

Final Report of Project

Project No. : 2015/0018

Part A

Project Title: “Sci-web” – E-platform to improve teaching and learning in Junior form Science”

Name of Organization/School: HKTA Tang Hin Memorial Secondary School

Project Period: From 06/2016 (month/year) to 08/2018 (month/year)

Part B

*Please read the **Guidelines to Completion of Final Report of Quality Education Fund Projects** before completing this part of the report.*

Please use separate A4-size sheets to provide an overall report with regard to the following aspects:

1. Attainment of objectives
2. Project impact on learning effectiveness, professional development and school development
3. Cost-effectiveness – a self-evaluation against clear indicators and measures
4. Deliverables and modes of dissemination; responses to dissemination
5. Activity list
6. Difficulties encountered and solutions adopted

Name of Project Leader: _____

Name of Grantee: _____

Signature: _____

Signature: _____

Date: 23/11/2019

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** Final Report of Project should be submitted via “Electronic Project Management System” (EPMS). Once submitted, these reports are regarded as already endorsed by the supervisor of the school/the head of the organization or the one who signed the Quality Education Fund Agreement for allocation of grant on behalf of the organization.*

1. Attainment of Objectives

Objective statement	Activities related to the objective	Extent of attainment of the objective	Evidence or indicators of having achieved the objective
Objective 1: Cater for the learner difference	1. Production short video clips 2. Preparing Online quizzes 3. Preparing supplementary worksheets 4. Preparing reading passage 5. Science investigation projects.	Fully achieved	<p>Altogether we have produced 103 videos including:</p> <ul style="list-style-type: none"> • 42 for S1 • 38 for S2 • 13 for experimental skills • 6 learning English in science • 4 for paper reviews <p>Besides, we have prepared 10 Online quizzes and 20 supplementary worksheets. (1 online quiz and 2 supplementary worksheets for each chapter in S1 and S2)</p> <p>1 reading passage was prepared for each chapter for S1 and S2. The reading was related to the topic in order to arouse students' interest in learning science.</p> <p>We have arranged 2 Science investigation project, 1 for S1 and 1 for S2. S1 project title: 2-minute video on presenting the science STEM project S2 project title: Production of water-bottle rocket.</p>
Objective 2: Using e-Learning (IT) for effective learning	1. Developing an online forum 2. Putting all the learning material online for students 3. Inter-class videotaping competitions	Fully achieved	<p>We finalized to use Google Classroom to be the online discussion platform.</p> <p>All teaching and learning materials are done and uploaded to the SciWeb by the end of May 2018.</p> <p>It was ensure that all the materials were viewable by all students in our school.</p>

			As we would like to show our appreciation to our students about making interesting videos in the inter-class competition, we finally chose 22 videos instead of 9 and uploaded to the SciWeb.
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2. Project Impact on

Broadening students'/teachers' horizons

This project helped our teachers to be more familiar with video making, making use online assessment and online discussion. It also encouraged some of the teachers to include e learning in daily lessons.

For students, it helped the students to develop self-directed learning habit. They were more used to visit the Sci-Web when they came across difficulties in class. Articles related to each topic were uploaded to let students know more up-to-date information of Science.

Increasing students'/teachers' sense of achievement

Through the project, we were required to tailor made teaching materials, the processes were able to raise our awareness on students' needs. Science teachers expressed that when they were designing the teaching materials, it did remind them about what the students need most.

For students, students from different forms participated in the video making process. The students contributed some of the ideas of the videos taken; the teachers acted as an advisor. Some of the script and the content of the videos were suggested by students, thus they had more freedom and more opportunities to contribute and enjoy the fun of science.

Fostering students' development in their potential and specific abilities

Online discussions provided a platform for teachers and students to discuss science related issues that were not covered in the syllabus. The science discussion forum could help to extend Science lessons outside the classroom and students could have more interactions among them. Hence, it could help students enrich their science knowledge, which was not included in the textbook and this could improve students' logical thinking skill and reasoning skill by sharing their opinions with others.

