

## **ITEM FOR FINANCE COMMITTEE**

### **HEAD 156 – GOVERNMENT SECRETARIAT : EDUCATION BUREAU**

#### **Subhead 603 Plant, vehicles and equipment**

**New Item “Upgrading of information technology facilities in schools under the third strategy on information technology in education”**

#### **Subhead 700 General non-recurrent**

**New Item “Implementation of the third strategy on information technology in education”**

Members are invited to approve the creation of the following commitments for implementing the third strategy on information technology in education –

- (a) a new commitment of \$200 million under Head 156 Government Secretariat : Education Bureau Subhead 603 Plant, vehicles and equipment for upgrading the information technology facilities in public sector schools (including government, aided and caput schools) and schools under the Direct Subsidy Scheme; and
- (b) a new commitment of \$40 million under Head 156 Government Secretariat : Education Bureau Subhead 700 General non-recurrent for the implementation of various measures under the third strategy on information technology in education.

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**PROBLEM**

As a key direction identified under the third strategy on information technology in education (Third Strategy), we need to assist schools in formulating plans to further integrate information technology (IT) in education which includes more cost-effective and strategic use of IT resources, helping teachers select appropriate digital resources for teaching, and fostering parents' and students' information literacy. The school sector also needs additional resources for replacing or upgrading IT facilities in schools and strengthening technical support in taking forward the Third Strategy.

**PROPOSAL**

2. The Secretary for Education proposes to create –
  - (a) a new commitment of \$200 million for replacing or upgrading IT facilities in public sector schools (including government, aided and caput schools) and schools under the Direct Subsidy Scheme (DSS) to integrate IT into learning and teaching more extensively; and
  - (b) a new commitment of \$40 million for implementing various measures to help teachers use IT widely to facilitate teaching and student learning, and to raise the information literacy of parents and students.

**JUSTIFICATION**

3. IT in education is about integration of IT into learning and teaching to improve students' learning outcome. Our long-term vision is to advance from e-learning to c-learning, which emphasises on collaborative, contributory and creative learning. With the implementation of the first and second strategies on IT in education (First Strategy and Second Strategy), we recognise that a more flexible, interactive and student-centred learning environment is emerging. The role of the Government is to provide the necessary conditions and practical advice on pedagogical application of IT to facilitate the integration of IT into education at the school level. We are also mindful of the differences in schools' priorities, teachers' readiness and students' learning needs. Instead of imposing a one-for-all model, we aim to support schools in formulating effective plans to embrace appropriate technologies for education according to their changing needs and priorities.

4. The objective of the Third Strategy is to empower teachers and students to use the right technology at the right time for the right task through effective school-based planning and practical advice on pedagogical application of IT. We conducted a one-month consultation on the Third Strategy from October to November 2007. Taking into account respondents' feedback, we propose to take the following actions under the Third Strategy –

***To provide a depository of curriculum-related teaching modules with appropriate digital resources***

5. The outcome of a survey<sup>1</sup> found that many teachers did not have confidence in selecting appropriate digital teaching resources, although the majority of them agreed that the use of IT could enhance the effectiveness of learning and teaching. We propose to invest \$25 million to establish a structured on-line depository of curriculum-related teaching modules for Chinese Language, English Language, Mathematics and Science (and General Studies in primary schools) for primary 1 to secondary 3 levels. The teaching modules will include lesson plans to provide practical advice on pedagogical application of IT in learning and teaching, and to support curriculum and pedagogical innovations as well as assessment of learning. The modules will also provide links to available on-line open source materials and self-developed or acquired digital resources. The depository will be launched in a platform vide the website of the Hong Kong Education City. We will actively involve teachers in developing the depository to ensure that the deliverables meet their needs.

***To continue to sharpen teachers' IT pedagogical skills***

6. We will continue to organise training and professional development programmes as well as IT in education symposia to sharpen teachers' IT pedagogical skills and broaden the dissemination of good practices among teachers. The future focus is pedagogical application of IT to improve students' learning outcome. The Education Bureau (EDB) will absorb the recurrent cost involved from within its existing resources.

