

Report on the Fourth Strategy on Information Technology in Education

Realising IT Potential

Unleashing Learning Power

A Holistic Approach



Education Bureau

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Foreword

To reap the full benefits of the global technological proliferation and advancement, as well as the position and role of Hong Kong in the national “One Belt One Road” Initiative, our Government is committed to leading Hong Kong toward a knowledge-based economy and to become a smarter city. Also, we have been tapping into the power of IT to strengthen and facilitate learning and teaching in the 21st century and to enable our students to be self-directed learners with talents and virtues for making contributions to society, country and the world, in addition to their personal achievement. With the concerted efforts of the community, the three IT in Education Strategies launched since the 1998/99 school year have witnessed progressive advancements in schools’ IT infrastructure, e-learning resources, teachers’ professional capacity and students’ digital literacy.

The Fourth Strategy on Information Technology in Education (ITE4) is formulated to unleash the learning power of all our students to learn to learn and to excel through realising the potential of IT in enhancing interactive learning and teaching experiences. With IT-rich school environment, schools’ professional leadership and capacity, and the support from community partnerships, we aim **to strengthen students’ self-directed learning, 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 capacity of IT.** We will sustain the development of ITE through synergizing resources and professional support to enhance teachers’ repertoire and their effectiveness of learning and teaching. Ongoing research studies and evaluations will be conducted continuously for programme refinements.

As ITE4 has far-reaching implications on the overall development of school education, as well as the future development of Hong Kong as a whole, the Education Bureau published the *Consultation Document* on 7 May 2014. This was followed by a two-month public consultation to collect feedback of different stakeholders from the education and other sectors in the community. We have organised more than 18 consultation sessions with some 1000 participants, including school principals, teachers, parents and students as well as representatives from the IT, publishing and tertiary education sectors. We also received 55 written submissions during the consultation period.

I would like to express my sincere gratitude to all the stakeholders for their valuable comments and suggestions tendered during the consultation period. They have expressed support for the goal, principles and the proposed actions of ITE4 generally. There is a general consensus that ITE4 will enable students to develop self-directed learning which will in turn empower them to pursue whole-person development and life-long learning. In response to the feedbacks, we have duly reviewed and fine-tuned ITE4 and the actions where appropriate.

I am confident that the recommended actions in this Report would take us forward in our pursuit of quality education. I also appeal to our partners in the education sector and the community at large to work together to implement the recommendations for the achievement of the goal of the strategy: realizing IT potential and unleashing the learning power of our students to learn to learn and to excel.

Eddie Ng
Secretary for Education

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Chapter 1 Introduction

Community Participation in Formulating the Fourth Strategy on IT in Education

Background

1.1 Harnessing IT in education is the key to strengthening and facilitating learning and teaching in the 21st century. This goes hand in hand with our education reform in Hong Kong. The three IT in Education Strategies launched since the 1998/99 school year have brought about progressive advancement in making use of IT and e-learning resources to facilitate and enhance learning and teaching at schools. The 2014 Policy Address has proposed the Fourth Strategy on IT in Education (ITE4) as one of the measures to let the youth flourish and unleash the potential of Hong Kong. The Education Bureau (EDB) launched a public consultation on ITE4 in May 2014 to collect views and suggestions on the goal and the proposed actions of the Strategy.

Public Consultation

1.2 The *Consultation Document* entitled *The Fourth Strategy on IT in Education: Realising IT Potential, Unleashing Learning Power - A Holistic Approach* was published on 7 May 2014. This was followed by a two-month public consultation to collect feedback from various stakeholders in the education and other sectors in the community on the goal of ITE4, the five proposed actions, implementation details and financial arrangements.

Consultation Process and Feedback

Dissemination and interactive engagement

1.3 A multiple-strategy and multiple-stakeholder approach was adopted in the consultation exercise. Information about ITE4 was disseminated through various channels such as publications, designated website, seminars and meetings as well as media

publicity programmes. The stakeholders and the public at large have tendered useful feedbacks for our reference and consideration through discussion on various consultation occasions, mass media as well as written submissions¹. A summary of the major feedbacks is in **Appendix 1**.

- 1.4 The *Consultation Document*, together with the *Executive Summary*, was uploaded to a designated website for public consultation during the two-month consultation period. In addition, a printed information leaflet on ITE4 was distributed to the participants of the consultation activities. The consultation also generated a great deal of public interests and discussions which were widely reported in the media².
- 1.5 Besides, EDB administered a questionnaire survey in the briefing sessions to collect feedbacks of the school heads and teachers on specific issues of ITE4. Among the 522 participants, 344 have responded to our survey, representing a response rate of 66%. The majority of respondents agree or strongly agree with the goal of the ITE4 (79%) and the adoption of a holistic approach to implement ITE4 in tandem with the curriculum reform (74%). A summary of the survey findings on the five proposed actions is in **Appendix 2**.
- 1.6 In general, the stakeholders and the public at large have shown support for the goal, implementation approach and the five proposed actions of ITE4. There is a general consensus that ITE4 will enable students to develop self-directed learning which is conducive to pursuing whole-person development and life-long learning. We have also received support as well as feedbacks to enhance or fine-tune the implementation measures.

¹ During the consultation period, EDB received 55 written submissions through e-mails and fax from various stakeholders in the school sector, educational bodies, associations of IT in education, business and professional organisations, and members of the public.

² Throughout the two-month consultation period, we met about 850 stakeholders who shared their views and comments on ITE4.

Purpose of the Report

- 1.7 The purpose of this report is to chart the way forward based on the feedbacks received during the consultation exercise. Each chapter sets out the proposal under consultation, major areas of support, concerns and the way forward for each proposed action.

Organisation of the Report

- 1.8 This chapter sets out the background to the consultation on ITE4 and describes the multiple-strategy and interactive approach adopted in the consultation exercise. In Chapter 2, we restate and put together the policy contexts, purposes and principles underpinning the proposed actions.
- 1.9 Chapters 3 to 7 cover the concerns and suggestions received and elaborate on our support measures covering the five proposed actions, including enhancing schools' IT infrastructure and re-engineering the operation mode, enhancing the quality of e-learning resources, renewing curriculum, transforming pedagogical and assessment practices, building professional leadership, capacity and communities of practice, as well as involving parents, stakeholders and the community.
- 1.10 In Chapter 8, EDB introduces Action 6 which is new to the five proposed actions. We will strive to sustain the development of ITE through synergizing resources and transforming the roles of the Centre of Excellence Scheme in aligning with various means of professional support. Besides, to capture the outcomes and fine-tune the implementation of ITE4, EDB will conduct ongoing researches, interim school surveys and evaluation study of ITE4 in the process to examine the effects resulting from the changes, and to identify support measures, wherever appropriate.
- 1.11 Chapter 9 summarises the funding arrangement for the proposed actions and the way forward.

Chapter 2

The Policy Context, Purpose and Guiding Principles – Realising IT Potential, Unleashing Learning Power

The Policy Contexts

2.1 The following paragraphs outline the evolving contexts within which the ITE4 takes shape – the macro environment, our strengths and the experiences gained from previous strategies on IT in education and other interim e-learning projects.

The macro environment

2.2 The ITE4 is formulated against the following macro environment:

- (a) With the advancement in mobile technology, lowering of prices and ever-increasing growth in the use of mobile computing devices, students can access different learning resources on the Internet and communicate with their peers and teachers almost anywhere and anytime.
- (b) To continue to respond to the changing world and to maintain the competitiveness of Hong Kong in the 21st century, our education should continue to promote students' whole-person development and foster their life-long learning capabilities. There is a great need to strengthen digital literacy, self-directed learning, collaboration and problem-solving competency as well as creative and innovative thinking skills of our students.
- (c) The 2014 Policy Address³ has given support for the formulation of ITE4 to enhance self-learning ability. The public consultation on 2014 Digital 21 Strategy – Smarter Hong Kong Smarter Living⁴ released by the Government has also emphasised the importance of having a

³ 2014 Policy Address: <http://www.policyaddress.gov.hk/2014/index.html>

⁴ 2014 Digital 21 Strategy: <http://www.digital21.gov.hk/eng/index.htm>

technological-innovative environment with broadband and WiFi access for schools to drive e-learning.

