

## **ITEM FOR FINANCE COMMITTEE**

**HEAD 47 – GOVERNMENT SECRETARIAT :  
OFFICE OF THE GOVERNMENT CHIEF INFORMATION  
OFFICER**

**Subhead 700 General non-recurrent**

**Item 894 “Enriched IT Programme in Secondary Schools”**

Members are invited to approve an increase in the approved commitment of Subhead 700 General non-recurrent Item 894 “Enriched IT Programme in Secondary Schools” from \$75 million by \$500 million to \$575 million for implementing the “IT Innovation Lab in Secondary Schools” initiative under the existing “Enriched IT Programme in Secondary Schools”.

### **PROBLEM**

Information technology (IT) is an important pillar in promoting innovation and technology (I&T) development in different areas, and the demand for IT talent in Hong Kong and other places is on the rise. We need to cultivate secondary school students’ interest in IT, enhance their digital skills, computational thinking and innovative abilities at the early stage to inject new blood in research and development and industry development for the local IT and other technology areas.

### **PROPOSAL**

2. The Office of the Government Chief Information Officer (OGCIO) proposes to implement the “IT Innovation Lab in Secondary Schools” (IT Innovation Lab) initiative under the existing “Enriched IT Programme in Secondary Schools” (EITP) to provide funding support of up to \$1 million in the

/three .....

three school years from 2019/20 to 2021/22 for each publicly funded secondary school<sup>1</sup> to upgrade their IT equipment and facilities and organise IT-related extra-curricular activities (ECA).

## JUSTIFICATION

3. Strengthening popular science education and “Science, Technology, Engineering and Mathematics” (STEM) education are among the eight major areas to promote I&T development put forth by the Chief Executive in her 2017 Policy Address<sup>2</sup>. In this Internet-driven digital age, IT is a common technology in I&T development. With the wide adoption of IT across different areas and sectors, the demand for IT talent in various industries is strong and ever-increasing. We must enhance the interest of young people (including secondary school students) in IT and innovative thinking and foster an IT learning atmosphere to encourage them to choose technology-related tertiary education programmes and pursue an I&T career in the future.

4. OGCIO conducted an interim review on EITP in the second half of 2018, and consulted stakeholders including teachers, students and their parents of the participating schools, secondary school councils, tertiary institutions, the IT industry and IT-education related associations. The stakeholders generally agreed that students’ participation in IT activities outside classroom learning helped arouse their interest in learning IT and cultivate their creativity and logical thinking. They generally hoped that the programme could be extended to all schools in order to strengthen and promote popular IT education.

5. Having regard to this, the Financial Secretary in his 2019-20 Budget Speech proposed the provision of \$500 million to implement the “IT Innovation Lab” initiative in all publicly funded secondary schools in Hong Kong in the coming three school years, with the aim to lay a sound foundation in IT for young people during their secondary schooling, thereby promoting local popular science education and expanding the supply of I&T talent.

/“IT .....

---

<sup>1</sup> Including government, aided (including special schools), caput secondary schools and secondary schools under the Direct Subsidy Scheme.

<sup>2</sup> The eight major areas include increasing resources for research and development; pooling together technology talent; providing investment funding; providing technological research infrastructure; reviewing existing legislation and regulations; opening up government data; Government to lead changes to procurement arrangements; and popular science education.

**“IT INNOVATION LAB” INITIATIVE**

6. The funding scope of the “IT Innovation Lab” initiative includes the following two aspects –

- (a) procuring and maintaining IT equipment and infrastructure (such as server-side and client-side hardware and software, optical fibre and broadband network, cloud servers and storage services) and acquiring relevant professional services (such as cloud services) that meet the needs of the school and its students; and
- (b) organising IT-related ECA. These activities can take different forms, including workshops, seminars, short courses, visits, experience activities, as well as participation in local and international competitions and organising exhibitions to showcase students’ innovation and achievements. The scope of such activities can also be wide-ranging, including for example learning to code, learning about new technologies such as virtual reality (VR)/augmented reality (AR), artificial intelligence (AI), drones, robotics, etc., the application of IT, digital transformation, visits to multi-national companies in Hong Kong and local start-ups as well as preparing for IT competitions, such as datathons, etc. The funding could also cover operational expenses of these activities (such as maintenance and professional services for learning support) and administrative cost.

7. In order to assist schools in procuring and organising suitable ECA, OGCI will set up a one-stop support centre to provide schools with professional advice and support. OGCI will provide a reference list of IT equipment (reference examples of equipment are at Enclosure 1) and issue application guidelines. OGCI will streamline the application and approval procedures as far as possible and disburse the funding to successful applicants each year in accordance with the annual plans submitted by schools. Upon approval of the Finance Committee of the Legislative Council (FC), OGCI will immediately conduct briefing sessions for schools on details of the new initiative and application procedures, including introducing the funding scope of the initiative and relevant application guidelines, recommending equipment and services that can be procured by schools and sharing success stories of other schools in organising activities.

