

ITEM FOR FINANCE COMMITTEE

HEAD 156 – GOVERNMENT SECRETARIAT : EDUCATION AND MANPOWER BUREAU

Subhead 603 Plant, vehicles and equipment

New Item “Replacement and upgrading of information technology facilities in public sector schools”

Subhead 700 General non-recurrent

New Item “Implementation of information technology in education strategy”

Members are invited to approve the creation of the following commitments for the implementation of another stage of the Information Technology in Education Strategy –

- (a) a new commitment of \$171.5 million under Head 156 Government Secretariat : Education and Manpower Bureau Subhead 603 Plant, vehicles and equipment for the replacement and upgrading of information technology facilities in public sector schools; and
- (b) a new commitment of \$40.2 million under Head 156 Government Secretariat : Education and Manpower Bureau Subhead 700 General non-recurrent for the implementation of various initiatives under the next information technology in education strategy.

/PROBLEM

PROBLEM

We need to provide funding for the implementation of another stage of our strategy on information technology (IT) in education with a view to equipping our younger generation to face up to the challenge of an increasingly knowledge-based and competitive world of tomorrow.

PROPOSAL

2. The Secretary for Education and Manpower proposes to create –
 - (a) a new commitment of \$171.5 million for the replacement and upgrading of IT facilities in public sector schools to better equip them to support today's need of IT in learning and teaching; and
 - (b) a new commitment of \$40.2 million for the implementation of various initiatives to embed IT in learning and teaching.

JUSTIFICATION*Another stage of our IT in Education Strategy*

3. The first IT in education strategy launched by the Government in 1998 came to an end in August 2003. Under the first strategy, we provided the public sector schools with the necessary IT infrastructure, and technical support as well as maintenance services for IT facilities. We also provided teachers with training on basic IT skills and application of IT in learning and teaching. We developed and pioneered with schools and the private sector digital resources relevant to schools' needs, and established the Hong Kong Education City (HKEdCity), a highly popular education portal which serves the education community. We also promoted an IT culture through various student and teacher activities, and partnered with the private sector to enhance the use of IT in learning and teaching.

4. On 16 March 2004, we issued a document "Information Technology in Education Strategy – Way Forward" to consult the public on the direction and implementation of the next stage of our strategy. The consultation closed in mid-May with positive feedback from the stakeholders concerned. The key stakeholders

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generally agreed with the main direction to further embed IT in learning and teaching. They are also supportive of our strategic goals under the next strategy, which are –

- (I) empowering learners with IT;
- (II) empowering teachers with IT;
- (III) enhancing school leadership for the knowledge age;
- (IV) enriching digital resources for learning;
- (V) improving IT infrastructure and pioneering pedagogy using technology;
- (VI) providing continuous research and development; and
- (VII) promoting community-wide support and community building.

5. Our plan is to begin phased implementation of the next IT in education strategy in the coming school year starting September 2004. We need to secure funding now so that we can advise the schools on the level of resources and the support that we will provide to them by mid-July, so that they can plan and prepare for their IT in education programmes for the coming school year.

6. The implementation of the next stage of our IT in education strategy will entail capital and non-recurrent expenditure of \$211.7 million, comprising \$171.5 million for replacing and upgrading of IT infrastructure facilities, and \$40.2 million for various measures including training, development and dissemination of educational resources, enhancing support and organizing activities. The beneficiaries will include all public sector schools (including government schools, aided schools and caput schools, and Direct Subsidy Scheme schools on hardware upgrading and replacement only).

Replacement and upgrading of IT facilities

7. To build on the first IT in education strategy, we need to ensure that schools' IT infrastructure will be able to support today's learning and teaching activities. Under the first strategy, public sector schools were provided with the necessary computer equipment (40 computers per primary school, 82 computers per secondary school and 30 computers per special school) and a Local Area Network (LAN) linking up the computer room(s), the computer-assisted learning room, the library and staff rooms. A survey conducted earlier this year shows that many schools have installed additional computers with their own resources. On average, a primary school has 91, a secondary school 247, and a special school 69 computers.