Training students to better meet social demands

Self-directed learning skill is necessary for our students as they are living in a knowledge-based society. As the technology development in modern society, there are so many information and knowledge that students can get through the internet. The establishment of the Sci-web could help students to develop self-directed learning habit. It could then increase their ownership in learning and develop their career readiness skill in future.

Increasing training opportunities for teachers and enhancing their professional development

A sharing session among staff in our school was held in August 2018. It demonstrated the idea of Sci-web and the effectiveness of making use of e-platform for learning. We would like to take the lead in starting up

the e-learning habit for students and teachers. Thus, this idea could spread to other subject panels in our school. It is believed that our success can encourage them to consider establishing this kind of e-platform of their subjects in future.

Improving learning atmosphere

Sci-Web provides an e-platform to supplement traditional lessons. Video, chapter summary and discussion forum could help students learn better.

Students could choose to revise the subject content at their own pace. Self-pacing could help teachers solve the problem caused by learner diversity. Basing on students' own needs and weaknesses, they could find the corresponding learning materials in Sci-web to consolidate their learning. The Sci-web also provides extension for those highly capable students to learn science in more depth and to further satisfy their curiosity in science.

Fostering team spirit and enhancing the overall image of the school

This project help the science panels created a culture of collaborative lesson preparation. Evaluation meetings related to this project were held twice a year. The meeting helped us to share our thought on how to improve teaching and learning. Moreover, the material prepared by different teachers was shared in the Sci-web, so there were more resources for teaching and learning that we could use in our lessons.

Moreover, good works from our students were uploaded to Sci-web as well. Others will be able to see the achievement of our teaching as well as our students.

Inducing collaboration with other schools / professional organizations.

Most of the secondary school may come across similar problem with us like learner diversity, limitation of laboratory. So the teaching materials prepared by us under this project can be share with other school so that they can take our work as a reference in catering learner diversity as well as solving the limitation in school facilities.

3. Cost-effectiveness

Budget Checklist

Budget Items <i>(Based on Schedule II of Agreement)</i>	Approved Budget (a)	Actual Expense (b)	Change [(b)-(a)]/(a) +/- %
Staff Cost	\$1,007,622.00	\$1,007,622.00	-
General expenses	\$17,068	\$8,068.00	-52.73%
Contingency	\$510	\$507.00	-0.59%

The project's cost-effectiveness should be evaluated with regard to:

- **Utilization of available resources**

In this project, we hired a supply teacher and a project assistance. The supply teacher shared some of the lessons of the science teachers. So they were able to spare more time to prepare the videos, teaching

materials, manage the discussion forum and organizing inter-class competition.

- **Unit cost for the direct beneficiaries**

There were 6 teachers and 297 students who were the direct beneficiaries of this project. The total expenditure of this project is \$1,025,132. The unit cost of the direct beneficiaries should be \$3383.3.

- **Sustainability of the learning programme and materials developed**

The teaching materials collected in the Sci-web were suitable for S1 and S2 students in future. Moreover, good works from students were also posted on the Sci-web for students' reference. The materials prepared during the projects would be beneficial to all junior form students in future as well. And it would also serve as a pool for storing student's good work, so the content inside the Sci-web would properly become richer and they could be precious resources of our school's science department.

- **Expenditure items which require no injection of resources when the project is replicated by other schools**

The teaching materials prepared by us could be used by other school directly, when the other school replicate this project, the expenditure maybe used in establish their school's e-platform to store all the teaching materials.

- **Alternative approaches for equivalent benefits at less cost**

More students could involve in the preparation of the teaching materials, such as video-taping, video editing as well as establishing the web page.