Encl. 1

8. OGCI will seek to mobilise the industry, relevant organisations (including Hong Kong Science Park, Cyberport, Hong Kong Productivity Council) and educational bodies to support the initiative by providing learning opportunities such as seminars, workshops, exhibitions, IT experience activities, etc. so as to enable students to keep abreast of new technologies and the latest development in the IT industry. OGCI will explore with the industry concessionary arrangements for school-editions of their hardware, software, cloud services and tools, etc. and encourage schools to participate in joint-school sharing.

9. The “IT Innovation Lab” initiative will adopt a more flexible and comprehensive approach to provide funding support to all publicly funded secondary schools to organise IT-related ECA. It will also replace the “Enriched IT Activities Programme” under the existing EITP. The eight partner schools currently under the “Enriched IT Class Programme” (EITC) can choose to join the new “IT Innovation Lab” initiative.

## **GOVERNANCE AND MONITORING**

10. OGCIO will set up an advisory committee to be chaired by the Government Chief Information Officer for the initiative. Members will include experts from the IT industry, academia and education sector. The committee will provide advice and recommendations in several major aspects, including the reference list of equipment, the nature and types of IT-related ECA, implementation progress and vetting criteria.

11. In addition, in applying for funding, schools are required to submit an annual plan on how the procured IT equipment and professional services will be utilised to organise suitable ECA. OGCIO will be responsible for vetting and approving the applications, and disbursing the funding required accordingly each year. Successful applicants are required to submit an annual report on the expenditure and uses of the procured equipment and services to ensure the funding is properly spent. In the event of any non-compliance with these requirements by the schools, OGCIO will take appropriate measures to assist schools in rectifying them and, if necessary, consider withholding or terminating funding disbursement to the schools concerned. OGCIO will monitor the implementation of this initiative and assess the effectiveness in light of technology development, school needs and other relevant funding measures, etc. as appropriate.

## **FINANCIAL IMPLICATIONS**

12. A non-recurrent commitment of about \$500 million is required to provide funding to all publicly funded secondary schools in Hong Kong to implement the “IT Innovation Lab” initiative in three school years starting from 2019/20. The indicative breakdown and cashflow by financial year are as follows –

/(**\$ million**) .....

		(\$ million)				
		2019-20	2020-21	2021-22	2022-23	Total
(a)	Schools to procure IT equipment and services	80	110	60	-	250
(b)	Schools to organise ECA and related expenses for IT Innovation Lab	10	90	100	50	250
<b>Total:</b>		<b>90</b>	<b>200</b>	<b>160</b>	<b>50</b>	<b>500</b>
		<b>Total:</b>				<b>500</b>

13. Schools can join the initiative on a voluntary basis and apply for and use the funding flexibly according to their own circumstances and needs in the areas mentioned in paragraphs 6(a) and (b) above. The total and annual expenditures in paragraphs 12(a) and (b) above may hence vary depending on the actual applications submitted by schools.

14. OGCIO estimates that the time-limited recurrent expenditure for implementing the initiative is \$11.6 million per annum, mainly for the staff and operating costs of programme management, funding scheme administration, secretariat support for the advisory committee, and operation of the one-stop support centre, etc. OGCIO has included the necessary provision for 2019-20 in the Estimates and will make similar arrangements for the relevant subsequent financial years.

## IMPLEMENTATION PLAN

15. Subject to funding approval of FC, we plan to implement the “IT Innovation Lab” initiative before end-2019 and invite about 500 publicly funded secondary schools in Hong Kong to join the initiative on a voluntary basis. The expected timetable is as follows –

	<b>Tentative Date</b>
Organising briefing sessions	Mid-2019
Invitation for applications	August 2019
Approving applications and starting funding disbursement	November - December 2019

/PUBLIC .....

**PUBLIC CONSULTATION**

16. On 11 March 2019, we consulted the Panel on Information Technology and Broadcasting of the Legislative Council on the initiative. Members generally supported our submission of the funding proposal to FC. Individual members requested extension of the “IT Innovation Lab” initiative to all primary schools in Hong Kong. After consulting the relevant bureaux/departments and making reference to the implementation experience of the existing EITP, we are of the view that students generally explore their direction in further studies and career during secondary schooling. Therefore, providing funding support to schools to enable secondary school students to experience new technologies such as AI, big data, etc. is more in line with the Government’s policy objective to nurture technology talent. In addition, certain Members requested that the Education Bureau (EDB) send representatives to attend the FC meeting to answer questions relating to education policies. EDB considers that the Innovation and Technology Bureau (ITB) champions the “IT Innovation Lab” initiative, which is a time-limited Budget initiative, whereas OGCIO will implement it, including providing interested schools with the necessary professional support and advice. It is therefore appropriate for ITB and OGCIO representatives to attend FC for this funding proposal. Schools may also decide on their own whether to submit an application considering their respective circumstances. EDB is prepared to brief Members separately on the promotion of STEM education in a more appropriate forum, such as the Panel on Education.