8. However, some computers were provided a long time ago (e.g. 15 computers for primary schools in the 1997/98 school year under the Multimedia Computer for Primary Schools Project). These computers entail high maintenance costs and are unable to support some current education software packages. To sustain and further embed IT in education, schools need to replace and upgrade these obsolete computer equipment by phases depending on their circumstances.

9. At present, primary, secondary and special schools have each been provided with three, six and three/five LCD projectors respectively. The LCD projectors enable all students in a classroom to watch from a common big screen, and facilitate interactive learning and teaching. Feedback from the recent consultation shows a demand for more LCD projectors to support the use of IT by more subject teachers concurrently.

10. We conducted a pilot scheme in 2003 on the use of Wireless LAN (WLAN) in eight primary and two secondary schools with very encouraging results, both in terms of use of technology and emergence of new pedagogy. The use of wireless technology greatly enhances IT accessibility and facilitates interactive learning with instant information browsing and sharing anywhere, any time. While we understand that not every school in Hong Kong is ready for the application of wireless technology as at today, we consider it worthwhile to expand the use of wireless technology to more schools. We will focus on those schools which are more advanced in integrating IT into their learning and teaching process at this stage. Wireless technology, with its associated portable equipment, can also be a solution to the problem of inadequate IT equipment in staff rooms.

11. Subject to schools' demonstrated needs, we plan to improve the IT infrastructure of schools by replacing or upgrading computer hardware in order to better support today's needs for learning and teaching (\$92 million), providing two to three additional LCD projectors and related systems to about 700 more schools (\$45 million) and extending the pilot scheme on wireless technology to schools which are more advanced in IT (\$34.5 million). Schools will be invited to submit their IT replacement and upgrading plans for the next three years commencing the 2004/05 school year, outlining the numbers and models of the computers and related systems that they plan to replace and/or upgrade, the relevant justifications and their plan on the use of replaced/upgraded hardware in support of learning and teaching. As an illustration, a primary school may apply for funding to upgrade about 50 old computers and/or replace some of them, and procure three additional LCD projectors. In addition, it may apply for funding to implement a WLAN with two connection points to supplement the existing wired LAN in school.

12. The Education and Manpower Bureau (EMB) will assist schools in the development of such plans and provide upgrading and replacement options. To minimize administrative work in the submission and processing of demand notes, schools will be provided with the approved funding upfront and have the flexibility to spread the use of the approved funding over three years in accordance with their own schedule of replacement/upgrading. The maximum fund to be disbursed to a primary school will be \$165,000; secondary school, \$188,000 and special school, \$145,000¹. About 1 099 school sites (565 primary, 461 secondary and 73 special) are expected to benefit. To ensure that the funds are used on the approved plans, schools are required to keep separate accounts of the funding received. At the end of the three-year period, any surplus will have to be returned to EMB.

13. Meanwhile, to maximize the use of resources, we will encourage schools to donate displaced computers under the programme which are still serviceable to students in need. We will also engage voluntary agencies to help distribute the displaced computers to needy students to help bridge the “digital divide” (see paragraph 14(VII) below).

Other initiatives under the next IT in education strategy

14. Apart from the replacement and upgrading of hardware, there will be other initiatives to support the goals of the next IT in education strategy. Details are set out below –

(I) Empowering Learners with IT

(a) “Information literacy” framework

To enable teachers and students to have a clearer picture on the learning targets of using IT in education, we plan to draw up an “information literacy” framework for primary and secondary /students

¹ The ceilings have assumed that –

- (a) for computer upgrading and replacement, each primary and special school would receive about \$76,600 to replace half of the 15 computers and the associated peripherals provided under the Multi-media Computers for Primary Schools project in 1998 or to upgrade about 50 computers, and each secondary school about \$99,500 to replace half of the 21 computers and associated peripherals in the S4-5 computer room or to upgrade about 70 computers;
- (b) for LCD projection system, except those schools already provided with extra projectors under other projects or those schools with six or below operating classes, each primary and secondary school would receive an additional \$60,000 for three such systems, and special school, \$40,000 for two such systems; and
- (c) for WLAN, each school in need would receive about \$28,800 for building access points and procuring mobile equipment.

students based on the IT Learning Targets for primary and secondary education. We also plan to produce interactive tool kits for schools and teachers on practical ways of using IT, and develop assessment tools for use by teachers to help them assess students' attainment of the learning targets in the context of "information literacy". We will implement the measures by engaging consultancy involving tertiary institutions. We estimate the expenditure to be about \$2 million.

