For discussion
on 9 November 2015

Legislative Council Panel on Education

**Progress on Implementation of
the Fourth Strategy on Information Technology in Education**

Purpose

This paper updates Members on the latest progress on the implementation of various actions under the Fourth Strategy on Information Technology in Education (ITE4) which was formally launched at the commencement of the 2015/16 school year after getting funding approval from the Legislative Council in May 2015.

Goal of ITE4

2. Harnessing information technology (IT) in education is the key to strengthening and facilitating learning and teaching in the 21st century. Against a vibrant digital context in Hong Kong as set out in the Government's Digital 21 Strategy, "Smarter Hong Kong, Smarter Living"[1], and riding on our world-class information and communication technology infrastructure[2], the proliferation of mobile computing devices, such as smartphones and tablet computers, and the rich information provided on the Internet, have enabled learning to take place beyond the confines of time and space. Learning will become more interactive and, more importantly, self-directed, collaborative and personalised.

3. The Education Bureau (EDB) officially launched the ITE4 in the 2015/16 school year. We aim to strengthen students' problem-solving, collaboration and computational thinking competency, enhance their creativity and innovation, and even entrepreneurship, as well as to nurture the students to become ethical users of IT for pursuing life-long learning and whole-person development through leveraging technology and the

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[1] Source at: <http://www.digital21.gov.hk>.
[2] According to the World Competitiveness Year Book by the International Institute for Management Development, Hong Kong has been ranked first in technological infrastructure in the same study for five consecutive years since 2011.

capacity of IT.   To achieve this goal, we have adopted a holistic approach under which six actions[3] have been formulated.   The progress on the implementation of measures under these actions is outlined below.

Action 1 -   Enhancing schools' IT infrastructure and re-engineering the operation mode

4.   EDB is committed to enhancing the WiFi access in all classrooms of the public sector schools in Hong Kong by phases.   EDB launched the Support Scheme for e-Learning in Schools ("WiFi 100" Scheme) as a pioneer measure to enhance the WiFi infrastructure in 100 schools in the 2014/15 school year.   Among them, there were 20 schools of which the infrastructure was not the most advanced and the social-economic status of students was relatively low, but other conditions for e-learning were equally strong as compared with other schools[4].   We appreciate that all of them have made good progress in practising e-learning with the enhanced WiFi infrastructure.   In particular, they have successfully pioneered an out-sourcing model whereby schools will only need to subscribe for the service of construction and maintenance of a stable and high capacity WiFi infrastructure.   Most of them have become "resource schools" in sharing experiences with the rest of around 900 schools.   With a view to putting in place the enhanced WiFi infrastructure in these 900 schools, we invited them to express their interest under the "WiFi 900" Scheme in February 2015.   School returns indicated that 411, 290 and 136 schools plan to complete their WiFi infrastructure enhancement in the 2015/16, 2016/17 and 2017/18 school years respectively, while some 40 schools have not got the plan ready due to various constraints such as reallocation of school premises, change in schools' senior management, etc.   We will closely liaise with these schools with a view to facilitating them in finalizing the WiFi infrastructure enhancement plan as soon as practicable.

5.   For the first-batch of 411 schools under the "WiFi 900" Scheme, we have disbursed both the one-off and extra recurrent grants to them by August 2015 after the funding approval given by the Legislative Council. The schools were provided with one-off funding of $100,000 per school on average for acquisition of mobile computing devices and recurrent funding of $70,000 per school on average for payment of WiFi services and mobile

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[3] Details of the six actions of ITE4 are available at <http://www.edb.gov.hk/ited/ite4>.
[4] A list of the selected schools was provided to the Panel in March 2014.

computing devices maintenance fees.

6.   According to the results of a survey conducted in October 2015, about 86% of the first-batch schools adopted subscription mode for WiFi services. 81% of these schools found the services provided by the contractors at acceptable or above levels. Besides, over 60% of the schools have already completed the WiFi infrastructure enhancement while most of the rest will complete the work by December this year.   We will continue to provide support, such as technical support to schools by our technical advisory team on user acceptance tests, on-site school visits, etc., wherever appropriate.   In view of the experiences consolidated from the first-batch schools, we will organise briefing sessions for the second-batch schools and provide them with reference materials in December 2015 for their early preparation for enhancement of WiFi infrastructure by 2016/17 school year.

7.   To enhance the capacity of schools in utilising the WiFi environment for e-learning, we have been providing ongoing professional development programmes (PDPs) to teachers since April 2014 to facilitate schools' planning for "Bring Your Own Device" (BYOD), covering issues on use of mobile computing devices to enhance learning and teaching, classroom management, student discipline and responsibilities in using mobile devices, guidelines on the formulation of Acceptable Use Policy, and communication with stakeholders including parents.   Reference materials were also provided.   Some 1 300 primary and secondary school teachers, including school heads/deputy school heads have attended these PDPs.