- (d) The broad blueprint of the “One Belt One Road”⁵ Initiative released by the Central Government in 2015 will provide Hong Kong with new business opportunities arising from the enlarged regional economic cooperation. To capitalize on the new opportunities, our students have to equip themselves with technological and innovative competence and skills to participate in the Initiative and make contributions to the national development.
- (e) A number of educational reform initiatives, in particular those relating to the school curriculum⁶, have been launched and put in place since 2000. ITE4 is a necessary step to support and realise the benefits of these initiatives in full.

Strengths and experiences

2.3 In line with the global trend of harnessing IT to facilitate learning and teaching, the Government has invested over \$10 billion in three strategies on ITE and other e-learning initiatives since the 1998/99 school year. The achievements made and the experiences gained contribute to the formulation and implementation of ITE4 in various ways:

⁵ In 2013, the Central Government revealed a strategic vision to foster closer cooperation amongst places far and near lying on two ancient economic corridors, namely "Silk Road Economic Belt" and "21st Century Maritime Silk Road" ("One Belt One Road"). Essentially, the "One Belt One Road" is an enlarged form of regional economic cooperation stretching across five continents.

Sources: <http://www.budget.gov.hk/2015/eng/budget17.html> and
<http://www.info.gov.hk/gia/general/201508/13/P201508130526.htm>

⁶ Curriculum documents and reports:
<http://www.edb.gov.hk/en/curriculum-development/cs-curriculum-doc-report/about-cs-curriculum-doc-report/index.html>

- (a) The First Strategy (1998/99 – 2002/03)⁷ witnessed significant progress in the provision of IT infrastructure comprising hardware facilities, networks and Internet connection for schools, and launching of large-scale professional development programmes to enhance the IT competence of teachers.
- (b) The Second Strategy (2003/04 – 2006/07)⁸ aimed to enhance the capacities of students and teachers to use IT for learning and teaching with the provision of professional development programmes and e-learning resources.
- (c) The Third Strategy (2007/08 – 2013/14)⁹ focused on the human factor necessary for the integration of IT into learning and teaching and the appropriate use of IT. Schools were empowered to formulate school-based ITE development plans on deploying digital learning resources and IT-related pedagogies appropriately, to cultivate students' information literacy¹⁰ for effective, ethical and legal use of information in the e-learning world, and to encourage parents to become effective facilitators of their children's e-learning in the home environment.

⁷ The First Strategy on IT in Education: Information Technology for Learning in a New Era Five-Year Strategy 1998/99 to 2002/03 (November 1998): <http://www.edb.gov.hk/attachment/en/edu-system/primary-secondary/applicable-to-primary-secondary/it-in-edu/five%20year%20strategy%2099%20to%2003.zip>

⁸ The Second Strategy on IT in Education: Empowering Learning and Teaching with IT (July 2004): http://www.edb.gov.hk/attachment/en/edu-system/primary-secondary/applicable-to-primary-secondary/it-in-edu/doc_english.pdf

⁹ The Third Strategy on IT in Education: Right Technology at the Right Time for the Right Task (December 2008): <http://edbsdited.fwg.hk/3ITED/>

¹⁰ Information literacy is about the capacity of people to recognise their information needs, locate and evaluate the quality of information, store and retrieve information, make effective and ethical use of information and apply information to create and communicate knowledge (UNESCO, 2008).

- (d) Schools have been provided with a recurrent Composite Information Technology Grant (CITG)¹¹ since the 2004/05 school year as a source of ongoing funding to meet their operational needs for ITE.
- (e) We have spent about \$90 million to organise a wide range of professional development activities¹² for educational professionals over the years to enhance their knowledge and skills to promote e-learning.
- (f) Various strategic e-learning initiatives have also been launched in schools since the 2010/11 school year, including:
 1. A three-year Pilot Scheme on e-Learning in Schools¹³ with a non-recurrent commitment of \$68 million since 2011 to tap into the changing pedagogical practices and pave the way for wider adoption of e-learning in schools.
 2. The e-Textbook Market Development Scheme (EMADS)¹⁴ implemented since 2012 with a non-recurrent commitment of \$50 million to facilitate the development of e-textbooks in line with the local school curricula for use starting from the 2014/15 school year.
 3. The Support Scheme for e-Learning in Schools¹⁵ with another non-recurrent commitment of \$50 million since early 2014 to enhance the IT infrastructure of 100 schools for using e-textbooks and e-learning resources.

¹¹ The Composite Information Technology Grant (CITG):
<http://www.edb.gov.hk/en/edu-system/primary-secondary/applicable-to-primary-secondary/it-in-edu/citg.html>

¹² IT in Education Professional Development Programmes:
<http://www.edb.gov.hk/en/edu-system/primary-secondary/applicable-to-primary-secondary/it-in-edu/pdp-ited.html>

¹³ The Pilot Scheme on e-Learning in Schools: <http://edbsdited.fwg.hk/e-Learning/eng/>

¹⁴ The e-Textbook Market Development Scheme (EMADS):
<http://www.edb.gov.hk/en/curriculum-development/resource-support/textbook-info/emads/index.html>

¹⁵ The Support Scheme for e-Learning in Schools:
<http://www.edb.gov.hk/en/edu-system/primary-secondary/applicable-to-primary-secondary/it-in-edu/supportscheme/index.html>

4. Setting up of the Hong Kong Education City Limited (HKECL)¹⁶ to develop and operate a portal to provide information, resources and services for various stakeholders on use of IT in improving the effectiveness of learning and teaching, including the EDB One-Stop Portal for Learning and Teaching Resources putting together relevant digital learning resources for easy access and the EdMall facilitating sourcing of commercial e-learning packages.
5. Implementation of various school-based ITE programmes with the funding support of some \$1.95 billion from the Quality Education Fund¹⁷. They prove beneficial for promotion of life-long learning and whole-person development of our students.

2.4 To move ahead, we are keenly aware of our strengths and experiences, being the positive drivers, and should not lose sight of the limitations.

Positive drivers

- (a) The Government is committed to investing in education, particularly harnessing IT in education to sustain the development of knowledge-based economy.
- (b) Parents and the community attach much importance to the use of IT in education for our young people and how it can support their learning and teaching more effectively.
- (c) Our schools' IT infrastructure has been upgraded over the years with a high level of student accessibility to computers in the school campus.

¹⁶ Hong Kong Education City Limited: <http://www.hkedcity.net/>

¹⁷ Quality Education Fund: <http://www.qef.org.hk/>

- (d) By international standards, Hong Kong students achieve well in a number of areas. For example, Hong Kong's 15-year-old students ranked third in the digital reading literacy assessment in the Programme for International Student Assessment (PISA) 2012¹⁸, which is two places higher than the fifth position in 2009. The result shows that the performance of our students has been improving significantly over the years due to the resources invested in the ITE strategies and the promotion of "Reading to Learn" under the curriculum reform.
- (e) Proficiency in IT skills has been one of the Seven Learning Goals in Hong Kong's curriculum reform which emphasizes ongoing renewal with innovations, including the use of the latest developments in IT to raise the quality of learning among students. ITE4 will work in synergy with the latest curricular and pedagogical developments such as those highlighted in the professional development programme of Learning to Learn 2.0: From Macro Planning to Micro Implementation¹⁹.
- (f) Hong Kong has a diligent teaching force. The professionalism of our teachers has been raised through significant upgrading of qualifications and participation in the education reforms.

Limitations

- (a) The IT hardware in schools such as WiFi coverage and bandwidth may not be sufficient to sustain more use of e-learning resources and mobile computing devices in learning and teaching on a wider scale in the school campus.
- (b) Some schools do not have well-structured and long-term planning for the implementation of e-learning.

¹⁸ Source: <http://www.oecd.org/pisa/keyfindings/pisa-2012-results-volume-I.pdf> (P.501, Annex B3-Table B3.I.9)

¹⁹ Source: <http://334.edb.hkedcity.net/EN/140520.php> held in May 2014

- (c) Some students, while interested in playing online games, need more motivation to make use of e-learning resources in their learning process.
- (d) The adoption of e-learning and the related paradigm shift can be demanding to some teachers as they may not have sufficient know-how on using IT to improve the effectiveness of learning and teaching. We need to encourage sharing among schools to identify effective means to maximise the professional capacity of teachers.
- (e) Research studies suggest that effective deployment of IT in learning and teaching depends not only on infrastructure, administrative planning and technical support, but also on school curriculum policy and leadership.
- (f) Parents and the community have concerns on health issues such as eyestrain from using computing devices for extended period of time.
- (g) The community may not have thorough understanding in ITE4. We should maintain effective and on-going communication with various stakeholders including schools, teachers, parents and students, etc., to ensure common understanding and coherent efforts throughout the implementation of the proposed actions.