(b) *E-learning*

To foster the development of e-learning, which is a key direction of our strategy, we plan to support research and evaluation on pedagogically appropriate e-learning platforms, and to help schools to set up such platforms, provide teacher training and enhance courseware. The costs for EMB to engage research and provide teacher training is estimated to be about \$1.3 million.

Subject to the needs of schools, we also plan to provide each school in need with funding of about \$7,000 for setting up an e-learning platform and procuring appropriate courseware. Based on the number of about 1 099 public sector school sites, the funding required is about \$7.7 million. Any surplus will be used for teacher training.

(II) Empowering Teachers with IT

(a) *Developing training platform and software*

To further empower teachers in the integration of IT in learning and teaching, we plan to enhance sharing and collaboration among teachers using exemplars and software that are proven to be effective in enhancing learning and teaching. We will develop, through the HKEdCity, an online training platform and more instructional software for teachers and request the HKEdCity to set up teacher communities to undertake and share pedagogical innovations, through online and face-to-face contacts. We estimate the expenditure to be \$1.5 million.

/(b)

(b) *Incentive schemes for developing instructional software*

We will support incentive schemes leading to the development of quality instructional software and further enhancement to the indexing and searching of available software resources. The schemes will mainly be public-private ventures and may be launched in partnership with the HKEdCity and/or tertiary institutions, together with textbook publishers and IT education media companies. Under this scheme the Government will finance part of the cost of developing the electronic materials and resources. We estimate the expenditure to be \$1 million.

(c) *Transforming “Centres of Excellence” into “Learning Centres”*

To help speed up the process of change, at least two of our existing Centres of Excellence² (one primary school and one secondary school) will be transformed into “Learning Centres” as a pilot. The “Learning Centres” will on the one hand continue to offer classes to students, and on the other hand provide an environment to facilitate teachers from different schools to get together to develop, share and disseminate innovative teaching and learning methods using the latest information and communication technologies. These “Learning Centres” will be suitably equipped with the requisite IT equipment and technology. Seconded teachers from the Centres of Excellence can make use of the centres to plan, develop, pilot and organize professional development programmes for teachers in four Key Learning Areas (Chinese, English, Mathematics and Science). They can also assist other teachers to plan and conduct lessons in the Centres. The funding required for this initiative is expected to be \$3 million for this financial year, covering the initial set-up costs involving limited equipment acquisition, a consultancy on programme development, the operational cost of the Centres for the initial year and hiring of supply teachers to relieve qualified teachers for the venture.

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² Under the first strategy on IT in education, we have established a regional network of 20 IT advanced primary and secondary schools as “Centres of Excellence”. These schools have two half-seconded teachers to provide support to schools which are less ready on the use of IT in learning and teaching. At present, these seconded teachers pay regular visits to schools to provide technical and pedagogical advice where appropriate and organize activities like seminars to facilitate sharing of experience. The arrangement has been proven to be effective in the implementation of the first strategy on IT in education.

(III) Enhancing School Leadership for the Knowledge Age

(a) Pilot training for school principals

We plan to pilot dedicated IT leadership training for school principals and to set up online communities as an e-platform to support principals' IT training. We will collaborate with local tertiary institutions and/or relevant overseas institutions in the pilot, and task HKEdCity to set up online communities to support the training and sustain the momentum of such training. We plan to identify reputable educationalists to host the on-line communities. The discussions within these communities will be edited and archived to form an online database for principals' reference. We estimate that the pilot will last for a year and cost \$3 million. Depending on the result of the pilot, the training can be held on an on-going basis to benefit more school principals.

(b) Strengthening "Centres of Excellence" network

To support schools on planning and implementing IT in education, we aim to strengthen the role of the "Centres of Excellence" network. In this regard, we plan to disburse \$0.5 million to the Centres for enhancing its activities, publications, promotion, and experience and knowledge sharing efforts. The funding will cover the purchase of consumables and hire of service pertinent to such programmes and activities.