4. Deliverables and Modes of Dissemination

Item description (e.g. type, title, quantity, etc.)	Evaluation of the quality and dissemination value of the item	Dissemination activities conducted (e.g. mode, date, etc.) and responses	Is it worthwhile and feasible for the item to be widely disseminated by the QEF? If yes, please suggest the mode(s) of dissemination.
Teaching videos uploaded to the Sci Web	Helpful in catering for learner diversity.	All the videos are stored in DVD and can be shared to any parties who are interested.	Yes, all the material can be shared through QEF web-page to the others.
Online quizzes and supplementary exercises	Helpful in catering for learner diversity.	Shared with other associated school (other schools sponsored by the Hong Kong Taoist Association) through the learning circle in 18/1/2019.	Yes, all the material can be shared through QEF web-page to the others.
Students good work	Helpful for others in organizing science project.	All the videos are stored in DVD and can be shared to any parties who are interested.	Yes, all the material can be shared through QEF web-page to the others.

Online discussion forum	Helpful tips for new implementation.	Shared with other associated school (other schools sponsored by the Hong Kong Taoist Association) through the learning circle in 18/1/2019.	Yes, all the material can be shared through QEF web-page to the others.
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5. Activity List

Types of activities (e.g. seminar, performance, etc.)	Brief description (e.g. date, theme, venue, etc.)	No. of participants				Feedback from participants
		schools	teachers	students	others (Please specify)	
Video preparation	Sep 2016 – Apr 2018		6	30	IT technician: 2 Project assistance: 1	Positive. Students who participate in the video preparation process expressed they enjoy the preparation process, and the process helped them to understand common misunderstanding among students when learning science.
Interclass video making competition	July 2017 – Aug 2017		8	S1: 165 S2: 132 S3: 165 Total: 462		Positive. Students are able to show how they apply their science knowledge to their daily life. This task also provides students chances to show their creativity.
Evaluation meeting and sharing among the science department	Jan 2018		8			Positive. Teachers shared experience in preparing the teaching material and also introduced the Sci-web to those teachers they are not taking part in the science panel.
Sharing in the staff development activity	29 Aug 2018		60			Positive. The Sci-web was introduced to the teaching staff in our school, and teachers of other subjects show appreciation on this e-learning platform.

6. Difficulties Encountered and Solutions Adopted

At the beginning we came across with problems in making videos and establishing online discussion forum, the schedule was a little bit behind as scheduled. After we got more familiar with online platform and video making technique, we were able to finish the project by the end of May 2018.

Appendix:

The list of the video prepared during the project

Topic	Title of the video	Total no. of video
Introducing Science	<ol style="list-style-type: none"> 1. Measuring weight with triple beam balance part 1 2. Measuring weight with triple beam balance part 2 3. Measure the volume of irregular object 1 4. Measure the volume of irregular object 2 5. Measure the volume of irregular object 3 6. How to use the dropper 7. How to use Bunsen burner 8. Comparing different Bunsen flame 	8
Cell and human reproductions	<ol style="list-style-type: none"> 1. Cell division 2. Introduction of cells 3. Animal cells and plant cells 4. Amoeba eats two paramecia 5. Immune cells eating bacteria 6. The start of a new life 	6
Energy	<ol style="list-style-type: none"> 1. Baking powder in hydrochloric acid 2. Burning magnesium ribbon 3. Match wrapped in aluminium foil 4. Motor dynamo 5. LED windmill 6. Water wheel 7. Clean and dirty fuel 	7
The Wonderful solvent-Water	<ol style="list-style-type: none"> 1. Distillation 2. Filtration by filter paper 3. Microorganisms in filtered water 4. Purifying pond water 5. Simulation of the formation of rain 6. Sedimentation 7. Formation of a large crystal 	9

