-House Invention Competition was organized every year since 2016/17. Students were able to showcase their creativity and problem-solving skills in making their own inventions.
	Robotics Club	mBot was taught in the Robotics Club in 2016/17, 2017/18 and 2018/19.
STEM Elite Team	STEM Training and Competition	A series of training programmes were given to the members of the STEM Elite Team so as to equip them with some advanced science knowledge and skills for participating in external competitions. In total, the team joined 36 STEM-related competitions, and some of the notable awards they received in these competitions are listed below: <ul style="list-style-type: none"> ● 2nd Runner-up and Merit in the Inter-School STEM Smart Home Design Competition 2018 – Secondary School Division ● 1st Class Award in 全港 mBot 機械人挑戰賽 2018 ● 1st Runner-up, 1st Class Award and 2nd Class Award in the Best Design for Environmental Friendliness and Appearance in the 2017 Hong Kong Technology & Renewable Energy Events – Wireless Charging Super-capacitor Car Transportation Competition ● 1st Class Award in the Hong Kong Youth Science & Technology Innovation Competition 2017-2018 ● 1st Runner-up and the Best Performance Award in the STEM in mBot 2017 (Six-legged Robot Event – Speed Run and Programmed Performance Events) ● Merit Award in the “Privacy Defender” App Design Competition

Area	Programme	Evaluation
		<ul style="list-style-type: none"> ● 1st Runner-up in the Engineering in School – Robotics Arm Competition
Resources	Purchase and Upgrade of Equipment	<ul style="list-style-type: none"> ● Half of the grant was used to purchase new equipment for the STEM Studio so as to facilitate the implementation of school-based STEM-related activities (including projects and competitions). ● The newly acquired equipment and resources include: three 3D printers, one laser cutter machine, one 3D scanner, one scan & cut machine and some programming learning kits like RedMi Android Phones, Arduino Learning Kits, mBot and Parts, Microbit Starter Kits.

Part 2: Financial Report

	Item	Actual Expenses (\$)
1.	Purchase and Upgrade of Equipment	
	<ul style="list-style-type: none"> ● Equipment for ICT lessons (RedMi Android Phones, Arduino Learning Kits, mBot and Parts, Microbit Starter Kits) 	53,200
	<ul style="list-style-type: none"> ● 3D Printers (3 sets) 	33,699.75
	<ul style="list-style-type: none"> ● Laser Cutter Machine 	14,500
	<ul style="list-style-type: none"> ● 3D Scanner 	4,260
	<ul style="list-style-type: none"> ● Scan & Cut Machine 	4,990
	<ul style="list-style-type: none"> ● Materials for 3D printing, laser cutter and Scan & Cut machines 	8,027
	<ul style="list-style-type: none"> ● Other materials and tools 	10,050
2.	Materials for STEM-related projects, workshops, activities and talks	28,392.32
3.	Student training courses and materials for STEM competitions	
	<ul style="list-style-type: none"> ● Student training courses 	17,000
	<ul style="list-style-type: none"> ● Materials for STEM competitions 	27,137.43
	Total:	201,256.50
	Unspent Balance:	0