(c) Assessment tools for schools' self-evaluation

To assist schools to conduct self-evaluation on the results of their implementation of IT in education, we plan to disseminate assessment tools for wide adoption in schools. The assessment tools have been developed under the "Overall Study on Reviewing the Progress and Evaluating the Information Technology in Education Projects 1998/2003" (the "Overall Study") which will be completed before the end of 2004 by the Hong Kong Polytechnic University. We plan to engage a tertiary institution to conduct a follow-on study to convert the tools used in the Overall Study into generic tools acceptable and easily usable by schools for self-evaluation, and prepare the requisite programme and publications for schools. The funding required is \$0.3 million.

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(IV) Enriching Digital Resources for Learning

(a) Production and adaptation of resource materials

To enhance the production and adaptation of resource materials, we plan to strengthen HKEdCity's role incrementally as a market facilitator. We will provide an estimated funding of \$3.5 million to HKEdCity for it to enhance production of resource materials, as well as licensing and adapting the contents of quality overseas e-learning materials for local use. We also plan to step up the publicity and dissemination of adapted works when they are posted to the HKEdCity.

(b) "Electronic learning credits" scheme

To encourage schools to acquire relevant electronic and interactive learning materials, we plan to pilot an "electronic learning credits" scheme. As a start, we will disburse grants (at \$10 per student) to all schools for purchase of such contents as well as curriculum-specific computer peripherals (e.g. dataloggers) for a period of 18 months to enhance the integration of IT in learning and teaching. The initiative would also call upon the HKEdCity to expedite and further enhance its Hong Kong Educational Software Platform (<http://www.hkedcity.net/esp/>) to facilitate schools to purchase the appropriate resources. Based on the number of students in public sector schools, the funding required is about \$10 million. We will claw back unspent funds from the schools at the end of 18-month period. In the long run, and subject to the results of the pilot, the purchase of these contents should be conducted on the web, e.g. through the HKEdCity when its electronic payment gateway is ready, and payments can be made direct from the Government to the vendors. This would on the one hand ensure that schools would devote a portion of their resources to acquire e-materials and start to use them, and on the other hand facilitate easy monitoring of the supply and demand for such materials, and encourage software vendors to develop and/or source quality educational resources for schools.

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(V) Improving IT Infrastructure and Pioneering Pedagogy Using Technology

Apart from improving the IT infrastructure of public sector schools as set out in paragraphs 7 to 13 above, we will encourage innovation and trials of new technology and equipment that may enhance learning and teaching. In this regard, we plan to launch in the 2004/05 school year a pilot to identify and disseminate leading practice in the use of interactive whiteboards in teaching and raising standards of various subjects in five primary and five secondary schools of varying degrees of application of IT in education. The pilot schools will also be exploring the software that come with the whiteboards, and explore educational uses that add significant value to the learning process that computers linked with ordinary LCD projectors cannot deliver. Moreover, we plan to engage a tertiary institution to conduct research and evaluation of interactive whiteboards with focus on the effective use of them in the classroom. The pilot is estimated to cost \$2 million.

(VI) Providing Continuous Research and Development

(a) *Identifying and developing exemplars*

For more effective sharing amongst teachers, we plan to work with tertiary institutions to identify and develop exemplars on learning paradigms and pedagogies, teaching methodologies, education resources, school practices, curriculum integration, and systems and networks. We plan to allocate \$1 million to support study and extrapolation by relevant institution(s), as well as to support the related publications and dissemination.

(b) *Collaborating with local and overseas communities*

To sustain the development of IT in education, we plan to explore the setting up of a research centre in Hong Kong to pioneer leading edge applications in support of proven educational precepts, and to come up with creative means of applying IT in pedagogy, learning and teaching and other education purposes. A budget of \$0.2 million, mainly for the incidental expenditures involved at this exploratory stage (e.g. fees associated with overseas experts or consultants) is proposed for this venture. Should this initiative materialize, other sources of funding to cover the longer term running costs (e.g. office accommodation, equipment and operational expenses) will need to be explored.