17. We consulted the Youth Development Commission and secondary school councils/associations of school principals on 22 March and 4 April 2019 respectively. The proposal received overall support. Some representatives of the secondary school councils and associations of school principals hoped that the application and approval procedures would be streamlined and that the use of funding could be more flexible so that schools could organise learning activities, co-curricular activities and ECA that aligned with their school-based curriculum. We will take the schools’ views into full consideration in mapping out the relevant implementation details.

**BACKGROUND**

18. According to the 2018 Manpower Survey Report for Innovation and Technology Sector published by the Vocational Training Council, there were around 95 780 IT practitioners in Hong Kong. Although the number of IT practitioners increased by 9.1% from 2016 to 2018, the report projected that the market would still need around 2 490 IT degree and 1 858 IT sub-degree graduates annually between 2019 and 2022 to join the IT industry.

/19. ....

Encl. 2 19. OGCIO launched the eight-year EITP (examples and deliverables of activities are at Enclosure 2) in the 2015/16 school year to start identifying and nurturing IT talent in secondary schools vis-à-vis the development of our digital society. EITP is composed of two components –

- (a) *Enriched IT Class Programme* – to provide funding support for eight partner schools to operate enriched IT classes to provide advanced IT training to students who are interested and talented in IT. Each partner school receives a sum of \$250,000 per class per year; and
- (b) *Enriched IT Activities Programme* – to provide funding support for secondary schools to organise various types of IT activities to create more opportunities for students to learn about IT outside classroom learning with an aim to foster an IT learning atmosphere in the campus and cultivate students’ interest in IT. The maximum funding for each application is \$50,000.

20. EITP is in its fourth year of operation. The enriched IT classes in the eight partner schools have about 1 000 students. In addition, about 20 000 students participated in the IT activities organised by 142 secondary schools. As at the end of the 2018-19 financial year, the total expenditure of the programme was about \$40 million.

-----

Innovation and Technology Bureau  
Office of the Government Chief Information Officer  
May 2019

**IT Innovation Lab in Secondary Schools  
Reference List of IT Equipment**

	<b>Equipment/Apparatus</b>	<b>Purpose</b>
1.	Lab equipment such as optical fibre and broadband network, cloud servers, storage services and relevant cloud-based coding and data analytics software services	Supporting IT-related extra-curricular activities
2.	Laptop computers, tablet computers, smartphones, coding tools	Organising coding classes, and participating in workshops and competitions for coding and prototyping
3.	Artificial intelligence (AI) learning such as pattern and object recognition kits, voice recognition kits, machine learning tools	Developing AI prototype solutions with machine learning tools
4.	Data analytics tools, data visualisation tools	Organising activities on data analytics, data visualisation and programming
5.	Drones	Organising drone coding activities and workshops and competitions for producing virtual reality (VR) scenes
6.	Programmable robotics kits, sensors, programmable controllers	Organising robotics assembling activities and controlling robotics through programming
7.	VR/Augmented reality (AR) devices	Organising workshops and competitions for producing VR/AR prototypes

-----



**Examples and Deliverables of  
“Enriched IT Activities Programme”**

	<b>Technology Application</b>	<b>Activity</b>	<b>Deliverables</b>
1.	Mobile Apps	Mobile apps development courses and group presentations	<ul style="list-style-type: none"> <li>• Students learned basic interface control of visual programming languages, application of sensors and control of apps.</li> </ul>
2.	Robotics Control	Robotics courses and exchange programmes	<ul style="list-style-type: none"> <li>• Students constructed and programmed robotics and completed simple tasks by using sensors.</li> </ul>
3.	Virtual reality (VR)/Augmented reality (AR)	VR/AR courses	<ul style="list-style-type: none"> <li>• Students enhanced the learning experiences of various subjects using VR/AR, making learning more interesting.</li> <li>• Students used computer programming languages to develop VR/AR mobile apps and showcased them during school activities.</li> </ul>
4.	Smart Home	Training Course for Smart Home Maker	<ul style="list-style-type: none"> <li>• Students grasped the concept, design and development related to smart home, and showcased their learning deliverables in competitions or exhibitions.</li> </ul>
5.	Internet of Things	Short workshops for Internet of Things and smart home	<ul style="list-style-type: none"> <li>• Students grasped the concept of automated control, and learned about Internet of Things and its applications in daily life through short workshops.</li> </ul>

-----