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<sup>1</sup> The "Evaluation Study on IT in Education" conducted by the Hong Kong Institute of Education in 2005 and 2006 revealed that although the majority of teachers (86% and 71% of primary and secondary school teachers respectively) agreed that the use of IT could enhance effective teaching, only over 50% of them used IT frequently in class. In fact, only slightly more than half of the teachers (62% primary and 52% secondary school teachers) were confident in selecting appropriate digital teaching resources.

*To assist schools to draw up and implement school-based IT in education development plan*

7. To facilitate schools in formulating their own IT development plans, we will collaborate with local tertiary institutions to develop an IT in education roadmap with a sample action plan and associated templates for schools' reference. In addition, through the establishment of a central technical support team in EDB, we will provide on-site support and organise workshops and e-leadership programmes to help schools assess their IT needs, and develop and implement their school-based plans according to their needs and priorities. EDB will fund these activities from within its existing resources.

8. The central technical support team will comprise about 30 seconded teachers from the Information Technology Section of EDB and Centres of Excellence on IT in Education<sup>2</sup>. The support cycle will start with an audit of the IT hardware and software within schools as well as the IT capacity of school leaders and teachers by the support team. Based on the audit result, the support team will assist the school management in drawing up a realistic school-based IT development plan and will recommend practical IT solutions to support the development plan. At the implementation stage, the support team will visit the school regularly to assist in rolling out the plan, with emphasis on adoption of best practices in integrating IT in education by teachers. On the technical front, the support team will assist the school in improving the efficiency, reliability, and security of its IT system.

9. There have been calls from the school sector for IT co-ordination support, including the need for a permanent teacher post to take up the IT co-ordination responsibility. We consider that in the initial development stage, there may be a need for a teacher in each school to assume the co-ordinating role of building up the most suitable IT infrastructure to support the learning programme, and support the principal in overseeing the integration of IT into learning and teaching activities. However, we expect that such a staffing need will diminish, after the infrastructure has been put in place, and more teachers and subject panels assume responsibility in the use of IT in schools. By then, school leaders may want to redeploy the resources thus saved to focus on their prevailing priorities in IT in education, but this funding flexibility would be lost under the proposal of a permanent teacher post for IT co-ordination. Furthermore, the need for dedicated on-going IT co-ordination support will be further reduced after the establishment of

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<sup>2</sup> Centres of Excellence on IT in Education are schools which excel in using IT to enhance learning. Extra resources are provided to these schools to create capacity for two or three teachers from each of these schools to engage in supporting other schools on IT in education.

the support team which is expected to lessen schools' burden on IT co-ordination in implementing their IT development plans. EDB will continue to disseminate models of good practice, and monitor any emerging needs arising from the implementation of the Third Strategy.

***To enable schools to maintain effective IT facilities***

10. Schools have suggested that part of the existing IT facilities procured under the First Strategy and Second Strategy have become outdated or obsolete. Some schools have indicated that additional resources can enable integration of IT into learning and teaching more extensively, e.g., by installing computers and/or projectors in more classrooms. We propose to set aside \$200 million for providing public sector and DSS schools with a special one-off grant to meet their IT needs identified in the school-based IT development plans. To ensure that resources are used effectively, schools should prioritise their initiatives and critically examine the ways existing facilities are used and the genuine needs to acquire new IT facilities. Therefore, as a condition for receiving the one-off grant, schools are required to commit themselves to drawing up and implementing their school-based IT development plans. We will take into account the review outcome as referred to in paragraph 14 below in expanding the scope of the Composite IT Grant (CITG) (being a constituent grant of the block grants for schools) to cover IT hardware to further enhance flexibility in the use of the grant. Furthermore, we propose to earmark another \$3 million for schools to try out special projects on IT in education, including experimenting with new IT pedagogical applications, and organising events to promote IT in learning and teaching.

11. While planning to replace or upgrade their IT facilities, schools may dispose some of their obsolete computers which are no longer in use. In this respect, EDB will remind schools to ensure that all data stored in existing computer systems will be removed by means of de-magnetisation and the hard disks physically destroyed before they are disposed of. Schools should also ensure that these physically destroyed hard disks and other unserviceable microcomputers and accessories such as printers, monitors, routers and modems will be disposed of in accordance with the relevant procedures promulgated by the Office of the Government Chief Information Officer.