Proposal

2.5 Student learning is central and the goal of ITE4 is to unleash the learning power of all our students to learn to learn and to excel through realising the potential of IT in enhancing interactive learning and teaching experiences.

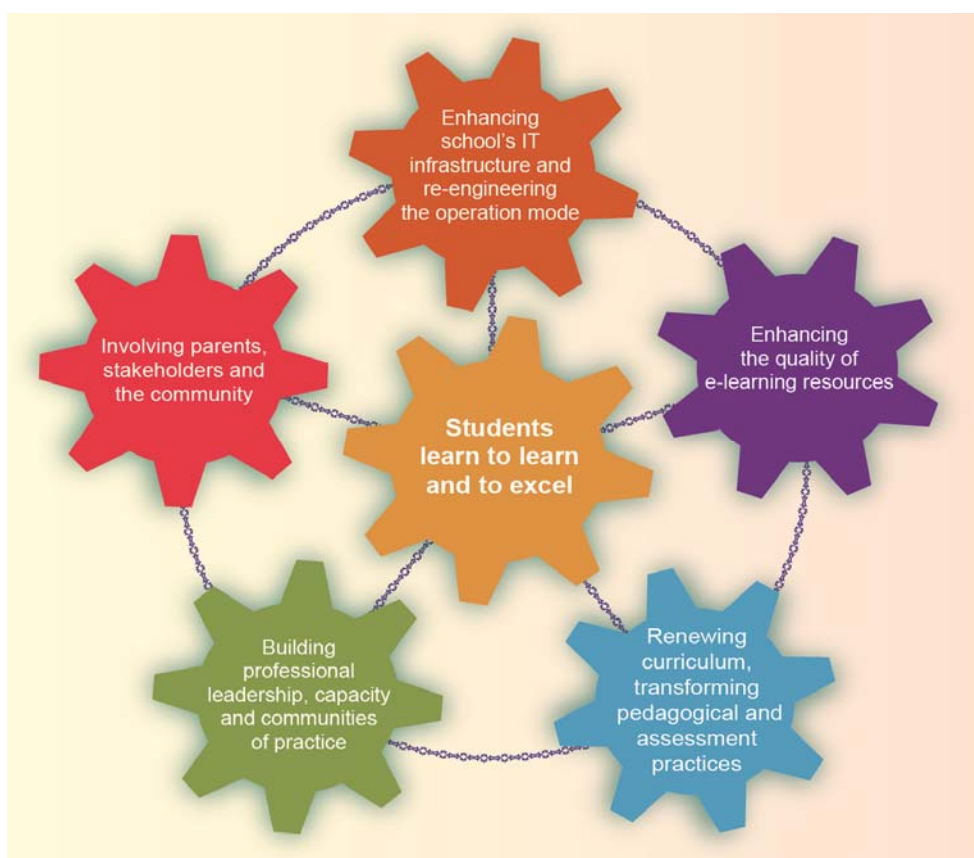
- (a) To achieve the goal of ITE4, we aim **to strengthen students' self-directed learning, problem-solving, collaboration and computational thinking competency, enhance their creativity and innovation, and even entrepreneurship, as well as to nurture the students to become ethical users of**

IT for pursuing life-long learning and whole-person development, through leveraging technology and the capacity of IT in IT-rich school environment, with schools' professional leadership and capacity, as well as the support from community partnerships.

(b) Five interconnected actions are proposed and shown in Figure 1 below:

1. To enhance schools' IT infrastructure and re-engineer the operation mode;
2. To enhance the quality of e-learning resources;
3. To renew curriculum, transform pedagogical and assessment practices;
4. To build professional leadership, capacity and communities of practice; and
5. To involve parents, stakeholders and the community.

Figure 1
Proposed Actions for ITE4



Benefits

2.6 The smooth and effective implementation of ITE4 relies on the concerted efforts of various stakeholders, including students, teachers, school leaders, parents and other relevant sectors such as the IT industry in Hong Kong. It is expected that the ITE4 will bring about the following benefits:

- (a) **Students** would be motivated to learn with the help of IT for easy access to various e-resources and online services in support of their development to become ethical users of IT and self-directed learners with better problem-solving and collaboration skills, computational thinking as well as creativity and innovation. They will also be empowered to realise their potential and develop career interest in IT.
- (b) **Teachers** would have access to a wide range of e-textbooks, e-assessment tools, e-resources and online platforms for use with one single account. By adopting teaching approaches such as Flipped Classroom, they could make better use of the classroom time to cater for the needs and interests of their students, share knowledge with colleagues and enrich their repertoire of e-learning pedagogies through professional development programmes, learning community and reflective practices.
- (c) **Schools and school leaders** could plan the upgrading and maintenance of school IT infrastructure according to their own pace and context. With greater confidence in planning to adopt e-learning according to their context, schools will enhance their capacity through engagement with various stakeholders and the community at large.
- (d) **Parents** would be provided with guidelines to support their children in the healthy, effective and ethical use of IT in learning and in their daily life and they will have easier access to support services from community organisations through a more standardised, simplified and integrated infrastructure.

- (e) **Hog Kong as a whole** would develop itself into a knowledge-based society with our students becoming life-long learners, learning beyond the confines of time and space and building up strong IT skills and the abilities in exploring problems and identifying solutions independently.

Way Forward

Guiding principles

- 2.7 We have carefully considered the views collected during the consultation. In charting the way forward, we will be guided by the following overarching principles and adopt a holistic approach both at the system and the school levels to implement ITE4:
- (a) Learner-focused with information technology deployed as a tool to support the implementation of various learning and teaching strategies, with a view to empowering our students in pursuing whole-person development and to become life-long learners.
 - (b) Stepwise planning and strategies should be built on existing strengths to develop and use the IT infrastructure for e-learning at the right pace, taking into account the readiness of teachers, school context and the characteristics of the students.
 - (c) Ongoing curriculum renewal, together with the related pedagogical and assessment approaches should enable learning in response to the changing world, harness technology to help open up the learning space and cater for learners' diversity among non-Chinese speaking students, gifted/talented students, and students with special education needs.
 - (d) Due consideration should be given to the development of teachers' professional capacity and the e-leadership of schools, in pursuing the desirable paradigm shift in our classrooms with the help of IT and expanding our teachers' existing

repertoire of effective learning and teaching strategies. The process of change should be carefully monitored to ensure timely and quality support for schools and teachers.

- (e) Parents, our major stakeholders, should be well updated on the benefits and limitations of e-learning as their support is essential.
- (f) There is a need to build community partnerships among the stakeholders concerned with “widespread leadership”²⁰ in the change process for sustainable development.
- (g) To ensure the achievement of the objectives of the proposed actions, it is essential to keep track on the process for ongoing program evaluations and appropriate refinements.

²⁰ Fullan, M. (2012). ‘Transforming schools an entire system at a time’ (http://www.mckinsey.com/insights/public_sector/transforming_schools_an_entire_system_at_a_time).

Chapter 3

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

We recommend in the *Consultation Document* three support measures for enhancing schools' IT infrastructure and re-engineering the operation mode (paragraphs 29-33).

Proposal

Providing a WiFi campus for all

- 3.1 To set up robust WiFi infrastructure to cover all classrooms of all public sector schools by phases incrementally over a period of three years ending in the 2017/18 school year.

Adopting a diversified service model

- 3.2 To encourage schools to adopt a “WiFi-as-a-service” model through subscription and look for other total solution services including cloud computing to better serve the IT/technical needs of schools in the construction and maintenance of a stable and high capacity WiFi infrastructure.

Using mobile devices wisely

- 3.3 To disburse a one-off grant for schools to acquire mobile computing devices as a supplement for development purposes with the cost to be covered by the increase in the recurrent subsidy.