	<ol style="list-style-type: none"> 8. What will be formed in saturated solution 9. Formation of saturated solution 	
Matter as particles	<ol style="list-style-type: none"> 1. Elemental power –Iced water 2. Self-inflating balloon 3. Tinkle Sprinkler 4. Floating Boat 5. Floating egg 6. Rainbow 7. Fire alarm system 8. Boiling liquid with bare hand 9. Showing the movement of gas particle 1 10. Showing the movement of gas particle 2 11. Showing the movement of gas particle 3 12. Change of state 	12
	Total number of video related to Secondary 1	42
Living things and air	<ol style="list-style-type: none"> 1. Putting out fire with fire extinguisher 2. Putting out fire with fire blanket 3. Putting out fire with sand bucket 4. How much oxygen is there in air? 5. Products of combustion 6. Properties of carbon dioxide 7. Structure of pig lung 1 8. Structure of pig lung 2 	8
Making use of electricity	<ol style="list-style-type: none"> 1. Current change in a parallel circuit with branches added 2. Ways to connect 2 bulb in a circuit 3. Finding voltage across three cells 4. Finding voltage across a light bulb 	4
Space travel	<ol style="list-style-type: none"> 1. Friction of rice in the bottle 2. Friction of an object in different contacting surface 3. Ways to reduce friction – air cushion 4. Action and reaction – balloon rocket 	9

	<ol style="list-style-type: none"> 5. Action and reaction – water rocket (preparation) 6. Action and reaction – water rocket (Launching) 7. Magnetic force 1 8. Magnetic force 2 9. Production of hydrogen (Fuel of rocket) 	
Common acids and alkalis	<ol style="list-style-type: none"> 1. Natural indicator DIY 2. Natural indicator (Red rose petal) 3. Natural indicator (Onion skins) 4. Natural indicator (Grape skins) 5. Metals in acid 6. Marble in acid 7. Diluting concentrated sulphuric acid in the wrong way 8. Diluting concentrated sulphuric acid in the correct way 9. Corrosiveness of concentrated sulphuric acid 10. Chicken leg in alkali 11. Production of Sulphur dioxide (component of acid rain) 1 12. Production of Sulphur dioxide (component of acid rain) 2 	12
Sensing the environment	<ol style="list-style-type: none"> 1. Distance from object to image with thick lens 2. Distance from object to image with thin lens 	2
	Total number of video related to Secondary 2	35
Experimental skills	<ol style="list-style-type: none"> 1. Candle in water 2. Use of the displacement can 3. Lighting a match 4. Pendulum experiment 5. Taking the reading from the triple beam balance 	13

	<ol style="list-style-type: none"> 6. Measuring the current 7. Measuring the voltage across the light bulb 8. Measuring the voltage across the battery 9. Mistake in connecting the ammeter 10. Mistake in connecting the voltmeter 11. Using the rheostat 12. Mistake in connecting the rheostat 13. Making use of the microscope 	
Learning Science in English	<ol style="list-style-type: none"> 1. Naming the apparatus 2. Common apparatus in laboratory 1 3. Common apparatus in laboratory 2 4. Golden rain experiment 5. What is the meaning of a solution? 6. What is assumption? 	6
Paper Review	<ol style="list-style-type: none"> 1. IS 1st Test paper review 2. IS half-yearly paper review 3. IS 2nd Test paper review 4. IS Final exam paper review 	4
Good works of S1 students	<ol style="list-style-type: none"> 1. Chopstick in rice 2. Coke with mentos 3. DIY fire extinguisher 4. Leak proof plastic bag 5. Rubber band car 6. Rainbow solution 7. Ping Pong in hot water 	7
Good works of S2 students	<ol style="list-style-type: none"> 1. Water glass magic 2. Tea bag rocket 3. Surface tension 4. Resuable moisture absorbent 5. Pepper float on water 6. Air gun 	6
Good works of S3 students	<ol style="list-style-type: none"> 1. Supercooling 2. Singing wine glasses 3. Science in winning a basketball match 4. Making a cloud in the bottle 5. Investigation of short circuit 	9



	6. Interesting facts about M&M 7. Homemade margarine 8. Conducting electricity with our body 9. Capillary action	
	Total number of video	122