***To strengthen technical support to schools and teachers***

12. At present, the recurrent CITG provides resources for schools to procure technical support services and meet other IT-related expenses, such as IT consumables, Internet connection services, and digital learning and teaching resources. Schools may use the grant to hire on-site technical support services from

IT companies or employ their own IT technicians. For the 2007/08 school year, primary schools of 19-24 classes receive a CITG of about \$250,000 while secondary schools of 25 classes receive \$290,000. The emergence of open educational resources and changing practices, such as higher awareness of environmental friendly practices and more intensive use of school intranet for communication with parents and students, should have reduced schools' spending on digital resources and IT consumables, such as ink cartridges, paper and compact discs. This has created room for resources redeployment. In addition, schools are free to deploy resources under the CITG and within their block grants to offer more competitive salaries to their IT technicians.

13. The school sector has suggested the creation of a permanent post of IT technician in schools to solve the problem of high turnover of IT technicians who are currently sought after by all industries. We are not convinced that the creation of such a permanent post can solve the problem. The existing funding arrangement allows school principals to adjust the salary of an IT technician flexibly. Creation of a permanent post however means rigidity in the pay package. In addition, many schools at present are hiring on-site technical support services from IT service providers instead of employing a technician. This arrangement can avoid discontinuity and instability of technical support services due to personnel changes, as the IT service providers are required to provide replacement according to the contract terms.

14. The school sector has also suggested that the CITG is inadequate for schools to offer a competitive salary to retain capable IT technicians. If the problem is one of the CITG not being able to meet in full the relevant recurrent IT-related expenses, including the salary adjustment of IT technicians according to the market rate, the solution should be ascertaining the adequacy of CITG. We have undertaken to conduct an evidence-based review of the ambit and amount of CITG by auditing schools' spending pattern on IT-related items and assessing the market rates of these items. The review will cover special schools. We aim to revert to the Legislative Council (LegCo) Panel on Education on the outcome of the review in July 2008.

15. In the meantime, to help the school sector address this manpower problem, we propose to set aside \$5 million for a pilot scheme to procure on-site technical services on a term-contract basis to assist schools which are temporarily affected by the turnover of IT personnel. On the other hand, we will organise specialised training on common technical issues encountered in the school environment for schools' IT technicians, especially new recruits, to enhance their technique and productivity. EDB will absorb the recurrent cost of these training programmes from within its existing resources.

***To raise parents' information literacy and assist them in guiding children to use IT at home***

16. Given the high household penetration rates of personal computers and Internet connectivity in Hong Kong<sup>3</sup>, e-learning is no longer confined to the traditional classroom environment but also takes place at home. Students are in need of proper parental guidance to enable them to use IT responsibly and intelligently for on-line self-learning activities at home. We plan to set aside \$5 million to collaborate with IT companies, schools, the Home-School Cooperation Committee and other non-governmental organisations (NGOs) to raise parents' awareness of the emerging role of IT in the learning environment, the availability of quality open source educational materials and built-in parental control features in operating systems, and the need to use all these open source educational materials legally.

***To continue the computer recycling scheme***

17. To help narrow the digital divide in the community, especially among students, we will continue the computer recycling scheme in conjunction with the Environmental Protection Department (EPD). EPD will work with NGOs to provide refurbished computers to needy students, while EDB will arrange to provide one-year free Internet service to the beneficiaries. Under this scheme, we also aim to secure agreement with telecommunications companies to offer these students Internet connection service at a concessionary rate after the initial year of free connection. We will fund the some \$25 million required for continuing the scheme from within the approved provision under the Second Strategy. No additional provision is required.