(A) Providing a WiFi campus for all and adopting a diversified service model

Support

- 3.4 There is a strong consensus on establishing WiFi infrastructure in schools for building up a robust mobile learning environment and implementing e-learning to enhance the effectiveness of learning and teaching.
- 3.5 Most respondents have agreed that the installation of the WiFi infrastructure should be implemented according to the school contexts by phases and in line with the recommended timeframe spanning over three years beginning from the 2015/16 school year.
- 3.6 There has been strong support for setting up the school WiFi infrastructure through subscription services.

Major Concerns and Suggestions

- 3.7 As the “WiFi-as-a-service” model for building up the IT infrastructure is new, schools have concerns about the timeframe and logistical arrangement for the installation of WiFi network and the on-going technical support for quality delivery, monitoring of the subscription service performance and reliability and security of cloud computing. They have also expressed the importance of sufficient funding for the subscription fees and acquisition of mobile computing devices.
- 3.8 Schools have claimed that the provision of on-going technical support through direct recruitment of Technical Support Staff (TSS) or service procurement remains essential despite the adoption of the subscription mode for the setting up and operation of the WiFi network, because of the need for maintaining school servers, housekeeping the e-resources and managing mobile computing devices. It is suggested that the provision of TSS be included in the school staff establishment as an incentive to retain their service.

Way Forward

- 3.9 EDB aims to enhance the WiFi access in all classrooms of the public sector schools in Hong Kong by phases. Starting from the 2014/15 school year, the 100 schools under the Support Scheme for e-Learning in Schools (Scheme) have pioneered in building up their WiFi infrastructure through the diversified subscription services model. Other computing services such as filtering profile configuration are also acquired to serve their needs. EDB will co-ordinate with the pioneering schools to form a learning community to share and disseminate the experiences²¹ in establishing WiFi campus for mobile learning. The information has been uploaded to a designated website²² for easy reference.
- 3.10 The experience of the above Scheme reveals that to develop a robust WiFi infrastructure is a highly technical task which is way beyond the capability of some teachers and the technical support personnel in schools. In quest of maintaining a more long-term working relationship, the service providers are expected to render adequate assistance to schools in tackling technical problems. In this regard, schools may be able to save and re-deploy resources for other e-learning purposes. Schools may wish to continue to recruit/retain the TSS or procure technical services flexibly using the CITG according to their needs. Moreover, EDB will maintain the technical advisory services to schools as requested.
- 3.11 EDB will enhance the recurrent grant for schools to subscribe for and maintain the WiFi services as well as to replace the mobile computing devices. Besides, it would be flexible for schools to opt for completing their WiFi infrastructure build-up by phases having

²¹ The project management experiences generated include the preparation of the tender specifications, purchase of mobile computing devices, issues on selection of contractors and services, timelines, installation of cables and network equipment, coverage of the user acceptance tests and live run of the WiFi service. Others are evaluations of the service delivery, monitoring of the construction work, impact on students' habits in e-learning, the role of parents and TSS.

²² Source at:

<http://www.edb.gov.hk/en/edu-system/primary-secondary/applicable-to-primary-secondary/it-in-edu/supportscheme/index.html>

regard to their school-based development preferences and readiness to adopt e-learning before the end of the 2017/18 school year.

- 3.12 We have invited schools, to express their interest (EOI)²³ in the enhancement schedule of WiFi infrastructure in February, 2015. We have also held regional briefing sessions for the school community and meeting for the relevant service providers to explain the details. Some 400 schools have indicated their preference to join the first-batch of schools in enhancing their WiFi infrastructure in the 2015/16 school year. About 300 and 200 schools will complete the enhancement in the 2016/17 and 2017/18 school years respectively.
- 3.13 EDB will also collaborate with the HKECL and IT industry to explore feasible technical support solutions for schools in adopting the subscription mode for WiFi services in tandem with the advancement in technological development. We will also provide a checklist and sample user requirement specifications for schools' reference in conducting the procurement exercises for WiFi services. A technical advisory team will be set up under the IT in Education Section to provide technical advisory services to schools in vetting the bidders' proposals and giving assistance in conducting user acceptance tests.
- 3.14 To enable teachers to establish firm pedagogical use of e-textbooks and e-learning resources, EDB will continue to provide schools with a package of support measures, including organising tailor-made professional development programmes for school teachers to strengthen their knowledge and repertoire for helping their students in e-learning, transforming the roles of Centre of Excellence (CoE)²⁴ in scaling up the formation of learning communities and sharing of experiences and good practices of e-learning, in particular, whole-school adoption of e-textbooks and e-learning resources,

²³ EDB issued a school circular memorandum on Expression of Interest (EOI) in February, 2015 to invite schools to express their preference in the WiFi infrastructure enhancement exercise : <http://applications.edb.gov.hk/circular/upload/EDBCM/EDBCM15028E.pdf>

²⁴ CoE Scheme refers to the recruitment exercise of experienced teachers to work on an annual secondment basis in the EDB to help strengthen schools' capacity in e-learning through professional development programmes and school-based staff development programmes.

providing reference materials in the form of short videos on e-learning pedagogies, technical solutions as well as promoting e-safety.

(B) Using mobile devices wisely

Support

- 3.15 The disbursement of a one-off grant for schools to acquire mobile computing devices and the proposed increase in the recurrent subsidy are welcome. The proposal of “Bring-your-own-device” (BYOD) also gains acceptance as it will facilitate learning in school as well as at home.

Major Concerns and Suggestions

- 3.16 Schools have also voiced out some success factors for implementing BYOD. They include teachers’ readiness and classroom management skills, students’ discipline, parents’ acceptance, and provision of financial assistance to needy students to acquire the mobile computing devices.

Way Forward

- 3.17 Schools should have the flexibility in implementing BYOD at their own pace and according to their own contexts. As EDB will disburse a one-off grant to schools for acquiring appropriate number of mobile computing devices to supplement the existing resources or for initial development purposes, schools can make use of the recurrent subsidy to replace the devices or address other e-learning requirements as appropriate.
- 3.18 Along with the promotion and implementation of e-learning in schools and continuous reduction in the prices of mobile computing devices, we anticipate that BYOD will become popular in schools. To support schools to formulate effective strategies on adopting BYOD, EDB will adopt a holistic approach by working with different stakeholders such as non-government organisations (NGOs), teachers, parents and other Government Departments, etc., to help

schools address various implementation issues, including classroom management, student discipline and responsibilities in using mobile devices, co-ordination with parents as well as formulation of relevant school policy with reference to local²⁵ and overseas²⁶ exemplars.

- 3.19 The Office of the Government Chief Information Officers (OGCIO) has been providing support²⁷ for students of low-income families via two service providers to procure computer equipment and Internet access services at economical prices under the Internet Learning Support Programme. We will also review the level of Internet access subsidy for needy students on an on-going basis. For selected groups of students having particular educational needs, e.g. students with special education needs and non-Chinese speaking students, schools may leverage community resources such as the Quality Education Fund (QEF) to provide a mobile learning environment for all.

²⁵ Source : <http://edbsdited.fwg.hk/e-Learning/eng/20140912.php?id=20>

²⁶ Source : <http://www.cobbk12.org/mcclure/downloads/BYODStudentForms.pdf>

²⁷ Source : <http://www.info.gov.hk/gia/general/201106/27/P201106270123.htm>

Chapter 4

Action 2 Enhancing the quality of e-learning resources

This chapter presents the development and provision of quality e-textbooks and e-learning resources, which is crucial for the development of IT in education. We recommend in the *Consultation Document* six support measures to develop local e-textbooks, leverage global e-learning resources and promote the sharing of resources in the education sector (paragraphs 34-42).

Proposal

Developing an e-textbook market

- 4.1 To develop a wide range of e-textbooks in line with our local curricula under the EMADS for use starting from the 2014/15 school year.

Leveraging global e-learning resources

- 4.2 To leverage global e-learning resources through the HKECL by acquiring quality e-learning resources from local and overseas developers.

Enriching the free resources on EDB One-Stop Portal for Teaching and Learning Resources

- 4.3 To continue to enrich and update the free learning and teaching resources available on the EDB One-Stop Portal for Teaching and Learning (One-Stop Portal) and to expand the Resource Depository of HKECL and online learning packages through partnerships among the schools and other organisations.

Sharing of resources by teachers

- 4.4 To encourage the sharing of resources among teachers by adopting Creative Commons in publishing their works.