Action 2 - Enhancing the quality of e-learning resources

8.   The EDB has been providing support measures to develop local quality e-textbooks with e-features and interactive learning activities, to leverage global e-learning resources as well as to promote the sharing of resources in the education sector.

9.   On the e-textbook front, the "e-Textbook Market Development Scheme" (EMADS) has paved way for the development of a healthy, rich and sustainable e-textbook market for our local curricula since 2012. Under EMADS, having undergone a vigorous quality assurance mechanism,

there are currently 26 sets of e-textbooks covering various subjects included on the Recommended e-Textbook List (eRTL). Upon the completion of Phase Two of the EMADS in mid-2016, a further 8 sets of e-textbooks will be developed.

10.   To ride on the quality assurance mechanism and the experiences of e-textbooks developed under EMADS, the open market for e-textbooks for local curricula has been in place since 2014 as e-textbooks of different subjects are accepted for review in stages. E-textbooks that have undergone the quality assurance mechanism will be included on the eRTL like those recommended in the EMADS. We aim to open up the e-textbook review for all subjects by 2016.

11.   Textbooks are by no means the sole resources in support of learning and teaching. There are also various free resources developed by EDB for teachers' use to reduce their reliance on textbooks. The learning and teaching resources covering different Key Learning Areas (KLAs)/subjects at various stages of learning are provided on the EDB One-stop Portal. We will continue to enrich and update the resources therein to enable teachers to obtain relevant materials to facilitate learning and teaching. With a better search engine installed since September 2015, teachers have found it easier to search the e-resources on the EDB One-stop Portal.

12.   The Hong Kong Education City Limited (HKECL) will be provided with a one-off grant of $10 million to leverage and acquire both local and overseas e-learning resources for our teachers and students. HKECL is devising the implementation plan, including the setting up of a steering committee with participation of front-line teachers to take forward the acquisition arrangements. To facilitate teachers to evaluate their students' performance, teachers with a valid HKECL teacher account can access the Assessment Tasks Bank developed by HKECL.

13.   In addition, HKECL has collaborated with EDB to develop the online integrated services platform which includes the extended "EdMall" platform to support publishers to display their ebooks and for distribution to end-users, "EdBookShelf" for users to read ebooks from different publishers with Single Sign-on functions, "Interactive Book Portal Editor/Management System" for publishers to create, edit and upload

e-books, and "Learning Data Interface" to support exchange of learning data. Phase One of the integrated services platform, including the first three components mentioned above, has been completed since September 2014. Refinements under Phase One have also been completed while the fourth component has been launched under Phase Two in September 2015. Further fine-tuning will take place in the 2015/16 school year.

Action 3 - Renewing curriculum, transforming pedagogical and assessment practices

14.   The importance and updated applications of IT as a learning goal to unleash the learning power of students in the whole school curriculum, ongoing curriculum renewal and relevant pedagogical and assessment development of all curricula in alignment with ITE4 have been stressed. This was reflected in the report to the Panel meeting on 15 July 2015 on the recommendations of the New Academic Structure Medium-term Review relating to the senior secondary curriculum and assessment issues.

15.   To articulate the learning objectives, including self-directed learning, collaborative learning of reading and writing through online tools, problem-solving and ethical use of IT, etc. into the school curriculum, we are updating the Secondary Education Curriculum Guide as well as the corresponding KLA Guides which will be available in 2016.

16.   With a view to nurturing students' problem-solving skills through equipping them with programming-related capabilities, such as computational thinking and coding, we are committed to providing different entry points of learning within relevant KLAs/subjects, including Science Education, Technology Education and General Studies, as well as Applied Learning courses. To this end, EDB has been providing teachers with a wide range of PDPs[5] and resources, including the eight modular Computer Awareness Programmes (CAPs)[6] which has been updated in August 2015 for schools' use.

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[5]   The PDPs cover topics like using visual programming language (e.g. Scratch, App Inventor) to enhance students' programming-related capabilities, using the modular approach and subtasks in teaching programming, using robot in teaching programming, curriculum planning and effective use of resources in teaching and learning Information and Communication Technology, etc.

[6]   The updated CAPs are available at :
<http://www.edb.gov.hk/en/curriculum-development/4-key-tasks/it-for-interactive-learning/modular-computer-awareness-programme/index.html>.

17.   EDB will continue to encourage students to participate in activities and competitions[7], both local and international, so as to stimulate students' interest and technological innovations in computing science.   Furthermore, we have been working in partnership with the Hong Kong Science and Technology Parks Corporation to supplement the school teaching progammes with the learning element on the use of robots since the 2014/15 school year.