***To enhance students' information literacy***

18. Many respondents to the consultation have highlighted the importance of enhancing students' information literacy which generally refers to students' ability to manage information and develop critical thinking, problem-solving, and decision-making skills with the use of IT. The proposed depository of teaching modules will include suggested activities for enhancing students' information literacy. We have commissioned a tertiary institution to evaluate the information literacy of primary and secondary students in Hong Kong under the Second Strategy. The tertiary institution has also developed an

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<sup>3</sup> According to the "Thematic Household Survey on Information Technology Usage and Penetration" conducted by the Census and Statistics Department from July to September 2007, 96.7% of primary and secondary school students had access to a computer at home. Out of them, 97.6% had access to the Internet.

Information Literacy Framework for students. We propose to allocate \$2 million for collaborating with tertiary institutions to launch projects to enhance students' information literacy with reference to the Framework, such as the development of self-evaluation tools for schools to assess the information literacy of students.

## FINANCIAL IMPLICATIONS

19. The proposals under the Third Strategy will require capital/non-recurrent expenditure totaling \$240 million. This comprises \$200 million for disbursement of one-off cash grants to schools for replacing or upgrading IT facilities and another \$40 million for implementation of various measures mentioned in paragraphs 5 to 18 above. The estimated cash flow requirements for the respective items are listed below –

	Financial Year							Total
	2007-08	2008-09	2009-10	2010-11	2011-12	2012-13	2013-14	
<i>Capital expenditure (\$ million)</i>								
(a) Cash grants for schools to acquire IT facilities	186.0	12.6	0.7	0.7	-	-	-	200.0
<i>Non-recurrent expenditure (\$ million)</i>								
(b) Staff cost for developing the on-line depository	-	1.8	3.1	4.8	5.1	3.1	2.1	20.0
(c) Production and purchase of digital resources for the depository	-	1.0	1.0	1.0	1.0	1.0	-	5.0
(d) Trying out new IT initiatives by schools	-	1.0	1.0	1.0	-	-	-	3.0

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	Financial Year							Total
	2007-08	2008-09	2009-10	2010-11	2011-12	2012-13	2013-14	
<i>Non-recurrent expenditure (\$ million)</i>								
(e) Strengthening technical support for schools	-	1.0	1.0	1.0	1.0	1.0	-	5.0
(f) Raising parents' information literacy	-	1.0	1.0	1.0	1.0	1.0	-	5.0
(g) Enhancing students' information literacy	-	0.5	0.5	0.5	0.5	-	-	2.0
<b>Total</b>	<b><u>186.0</u></b>	<b><u>18.9</u></b>	<b><u>8.3</u></b>	<b><u>10.0</u></b>	<b><u>8.6</u></b>	<b><u>6.1</u></b>	<b><u>2.1</u></b>	<b><u>240.0</u></b>

20. On paragraph 19(a) above, the expenditure is for the disbursement of a special one-off cash grant to each of about 1 000 schools (including 480 primary schools, 466 secondary schools and 60 special schools) for replacing or upgrading their IT facilities. We have worked out the requirement of \$200 million with reference to the Government's investment in IT facilities under the First Strategy. By and large, schools will receive a grant of about \$133,880 to \$334,700 per site depending on the number of operating classes on the site. To provide for greater flexibility, schools will be allowed to use the grant to purchase the necessary IT hardware and software in accordance with their school-based IT development plans till the end of the 2010/11 school year, i.e. 31 August 2011. Schools could use the funds to replace obsolete IT facilities, upgrade their software, reinforce their IT security, procure additional new IT equipment for teaching and learning, as well as purchase computers for teachers, etc. Any unspent provision will be clawed back by the Government after the 2010/11 school year. The recurrent cost incurred under this project will be met by schools' block grants (including the CITG).

21. On paragraph 19(b) above, the expenditure is for setting up a team of subject specialists in EDB to develop within five years an on-line depository with teaching modules on selected Key Learning Areas, including Chinese Language, English Language, Mathematics and Science (and General Studies in primary schools), for primary 1 to secondary 3 levels. We will review after completion of

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this project to see if expansion to other subjects and higher academic levels is necessary. The depository will complement other IT in education materials already or being developed, such as the dedicated website on Liberal Studies for the new senior secondary curriculum.