Enabling Single Sign-on and integrating e-learning platforms

- 4.5 To set up an online integration services platform through the HKECL for providing students with Single Sign-on service account to access various e-learning networks, platforms and e-books and for enabling exchange of learning data between school-based Learning Management Systems (LMSs) and other online learning content platforms.

(A) Developing an e-textbook market

Support

- 4.6 There is a consensus that the EMADS is a good starting point to create a local market for development of e-textbooks in line with the local curricula for use by schools.

Major Concerns and Suggestions

- 4.7 Schools are concerned about whether there will be sufficient provision of good quality e-textbooks for different Key Learning Areas (KLAs) and Key Stages (KSs). To facilitate the development of school-based curriculum, it is suggested that e-textbooks could be developed and marketed on a modular basis at reasonable prices.
- 4.8 There are also suggestions that students could continue using the e-textbooks they have previously acquired, e.g. after they have left the schools or to pass the e-textbooks to their siblings.

Way Forward

- 4.9 To ensure the quality of e-textbooks developed under the EMADS, EDB has launched a series of quality assurance mechanisms, including the monitoring of the deliverables submitted by the e-textbook developers and the collection of comments from students and teachers through the tryouts of the deliverables under the Partner Schools Scheme. Besides, we have put in place the Recommended e-Textbook List (eRTL) since May 2014, listing the first batch of

e-textbooks with quality assurance under Phase One of EMADS for school use in the 2014/15 school year. The e-textbooks being developed under Plans A and B of Phase Two of EMADS will be ready for school use in the 2015/16 and 2016/17 school years respectively. In addition, with the acceptance of submission of e-textbooks of different subjects for review in stages since late 2014, more e-textbooks will be available in the market, hence more choices for schools.

- 4.10 EDB will evaluate the effectiveness of the EMADS, including the quality assurance mechanism, the benefits e-textbooks generated and experiences gained through the Partner Schools Scheme in promoting e-learning. Although the terms of the licence agreements for subscription vary with different e-textbooks, some students may need to have access to the contents of the e-textbooks for revision or reference even after the expiry of the subscription period. We will communicate with stakeholders on the needs of students for e-learning.

(B) Leveraging global e-learning resources

Support

- 4.11 There is overwhelming support that the acquisition of more quality e-learning resources from local and overseas developers will provide teachers and students with more choices and is crucial for the success of IT in education.
- 4.12 The role of the HKECL, in managing the education portal, acquiring e-learning resources and acting as the coordinator on the evaluation, acquisition and licensing of e-learning resources for schools, is generally supported by the respondents. Through provision of good quality and user-friendly e-learning resources, relevant cost and teachers' workload could be reduced.

Major Concerns and Suggestions

- 4.13 It is suggested that the HKECL could enhance its services by hosting a common platform for local and world-wide resources.
- 4.14 Besides, EDB can work in collaboration with different partners, including Government departments, such as the Leisure and Cultural Services Department (LCSD), NGOs, school sponsoring bodies and the IT industry, etc., to ensure the quality of the e-learning resources in terms of security, compatibility and software management.

Way Forward

- 4.15 Adhering to the principles of ITE4, EDB encourages the adoption of a holistic approach for implementation of the proposed measures. We will be working in partnership with various stakeholders and partners to enrich the supply of quality e-learning resources. For example, the Hong Kong Public Libraries of LCSD²⁸ has developed a range of free and diversified e-services and e-resources to meet public demands for information and life-long learning. Teachers and students are encouraged to use its e-services, including the "library at your fingertips" with "My Library" Apps and over 60 e-databases and 200 000 e-book items for reading anytime and anywhere. Also, they can make use of the Multimedia Information System to search and view the relevant old photos and literature of Hong Kong for teaching and learning purposes.
- 4.16 HKECL will continue to address IT-related educational needs by developing and acquiring quality e-resources. The proposed provision of a one-off grant of \$10 million to HKECL will help leverage and acquire both local and overseas e-learning resources for our teachers and students. Besides, HKECL will set up a steering committee with participation of front-line teachers to take forward the acquisition and evaluation of the e-resources for school use.

²⁸ Details are available at the website of HKPL: <http://www.hkpl.gov.hk/en/index.html>

- 4.17 For sustainability, HKECL will partner with NGOs and schools in the development of e-learning resources and make these resources available for sharing, including to address students with special educational needs and non-Chinese speaking students. HKECL will also partner with the IT and publishing industries to develop common standards and specifications to facilitate e-learning data exchange across different systems.

(C) Enriching the free resources on EDB One-Stop Portal for Learning and Teaching Resources and sharing of resources by teachers

Support

- 4.18 The stakeholders' feedback is affirmative that the learning and teaching resources available on the EDB One-Stop Portal are useful for teachers in facilitating their learning and teaching.
- 4.19 It is also generally agreed that certain organisations, for instance, the Creative Commons can provide a possible channel for teachers and schools to publish and share their works and experiences more easily.

Major Concerns and Suggestions

- 4.20 Some respondents opine that the e-learning resources on the EDB One-Stop Portal should be open for public access.
- 4.21 Schools and teachers require references in solving the copyright issues when they share their innovative teaching resources. For example, they may require information on how to share their resources, applications and knowledge under Creative Commons.

Way Forward

- 4.22 The One-Stop Portal is open for free public access since May 2013²⁹. To facilitate teachers to evaluate their students' performance, the

²⁹ Source at: <http://www.info.gov.hk/gia/general/201205/03/P201205030291.htm>

Assessment Task Bank is designed specifically for teachers with a valid HKECL teacher account. We will continue to enrich and update the e-resources, including with appropriate pedagogy and learning materials as an ongoing exercise.

4.23 HKECL will continue to coordinate and consolidate the resources for use by teachers and to explore feasible technical solutions to facilitate information search and wider adoption of e-resources across different platforms.

4.24 HKECL has been hosting a repository for teachers' inputs for sharing among the school community. EDB has provided support to schools and teachers through the provision of ongoing professional development programmes on copyright issues and intellectual property rights. We will further address teachers' concerns, for example, about the adoption of Creative Commons through promotional activities and training programmes as well as the provision of reference materials and updates in partnership with tertiary institutions and Government departments.

(D) Enabling Single Sign-on and Integrating e-learning platforms

Support

4.25 The setting up of an online integration services platform by the HKECL to provide students with Single Sign-on (SSO) services and facilitate exchange of learning data among LMSs is strongly supported.

Major Concerns and Suggestions

4.26 The respondents are concerned about the feasibility of the SSO and the interoperability between platforms, including the Web-based School Administration and Management System (WebSAMS)³⁰ and schools' intranets. The school sector also places emphasis on the security of students' personal information.

³⁰ Source at: <http://www.edb.gov.hk/en/sch-admin/admin/sch-it-systems/websams/index.html>

Way Forward

- 4.27 HKECL will collaborate with EDB in developing the SSO and the online integrated services platform to facilitate a common platform for using e-resources, including e-books. The SSO will adopt open standards that the third party platforms can have better integration. SSOs for WiFi infrastructure and third party websites are already available in the 2014/15 school year. Besides, an eBookShelf with SSO has been provided to hold ebooks by different publishers since September 2014. The platform will be further developed to support learning data exchanges in September 2015.
- 4.28 Concerning the security issues, while users of student data have to strictly comply with the Personal Data (Privacy) Ordinance in Hong Kong, schools have been reminded to observe the relevant Ordinance.

Chapter 5

Action 3 Renewing curriculum, transforming pedagogical and assessment practices

This chapter focuses on the arrangements for the holistic renewal and transformation of curriculum, pedagogies and assessment practices in alignment with the use of IT in schools to unleash the learning power of our students to learn and to excel. We recommend in the *Consultation Document* seven support measures to enhance the ongoing processes to facilitate the curriculum renewal and relevant pedagogical and assessment development (paragraphs 44-54).

Proposal

Articulating clear learning objectives

5.1 The following learning objectives will be articulated in all education initiatives relating to student learning:

- Self-directed learning;
- Collaborative learning of reading and writing through online tools;
- Problem-solving, creativity, computational thinking through design and coding to tackle complex problems; and
- Ethical use of IT.