18.   We will continue to encourage schools to use e-assessment more widely and some well-developed e-assessment platforms and diagnostic tools that would provide instant feedbacks.   An example is the online Student Assessment (SA) on the basic competencies of the core subjects, Chinese Language, English Language and Mathematics.   We have planned to expand the online question bank of SA with a view to covering a wider scope of the curricula for Chinese Language, English Language and Mathematics for Key Stages 1-3.

19.   Meanwhile, the Government has selected eight secondary schools as partner schools to participate in the Enriched IT Programme in Secondary Schools in July 2015 aiming to cultivate young IT professionals and if applicable, entrepreneurs to meet the development needs of a digital society which are in line with ITE4.   The Office of the Government Chief Information Officer together with EDB are providing on-going support to these schools as appropriate.

Action 4 - Building professional leadership, capacity and communities of practice

20.   Professional capacity and repertoire of principals to lead and of teachers to apply in learning and teaching is at the heart of effective learning and teaching.   The comprehensive series of PDPs for school leaders, including principals and middle management personnel/curriculum leaders, and teachers have been implemented.   From September 2014 to October 2015, 1 362 school leaders and 8 077 teachers have already attended these PDPs.

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7   Our students, for example, have got the Best Award at the China Adolescents Science and Technology Innovation Contest, 2015 and with three silver medals at the International Olympiad in Informatics, 2015.

21.   To enable and facilitate teachers to establish solid pedagogical use of e-textbooks and e-learning resources, the contents of the tailor-made PDPs we have provided cover pedagogical issues, KLA/subject-related series for teachers, technological series for IT heads for keeping abreast of the world-wide trend, e-Leadership series for school leaders and e-Safety series for all stakeholders including parents.

22.   Schools and teachers also learn by learning and sharing with their peers.   In the 2015/16 school year, we have increased the number of ITE "resource schools", i.e. Centre of Excellence (CoE) from 12 to 20.   Their services have also been enhanced, in particular, through the provision of on-site support to schools.   By the end of October 2015, we have already received more than 110 requests from schools for support services.   It is about 70% of the 155 support services requested in the 2014/15 school year. To better serve the needs of schools and scale up the formation of learning communities, we have also placed emphasis on the provision of district-based school network programmes being arranged and supported by CoEs.   These programmes aim to facilitate the forming of communities of practice.   Besides, CoEs work together with various professionals to produce reference materials in the form of short videos on e-learning pedagogies, technical solutions as well as e-safety promotion.   The materials will be uploaded on our webpage and the "Go e-learning" webpage[8] of HKECL for reference of the stakeholders.

Action 5 - Involving parents, stakeholders and the community

23.   We have provided a series of measures to support parents and schools on issues related to e-learning and e-safety so that parents can guide their children for effective, ethical and legal use of IT in learning. We have worked with various community stakeholders, including HKECL, the Association of IT Leaders in Education, the Committee on Home-School Co-operation, the Hong Kong Parents Association Limited, the Hong Kong Institute of Family Education, etc. to provide ongoing training for parents on health issues in relation to e-learning.   To reach out to parents, we have been organising a series of eight conferences on e-learning in the 2015/16 school year.   Resources, such as a leaflet on tips for parents in supporting their children for e-learning, will be published and distributed.   We will also continue to provide the ongoing hotline service

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[8] "Go-eLearning" is available at <http://www.hkedcity.net>.

on e-safety to support individual parents, teachers and students in need.

Action 6 - Sustaining a coherent development of ITE

24.   With a view to sustaining the impact of ITE and fine-tuning the support measures of ITE4, EDB will consolidate, deploy and disseminate knowledge and practices developed in previous ITE strategies, evaluation studies and other projects to continue and sustain pedagogical innovations of e-learning.   Ongoing researches and evaluation studies have already been planned to gauge the progress of ITE4.   These would include school surveys, case study research, and other methodologies that would provide useful information on the implementation of ITE4 and the impact of e-learning.

25.   HKECL has launched a new website of "Go eLearning" recently to consolidate and disseminate knowledge and practices on e-learning for teachers' easy reference.   This website will place emphasis on introducing classroom tools and practical examples for mobile learning environment. The contents will be updated regularly to keep abreast of the latest development of ITE and the world trend.   Besides, CoEs mentioned above will line up various means of professional support, for example, the Quality Education Fund Thematic Network, tertiary institutions, IT associations and industry as well as schools/teachers with exemplary practices in different KLAs and pedagogical issues in e-learning, etc. to provide district-based/onsite thematic support to schools on request.

Advice Sought

26.   Members are invited to note and give their views on the progress of the implementation of ITE4 as set out in this paper.

Education Bureau
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