22. On paragraph 19(c) above, the expenditure is for EDB to develop and procure appropriate digital resources for lesson plans to be incorporated into the on-line depository. We envisage that, like similar depositories developed by other jurisdictions, many quality open digital educational resources, which are free for educational use, will be included in the proposed depository. However, we may need to purchase and subscribe to quality digital learning and teaching resources for enhancing the contents of the on-line depository. The expenses include copyright licensing fee for these acquired or subscribed materials.

23. On paragraph 19(d) above, the expenditure is for schools to try out special projects on IT in education, and for EDB to launch different pilot schemes to identify and disseminate leading practices in e-learning.

24. On paragraph 19(e) above, the expenditure is for procuring technical services from IT companies to carry out a pilot scheme of providing on-site support to schools temporarily affected by the turnover of their IT personnel.

25. On paragraph 19(f) above, the expenditure is for organising specialised training programmes to empower parents to guide their children to use IT appropriately and intelligently for learning purposes.

26. On paragraph 19(g) above, the expenditure is for tertiary institutions to launch projects to enhance students' information literacy.

27. We expect minor adjustments may be required to the cash flow requirements across the respective financial years and among different measures as shown in paragraph 19 above according to the actual operational needs, but the overall level of the two new commitment items will not be exceeded. EDB will absorb from within its existing resources the recurrent costs involved in implementing various measures under the Third Strategy. Subject to the Finance Committee (FC)'s funding approval, EDB will start to implement the proposed measures, including disbursing the one-off grant to schools in 2007-08, so that the latter can plan and prepare earlier for their school-based IT in education development plans. We will also issue a finalised strategy document by mid-2008.

28. EDB has earmarked sufficient provision in the 2007-08 Estimates to meet the funding requirements of the above proposals. For 2008-09 and onwards, EDB will include relevant provisions in the draft Estimates of the respective years.

## **PUBLIC CONSULTATION**

29. The Government conducted a one-month public consultation on the Third Strategy from 26 October to 28 November 2007. We briefed the LegCo Panel on Education on the consultation document at its meeting on 12 November 2007 and reported the outcome of the consultation at its meeting on 14 January 2008. At its meeting on 31 January 2008, the Panel heard the views of deputations from the school sector and further discussed measures for strengthening technical support to schools in implementing IT in education and providing needy students with recycled computers. While the Panel supported the submission of the funding proposal to the FC for consideration, it requested the Administration to address the issues raised at the Panel meeting on 31 January 2008, including creation of permanent posts of IT co-ordinator and IT technician in schools, review of CITG, mode of developing the proposed depository of teaching modules, resources for replacing and upgrading IT facilities in schools, measures to narrow digital divide among students and raise the information literacy of parents, and the use of IT for education of students with special educational needs. EDB has responded to the issues raised in writing to the Panel on Education. We have also as appropriate explained our position in greater detail in the preceding paragraphs of this submission.

## **BACKGROUND**

30. In 1998, the Government announced the five-year strategy on IT in education and released the policy document "Information Technology for Learning in a New Era: Five-year Strategy – 1998/99 to 2002/03". Under the First Strategy, we focused on providing schools with necessary IT infrastructure and facilities, connecting them to the Internet and developing digital learning resources with a total funding of \$3,177.2 million approved by FC vide FCR(97-98)2, FCR(97-98)73 and FCR(98-99)71 on 18 April 1997, 5 December 1997 and 29 January 1999 respectively. To sustain the momentum of IT in education, we proposed and FC approved vide FCR(2004-05)27 and FCR(2005-06)14 on 2 July 2004 and 10 June 2005 a total funding of \$336 million to implement the measures under the Second Strategy document entitled "Empowering Learning and Teaching with Information Technology". The emphases were enhancing e-leadership in schools, enriching digital resources for learning, developing IT pedagogy, and involving the community in supporting IT in education.

31. The recent emergence of a more flexible, interactive, and student-centred learning environment, the availability of free-of-charge open educational resources, and changing technologies and practices call for a holistic strategy to respond to the changes. We believe that better school-based IT in education planning will enable school leaders to integrate IT into learning and teaching to improve students' learning outcome more effectively, and to create more room for redeployment of resources to meet their changing needs and priorities. This forms the basic thinking of the Third Strategy.

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Education Bureau  
February 2008