Enhancing problem-solving and programming-related skills

5.2 To continue to equip students with programming-related capabilities (e.g. computational thinking, modelling, coding³¹ testing, and logical analyzing), through the enriched Technology Education Key Learning Area (TEKLA) curriculum at the junior secondary level and the Information and Communication Technology subject at the senior secondary level.

³¹ Coding refers to the process of converting a program design into a detailed representation of the program using a suitable computer language/programming tool. Sometimes, the term "programming" is being considered as a synonym to coding.

Applying IT skills across school curricula

- 5.3 To continue to infuse the four priority learning objectives with more IT skills, including digital reading skills and online collaborative skills across the curriculum and information literacy among students in meeting the challenges of the rapidly changing digital world.
- 5.4 To provide different life-wide learning experiences and to conduct ongoing curriculum review/revision of the ICT components of the enriched TEKLA curriculum, New Senior Secondary (NSS) ICT subject curriculum, and the relevant IT part of the existing Primary General Studies Curriculum, where appropriate.
- 5.5 To continue to review relevant curricula like Primary General Studies, Technology Education Key Learning Area at the junior secondary level and senior secondary Information and Communication Technology subject as well as suitable Applied Learning subjects to develop students' IT-related career interests.

Promoting an e-learning repertoire

- 5.6 To enhance teachers' understanding and use of e-learning pedagogy across KLAs, including strategies for building self-regulated reading habits, developing students' information literacy and promoting assessment for/as learning.

Using e-assessment for student learning

- 5.7 To encourage school to use e-assessment more widely by developing suitable e-assessment item banks and platforms for supporting schools and teachers in designing their tests and using assessment for learning.

Engaging students in IT-related life-wide learning

- 5.8 To encourage students to participate in related life-wide learning activities and competitions, both local and international, so as to stimulate students' interest in computing science.

Exploring IT-related study and career paths

- 5.9 To nurture and enhance future IT professionals and even entrepreneurs to meet the development needs of Hong Kong as a digital society, the Government will encourage partnership with the community, e.g. the IT sector, tertiary institutions, and NGOs, to provide enrichment programmes for young IT-gifted students being identified especially in secondary schools that they are enlightened to join the innovative and technological industries, etc.
- 5.10 To equip students to further their studies of IT in tertiary education, use of IT as a tool to support their disciplinary learning, pursue advanced studies of IT in gaining industrial recognition, deploy IT to handle a wide range of tasks in the workplace, and even to realise their entrepreneurship.

(A) Articulating clear learning objectives

Support

- 5.11 The respondents are generally in support of integrating the four designated learning objectives in all related education initiatives to empower students to achieve learning to learn.

Major Concerns and Suggestions

- 5.12 As mobile learning will facilitate learning and teaching beyond classroom, teachers have to recognise their changing roles with the use of technology. Besides, the Government should strengthen the development and awareness of IT literacy as well as network safety.

Way Forward

- 5.13 EDB will continue to present and align the four priority learning objectives across the related education initiatives to empower our students to learn to learn as well as to unleash their learning potentials.

(B) Enhancing problem-solving and programming-related skills

Support

- 5.14 Teachers and the IT industry generally agree to include programming in the secondary curriculum and consider it mandatory in the junior secondary curriculum.

Major Concerns and Suggestions

- 5.15 In addition to the constant review, including the class size in teaching programming and the computer programming curriculum, some teachers suggest whether more relevant IT courses and programmes could be provided in schools with resources, e.g. teaching guidelines to support the teachers.
- 5.16 To increase the learning elements of programming in the curriculum, EDB should work closely with the tertiary institutions and IT industry in reviewing the curriculum. This will enhance students' logical reasoning power and provide more opportunities for them to develop their interest to study ICT at secondary and tertiary levels as well as to pursue their career in the IT industry.

Way Forward

- 5.17 EDB will continue to enhance students' problem-solving skills through equipping them with programming-related capabilities (e.g. computational thinking, modelling, coding, testing, and analysing). The provision of programming-related capabilities in Key Stage 3 will help students develop a logical problem-solving mindset through the use of IT. To enhance teachers' repertoire on developing

students' computational thinking through the General Studies subject in primary schools, we have organised relevant professional development programmes starting from the 2014/15 school year.

- 5.18 To align with the most recent promulgation of the enriched Technology Education Key Learning Area (TEKLA) curriculum at the junior secondary level and the senior secondary Information and Communication Technology subject, we will continue to organise and share good school practices³² in teaching programming.
- 5.19 EDB will explore ways and best practices to train senior secondary students in structured and logical thinking through mandatory programming studies, including the enhancement of learning and teaching of programming under the medium-term review of the Information and Communication Technology (S4-6) curriculum of the New Academic Structure (NAS). The last batch of recommendations on curriculum and assessment for the NAS Medium-term Review has been announced in July 2015.
- 5.20 Promotion of problem-solving and programming-related skills under the existing Science and Technology initiatives in basic education will be continued.
- 5.21 EDB will explore different entry points of learning within relevant KLAs (e.g. Science Education and Technology Education) in the curriculum and Applied Learning courses to develop students' problem-solving and programming-related skills and knowledge (e.g. fair testing, design cycle and logical thinking) progressively towards senior secondary levels. Our aim is to nurture students' disposition and ability to solve daily-life problems, from personal to community levels, including the enhancement of their computational thinking through General Studies, use of robot and programming in Computer subjects.

³² Experience sharing seminars include how to enhance students' learning in programming and participation in the Hong Kong Olympiad in Informatics (2014/15), how to use the modular approach and subtasks in teaching programming to enhance teachers' repertoire in teaching programming, as well as training students for the Hong Kong Olympiad in Informatics.

(C) Applying IT skills across school curricula

Support

5.22 Different stakeholders generally agree to the proposed actions.

Major Concerns and Suggestions

5.23 As e-learning will become essential both within and beyond the classroom, teachers require more holistic information on the implementation details e.g. the timeline and exemplary e-learning pedagogical approaches across subjects/KLAs as well as e-assessment for teachers' reference.

5.24 To strengthen students' learning in information literacy across the school curriculum, EDB should work closely with the tertiary institutions in the curriculum design.

Way Forward

5.25 With a view to enhancing information literacy among students in meeting the challenges of the rapidly changing digital world, we will continue to infuse the four priority learning objectives with more IT skills, including digital reading skills and online collaborative skills across the curriculum. In this connection, we will revise the information literacy framework³³ in 2015 with a view to incorporating essential elements in the use and production of information, taking into consideration of effective implementation through KLAs.

5.26 We will also provide different life-wide learning experiences and commit ourselves to the ongoing curriculum review/revision of the

³³ The framework for information literacy has been developed by the Curriculum Development Council since 2000 with the publication of the Information Technology Learning Targets - A Guideline for Schools to Organise Teaching and Learning Activities to Develop our Students' Capability in Using IT. Furthermore, a study report - Information Literacy Framework for Hong Kong: Building the Capacity of Learning to Learn in the Information Age published in 2005 has mapped out the standards of information literacy in different dimensions with performance indicators and exemplars of classroom practices for the reference of school.

ICT components of the enriched TEKLA curriculum, Science, Technology and Mathematics Education (STEM), New Senior Secondary (NSS) ICT subject curriculum, and the relevant IT part of the existing Primary General Studies Curriculum where appropriate. To facilitate learning across school curricular, STEM education can be infused into different KLAs/subjects.

5.27 While conducting regular curriculum revision across KLAs and Applied Learning courses, we will continue to update and strengthen IT skills as appropriate to keep pace with the rapid developments in relevant industries.

5.28 Besides, with a view to nurturing and developing IT talents, we will enhance school support to nurture students' interest in IT and their continued engagement in IT-related careers through initiatives and collaborative partnership schemes which promote the development and achievement of the IT industry.

(D) Promoting an e-learning repertoire

Support

5.29 Stakeholders generally support the proposed suggestions.

Major Concerns and Suggestions

5.30 The school sector responds that more school visits and sharing on e-learning would enhance their professional capacity and repertoire. To help lessen the workload of teachers, additional manpower may be required to create space for teachers to enrich their e-learning repertoire.

Way Forward

5.31 We will keep abreast of the latest pedagogical developments, with a view to exploring workable practices in classrooms. Pedagogical knowledge will be co-constructed in established networks or teacher communities (assisted by existing IT platforms, e.g. HKECL)

through actions and discussions among professionals in order to enhance classroom teaching.