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(VII) Promoting Community-wide Support and Community Building

(a) Programmes for Parent-Teacher Associations

We will earmark \$2 million for planning and implementing parental programmes on ethical, legal and health issues of IT. The purpose is to actively involve parents in the promotion of IT in education.

(b) Collaborative schemes with the private sector and NGOs

To sustain and enhance the participation of the private sector and Non-Government Organizations (NGO) in furthering the cause of IT in education, we plan to allocate \$1 million in support of the following collaborative schemes –

- (i) a call centre service to answer queries and problems encountered by students and teachers;
- (ii) an “Adopt a School” campaign³ by the private sector to assist schools’ transformation into innovative learning institutions;
- (iii) forums and events to foster IT culture in schools;
- (iv) guidance on provision of maintenance, administration and management of computer network; and
- (v) guidance to schools on IT security, skill sets required for IT technical staff and training roadmap for the development of technical personnel.

(c) “Computer recycling” and donations to help needy students

To help needy students from families which are not financially capable to purchase computers at home with a view to bridging the “digital divide”, we plan to encourage “computer recycling” and donations. In this connection, we propose to allocate \$0.2 million in support of collaborative schemes with NGOs and schools and enhance the support services associated with such schemes.

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³ Under the proposed “Adopt a School” campaign, a private sector company may select a specific school and offer targeted assistance to the “adopted” school in IT in education. The form of assistance may not be confined to donations in money, but may also include support in kind, such as technical advice on IT infrastructure, call centre support services, voluntary work by the staff, and any other innovative form of partnerships.

15. Apart from additional funding proposed by the Government, schools may continue to resort to other sources of funding, such as the Composite Furniture and Equipment Grant, disbursement from school sponsoring bodies and funds raised by Parent-Teacher Associations, etc. to further promote the use of IT in education. The Quality Education Fund will also encourage innovative IT in education projects proposed by schools.

FINANCIAL IMPLICATIONS

16. The proposals will require additional capital expenditure of \$171.5 million and other non-recurrent expenditure of \$40.2 million. The bulk of the funding required is expected to be disbursed in the 2004/05 financial year. We have already earmarked sufficient funding in the 2004-05 approved Estimates for the purpose. The expenditure items are summarized as follows –

	Total \$million
<u>Expenditure under the Capital Account, Subhead 603</u>	
Improving IT infrastructure and pioneering pedagogy using technology – Replacement and upgrading of IT facilities	171.5
<u>Non-recurrent Expenditure under the Operating Account, Subhead 700</u>	
Empowering learners with IT	11.0
Empowering teachers with IT	5.5
Enhancing school leadership for the knowledge age	3.8
Enriching digital resources for learning	13.5
Improving IT infrastructure and pioneering pedagogy using technology	2.0
Providing continuous research and development	1.2
Promoting community-wide support and community building	3.2
<i>Total</i>	<hr/> 211.7 ===== /17.

17. In terms of recurrent costs, the maintenance of the replaced/upgraded computer equipment will continue to be met from existing recurrent resources provided to schools for supporting their recurrent IT requirements such as hiring of technical support service and maintenance (for the 2004-05 school year, a composite IT grant amounting to \$190,000 to \$280,000 per school depending on class structure will be disbursed).

BACKGROUND INFORMATION

18. In 1998, the HKSAR Government announced the 5-year strategy on IT in education and issued the policy document “Information Technology for Learning in a New Era: Five-year Strategy – 1998/99 to 2002/03”. The vision was to link up our students with the vast network world of knowledge, and to develop in our students’ attitude and capability for independent and lifelong learning. After the successful completion of the first strategy in 2002/03, the EMB released the consultation document “Information Technology in Education – Way Forward” in March 2004 to collect public views and to chart the next strategy of using IT in school education. The new strategy is to sustain and enhance the momentum of IT in education and to further embed IT in learning and teaching.

19. On 21 June 2004, we consulted the Legislative Council Panel on Education on the proposal. The Panel generally supported the next strategy on IT in Education.

Education and Manpower Bureau
June 2004