



**Final Report of Project**

Project No. : 2014/0503

**Part A**

Project Title: *Promoting Assessment for Learning in Science and Mathematics through identifying students' learning difficulties from automated analysis of multiple-choice test.*

Name of Organization/School: *Tak Sun Secondary School*

Project Period: *From Sept/2015 to Aug/2016*

**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:

Signature: \_\_\_\_\_

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

*7<sup>th</sup> July, 2016*

Name of Grantee\*:

Signature: \_\_\_\_\_

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

*7<sup>th</sup> July, 2016*

*\* 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.*



## Guidelines to Completion of Final Report of Quality Education Fund Projects

Please elaborate the following items in your evaluation of the project. It is expected that the guide would provide a reference to the project leader/team in reflecting on the effectiveness of the project.

### 1. Attainment of Objectives

#### 1a. Achieved objectives:

*'to promote Assessment for Learning in Science and Mathematics in school'*

*'to identify students' possible learning difficulties effectively'*

*'to enable teachers to use information about students' performance to inform their teaching'*

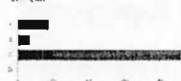
These objectives have been achieved. Four Science teachers and two Mathematics teachers had used the data collected to feedback their teaching. Furthermore, Social Science department has requested to join next year. Teachers' reflected that some students' common mistakes / misconceptions can be elicited more easily and quickly compared with the traditional method. Statistics and analysis shown become is one of the examples in F3 science.

#### Multiple-choice questions

(80% CORRECT)

1. The chemical symbol of calcium (鈣) is

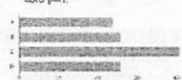
- A. C
- B. CA
- C. Ca
- D. Cal



(44% CORRECT)

2. Which of the following is an example of chemical properties of a substance?

- A. Aluminium is shiny
- B. Water boils at 100°C
- C. Iron rusts in air
- D. Lead conducts heat from hot part to cold part



#### Fill in the blanks below:

Compound is a substance which consists of (5) (22% CORRECT) chemically combined together.

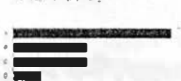
When a compound is made up of ions, (5) (53% CORRECT) (+) and (2) (43% CORRECT) (-), this compound is called (3) (36% CORRECT) compound.

Copper is commonly used to make electrical wires mainly because it is a very good (2) (4% CORRECT).

(14% CORRECT)

3. Which of the following is/are compound/s?

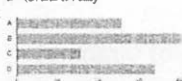
- (1) Water (H<sub>2</sub>O)
- (2) Mercury (Hg)
- (3) Dioxide (O<sub>2</sub>)
- A. (1) only
- B. (1) and (2) only
- C. (1) and (3) only
- D. (2) and (3) only



(37% CORRECT)

4. Which of the following is/are polyatomic ions?

- (1) Li
- (2) OH
- (3) Mg<sup>2+</sup>
- A. (2) only
- B. (3) only
- C. (1) and (2) only
- D. (2) and (3) only



Atomic symbol	Electronic arrangement	Charge(s) of ion formed	Electronic arrangement of the ion formed
Na	(10) (2, 8) CORRECT	1+	(11) (2, 8) CORRECT
Mg	(12) (2, 8) CORRECT	(13) (2, 8) CORRECT	(14) (2, 8) CORRECT
(15) (2, 8) CORRECT	2.8.6	(16) (63% CORRECT)	(17) (64% CORRECT)
(18) (17% CORRECT)	(19) (70% CORRECT)	1-	2.8

#### Result analysis:

Students are strong at:

- identifying the atomic symbols of the element
- writing the electronic arrangement for atoms and ions

Students are weak in:

- spelling e.g. electrical conductor
- distinguishing between 'element and compound' and 'simple ions and polyatomic ions'

#### 1b. Objective cannot be achieved

*'to enhance the professional exchange among colleagues in STEM education'*

This objective cannot be achieved since our teachers are still not familiar with the rationale behind STEM.



### 3. Cost-effectiveness

Utilization of available resources

Equipment: Different subject streams (LS, Chin, etc.) have requested to use the tablets granted for their subject teaching use, e.g. survey, in-class activity, searching info, etc.  
Tablets are now well kept inside the charging cart and monitored by IT technician.

**Table 2: Budget Checklist**

<b>Budget Items</b> (Based on Schedule II of Agreement)	<b>Approved Budget</b> (a)	<b>Actual Expense</b> (b)	<b>Change</b> [(b)-(a)]/(a) +/- %
Equipment	\$100,100	\$80,894	-19.2%
Services	\$2,100	\$0	-100%
General Expenses	\$5,000	\$5,000	0%

Budget Tablet charging cart was not equipped since we have another solution to carry all 40 tablets.  
Staff trainer was not recruited since we cannot find a suitable person with enough experience in both IT in education and Assessment for Learning.

### 4. Deliverables and Modes of Dissemination

**Table 3: Dissemination Value of Project Deliverables**

<b>Item description</b> (e.g. type, title, quantity, etc.)	<b>Evaluation of the quality and dissemination value of the item</b>	<b>Dissemination activities conducted</b> (e.g. mode, date, etc.) and responses	<b>Is it worthwhile and feasible for the item to be widely disseminated by the QEF? If yes, please suggest the mode(s) of dissemination.</b>
Learning and teaching materials, resource package	Keep inside each of the department network drive for further usage.	/	School-based learning and assessment materials can be shared.
DVD (lesson videos and interview)	For inviting other department / school to explore the feasibility of using this method of teaching.	/	NIL

### 5. Activity List

Peer lesson observation was done among different subject stream teachers. Observing how to use the technology to collect and identify the student learning progress promptly and feedback during lesson time. Most teachers appreciate the method used.

#### **Difficulties Encountered and Solutions Adopted**

Teachers / Subject panel head have to learn how to build up the \_\_\_\_\_ form with auto-marking function. This hindered the spreading among colleagues since teachers have limited time to do so. To deal with this, we would invite TA to work together, TA will be geared up the skills for building the \_\_\_\_\_ form.

This form/guidelines can be downloaded from the QEF webpage at <http://qef.org.hk>.