5.32 EDB would focus both on introducing e-learning pedagogy and encouraging teachers to develop their own repertoire and sense of discernment, for example, the relevant technological knowledge as well as updates and research studies on technological pedagogical content knowledge (TPACK)³⁴, with respect to the use of effective content pedagogy in their subject specialism(s), both with and without IT enhancement. On the other hand, we will enhance teachers' understanding of e-learning pedagogy across KLAs so as to enable them to serve as facilitators and leaders in empowering students' use of IT for effective learning.

5.33 We will promote active student learning with the use of e-learning pedagogy across subjects/KLAs, such as strategies for building self-regulated reading habits, developing students' information literacy and promoting assessment for/as learning. In order to encourage teachers to use e-pedagogy in their subject teaching, we will update related learning elements / contents as well as enrich teachers' e-learning repertoire as part of the ongoing curriculum review cycle in each KLA.

(E) Using e-assessment for student learning

Support

5.34 It is generally agreed that e-assessment should be adopted more widely. Besides, facilitating the transfer of assessment data back into the management information system (MIS) is considered a good

³⁴ The Technological Pedagogical and Content Knowledge (TPACK) concept empowers teachers (with knowledge and skills) to consider, organise and make choices in their use of technology in teaching students with different abilities. Source at: www.tpack.org.

idea as it would reduce teachers' workload and facilitate feedback in students' learning and teaching.

Major Concerns and Suggestions

- 5.35 It is suggested that the Hong Kong Examinations and Assessment Authority (HKEAA) should consider the feasibility of the integration of a reliable e-assessment system for providing online test(s) which can become an alternative to written tests eventually.
- 5.36 Schools require more exemplars of using IT as an assessment tool for different subjects.

Way Forward

- 5.37 EDB will continue to encourage schools to use e-assessment more widely. Schools will be encouraged to use some well-developed e-assessment platforms and diagnostic tools that would provide instant feedback, e.g. the online Student Assessment (SA) on the basic competencies of the core subjects, Chinese Language, English Language and Mathematics. Besides, some tools which use statistical and psychometric techniques to improve test design and understanding of the student diversity (e.g. the Assessment Quality-assurance Platform (AQP) of HKEAA and the SP Xpress) are also available for schools.
- 5.38 Simple e-assessment tools will be a feature of e-textbooks for keeping track of student progress. E-assessment item banks provide assessment items for teachers' use and facilitate assessment for learning by providing useful data on student performance. Efforts will be made to develop suitable e-assessment item banks and platforms to enable students to fully benefit from e-assessment.
- 5.39 EDB has been encouraging schools to use e-assessment. We have planned to expand the online question bank of SA by covering a wider scope of the curricula for the three core subjects for KS 1-3.

(F) Engaging students in IT-related life-wide learning

Support

5.40 Stakeholders render general support to the proposed actions.

Major Concerns and Suggestions

5.41 The Government should strengthen professional exchanges and partnership with tertiary institutes and the Vocational Training Council so as to strengthen IT-related life-wide learning for students.

5.42 Students should also be encouraged to participate in a wide range of local and international competitions to broaden their perspective.

Way Forward

5.43 EDB will continue to encourage students to participate in activities and competitions relevant to life-wide learning, both local and international³⁵, so as to stimulate students' interest in computing science.

5.44 Partnerships with the community (e.g. the IT sector, tertiary institutions and NGOs) will be further enhanced to provide enrichment programmes for young IT-gifted students, in particular, those in secondary schools³⁶. It is hoped that future IT professionals and even entrepreneurs would be nurtured in order to meet the development needs of Hong Kong as a digital society.

³⁵ Hong Kong has been participating in the International Olympiad in Informatics (IOI) since 1992. There were four students representing Hong Kong to participate in IOI 2015 which was held in Almaty, Kazakhstan and the team was awarded with three silver medals. We will continue to nominate students to join this international event.

³⁶ The Education Bureau has been working in partnership with the Hong Kong Science and Technology Parks Corporation to supplement the learning elements of the school teaching programmes with the use of robots since the 2014/15 school year.

(G) Exploring IT-related study and career paths

Support

5.45 Stakeholders generally agree to the proposed suggestions.

Major Concerns and Suggestions

5.46 Innovation and technology education should be promoted and more incentive measures should be put in place to attract talented graduates to join the IT industry which could become one of the pillar industries in Hong Kong

Way Forward

5.47 EDB would assist in cultivating an IT and IT-rich school environment so as to provide opportunities for the development of key generic skills, such as communication, creativity and innovation, problem-solving and IT skills, in students, in addition to the development of a positive collective mindset that embraces ongoing changes and challenges ahead. As such, students can be well-equipped for their further studies of IT in tertiary education, use of IT as a tool to support disciplinary learning and advanced studies of IT to obtain industrial recognition, use of IT to handle a wide range of tasks in the workplace and even to realise their entrepreneurship.

5.48 In addition, enriched IT school programme aiming to nurture young IT professionals and entrepreneurs will be launched on a pilot basis in secondary schools for students who are interested and gifted in IT.

Chapter 6

Action 4 Building professional leadership, capacity and communities of practice

This chapter outlines the strategies to enhance the professional capacity which is at the heart of effective learning and teaching. The proposal of building professional leadership, capacity and communities of practice through the five measures recommended in the *Consultation Document* has gained strong support among the stakeholders (paragraphs 55-62).

Proposal

Empowering e-leadership

- 6.1 To empower e-leadership through the enhancement of professional leadership and capacity of school leaders (principal, vice-principal / teachers responsible for curriculum planning) and teachers with different modes of professional development programmes (PDPs).

Providing a web-based self-learning tool kit

- 6.2 To develop a web-based Resource Pack for schools to tailor-make their own e-learning development plans.

Enhancing professional development of teachers

- 6.3 To organise a series of PDPs at the generic level as well as at KLA-specific levels to enhance teachers' information literacy and help exploring the potential of using IT for the enhancement of learning and teaching, and the development of self-directed learning, collaboration and problem-solving skills respectively with various IT-enhanced pedagogical approaches.

Rendering support services and building communities of practice

- 6.4 To organise seminars on IT for learning and teaching and hands-on sessions on using mobile computing devices, and district-based PDPs and on-site support for schools. School teachers are also encouraged to build learning communities among themselves to support one another.

(A) Empowering e-leadership

Support

- 6.5 There is a common consensus that school leadership is a key component in leading school-wide change and is essential to the successful formulation of policy in enabling whole school adoption of e-learning.

Major Concerns and Suggestions

- 6.6 Some teachers are concerned that they do not have spare time to attend e-learning related PDPs due to their heavy workload. Besides, it is suggested that the role of the vice-principal or Primary School Master/Mistress (Curriculum Development) (PSM(CD)) to take charge of implementing e-learning across the curriculum can be clearly set out in the relevant PDPs. Another alternative can be the establishment of an additional post, e.g. Primary School Master/Mistress (IT) (PSM(IT)) to coordinate the work of all IT related matters in schools for the long-term development of e-learning particularly in primary schools.
- 6.7 To better equip school principals, they should be encouraged to participate actively in the local and international professional development community to share their valuable experiences. Furthermore, EDB should include e-learning elements in those PDPs for aspiring school principals and senior teachers.
- 6.8 To facilitate successful implementation of e-learning in schools, the course contents of the PDPs should include training on paradigm

shift in school culture, human resources management and change in administrative framework and peer support through sharing of research findings and good e-learning practices, both local and world-wide.

Way Forward

- 6.9 To empower and sustain school leadership in the development of e-learning, EDB has enriched and delivered the PDPs in different modes for the school principals, middle management personnel / curriculum leaders on strategic planning for whole school adoption of e-learning. Following the proposal under consultation, all school leaders will be provided with relevant training within three years and will complete it by 2016/17 school year or earlier. We will also encourage school leaders to participate in professional experience sharing in local and international communities, including the Learning & Teaching Expo.
- 6.10 As revealed by school experiences, successful development of e-learning requires the involvement and leadership of school head and curriculum leader with the support of the IT team. In this regard, the strengthening of the role of school head, vice-principal and PSM(CD) to lead a whole-school development of e-learning across the curriculum and in collaboration with the school IT team is crucial.
- 6.11 As regards the post of PSM(CD) in primary schools, the curriculum leaders should assist the school head to lead whole-school curriculum development by formulating and leading teachers to try out different strategies for curriculum development, including the integration of IT across KLAs and subjects with support of the IT team.
- 6.12 EDB will keep reviewing and updating the IT elements in the Teacher Competencies Framework and the continuing professional development (CPD) of teachers to better serve as a reference tool for the enhancement of teachers' professionalism in schools.

- 6.13 To further enhance the professional competencies of teachers, schools will be encouraged to make use of the current Capacity Enhancement Grant to relieve teachers' workload for attending the PDPs.

(B) Providing a web-based self-learning tool kit

Major Concerns and Suggestions

- 6.14 Development of more resource materials for schools' reference to assess the readiness for implementing e-learning is recommended.

Way Forward

- 6.15 To step up our support for schools in formulating their own school development plans, we will prepare the contents of the web-based Resource Pack by the 2015/16 school year to support schools in devising their e-learning development plans according to their priorities and needs, as well as building the school leaders' confidence in adopting e-learning according to the school context.
- 6.16 To benefit the school community, the Resource Pack will include exemplar school development plans and good practices of e-learning, etc. They will be uploaded to the web for schools' reference.

(C) Enhancing professional development of teachers

Support

- 6.17 A high proportion of respondents agree that the provision of IT training to teachers on e-learning at generic and KLA-specific levels should be strengthened in order to further enhance their effectiveness of learning and teaching.

Major Concerns and Suggestions

- 6.18 EDB should take the lead in developing teachers' professionalism and capacity for e-learning in their subject areas as well as furnishing the middle school management with knowledge on school-wide issues such as setting up of WiFi infrastructure, subscription for WiFi services and the implementation of BYOD.
- 6.19 Suggestions are also put forward to prescribe a minimal requirement on the hours of training in e-learning for teachers, covering e-learning pedagogies, information literacy, IT security and privacy issues, etc.

Way Forward

- 6.20 Adhering to the proposal under consultation and taking into account the views of the stakeholders, EDB will provide a variety of training courses to meet the needs of teachers, which will include a series of PDPs at both generic and KLA-specific levels to explore the potential of using IT for the enhancement of their effectiveness in learning and teaching, as well as seminars on building up WiFi infrastructure through the subscription service mode, BYOD, information literacy, IT security and privacy issues, etc.
- 6.21 To facilitate schools in arranging PDPs on e-learning for their teaching staff and making reference to the requirements of CPD, EDB has compiled a list of PDPs for reference by primary and secondary school teachers (webpages at www.edb.gov.hk/cd/pdp/pri and www.edb.gov.hk/cd/pdp/sec respectively). The PDPs include technological, e-leadership and management, KLA-related as well as pedagogical courses.

(D) Rendering support services and building communities of practice

Support

- 6.22 There is an overwhelming support for providing teachers with IT training and schools with on-site support for e-learning, as well as for building learning community to create a platform so that valuable e-learning experiences (knowledge and skills) are shared among teachers and problems are solved through mutual support. This can help save teachers' time in preparing teaching resources and reducing their workload.

Major Concerns and Suggestions

- 6.23 Strengthening the sharing of e-learning practices at both school and subject levels is supported. Suggestions on providing more school-based support or organising more e-learning activities such as talks and workshops for school staff development.

Way Forward

- 6.24 Following the proposal under consultation, EDB will facilitate the building of Learning Communities among schools. We will organize seminars for teacher peers to share their experiences in IT for learning and teaching and provide hands-on sessions on using mobile computing devices, etc., to enrich teachers' repertoire of e-learning pedagogy and build up their confidence in harnessing IT in education. School teachers will also be encouraged to form learning communities within and across schools where they can share their experiences and support each other.
- 6.25 We will provide other modes of support for building teacher capacity, including on-site school-based support and district-based PDPs for schools. Teams of professional staff of EDB, in partnership with teaching professionals, will provide on-site support to schools as requested aiming at introducing and empowering teachers to adopt or adapt good IT pedagogical and technical practices in their schools and facilitating effective school cultural changes. In addition,

dissemination of experiences gained in schemes such as CoE, Pilot Scheme on e-Learning in Schools, Partner Schools Scheme under the EMADS and Support Scheme for e-Learning in Schools will continue.

- 6.26 The Government has launched various initiatives and IT related schemes and they are open for schools to apply and participate.

Chapter 7

Action 5 Involving parents, stakeholders and community

This chapter lists out measures to support parents and schools as well as to create community synergy for the implementation of e-learning. The *Consultation Document* recommends three support measures on engaging parents, different stakeholders and the community (paragraphs 63-69).

Proposal

Communicating with parents

- 7.1 To reach out to parents through launching a series of promotion videos on the issues related to e-learning and e-safety, and to facilitate parents to provide early guidance for their children for effective, ethical and legal use of IT in learning (for example, infringing personal data privacy and intellectual property rights on the Internet and illegal downloading of information in IT/digital environment, etc).

Working with the stakeholders and the community

- 7.2 To provide support for individual parents through collaboration with different stakeholders, including district federations of parent-teacher associations, community organisations, NGOs, and other sectors including the local tertiary institutions and the IT sector to support our children in e-learning, promotion of healthy and ethical use of e-learning.

Leveraging community resources

- 7.3 To leverage community resources by encouraging schools to apply for the QEF. “Using e-learning (IT) for effective learning” is a new priority theme under the QEF since April 2014.

(A) Communicating with parents and working with the stakeholders and the community

Support

- 7.4 The majority of respondents confirm that parents are important stakeholders to encourage e-learning at home and the Government should help enhance their literacy in e-learning, understanding of the benefits and development of IT in education covering e-learning materials, latest technologies, use of IT and BYOD, etc.
- 7.5 To promote e-safety and ensure the healthy development of children, it is agreed that parents' knowledge on data privacy, security including cyberbullying, and cybercrime, as well as health issues such as eye care and Internet addiction will be essential for empowering them to provide guidance to their children by fostering discipline, integrity and respect.
- 7.6 Efforts to synergize community partnership in providing assistance to working parents particularly, and nurturing young IT-talents in schools are supported. Participating partners includes schools, parent associations, educational bodies, NGOs, and IT industry.

Major Concerns and Suggestions

- 7.7 Parents are concerned about the health issues such as addictive behaviors and cyberbullying. They need support to guide their children for e-learning and e-safety.
- 7.8 Schools require more references to foster cultural change involving parents for implementing e-learning, use of mobile devices and BYOD as well as setting Acceptable Use Policies (AUP).
- 7.9 The Government should render financial support to needy students and families for creating an e-learning environment for all.

Way Forward

- 7.10 Adhering to the proposal and responses collected, EDB will further explore effective ways, including ongoing production of various interactive materials including promotional videos and information kits to reach out to parents through schools for enhancing their understanding on e-learning, addressing their concerns on e-safety and health issues such as eye care, and empowering them to guide their children.
- 7.11 We have already launched a designated website related to e-learning and e-safety and we will consolidate various interactive media packages, information kits and exemplars on good practices of BYOD for reference by schools and other interested stakeholders. Samples of AUP will also be provided including guidelines for working out such policy with relevant stakeholders, both in schools and at home.
- 7.12 To facilitate schools to adopt BYOD, we will provide ongoing professional development programmes to strengthen the relevant school personnel in building up their capacity to deal with discipline and guidance problems related to BYOD and to update teachers on issues of e-learning.
- 7.13 Besides, we will continue to provide the hotline service on e-safety which has been launched since 2011³⁷ to render individual support to parents, teachers and students in need. EDB will also continue to collaborate with relevant community stakeholders to provide ongoing training for parents on health issues in relation to e-learning.
- 7.14 EDB will collaborate with relevant organisations to produce reference materials regarding e-safety issues of using WiFi and mobile computing devices for parents' reference. We will also review relevant financial support to assist needy students in pursuing e-learning.

³⁷ E-safety hotline service is available at: <http://internetsafety.edb.hkedcity.net/>

(B) Leveraging community resources

Way Forward

- 7.15 Schools and community organisations, including the NGOs and tertiary institutions, etc. are encouraged to leverage relevant community resources for e-learning, including the QEF. A priority theme “Using e-learning for effective learning” has been introduced since April 2014.

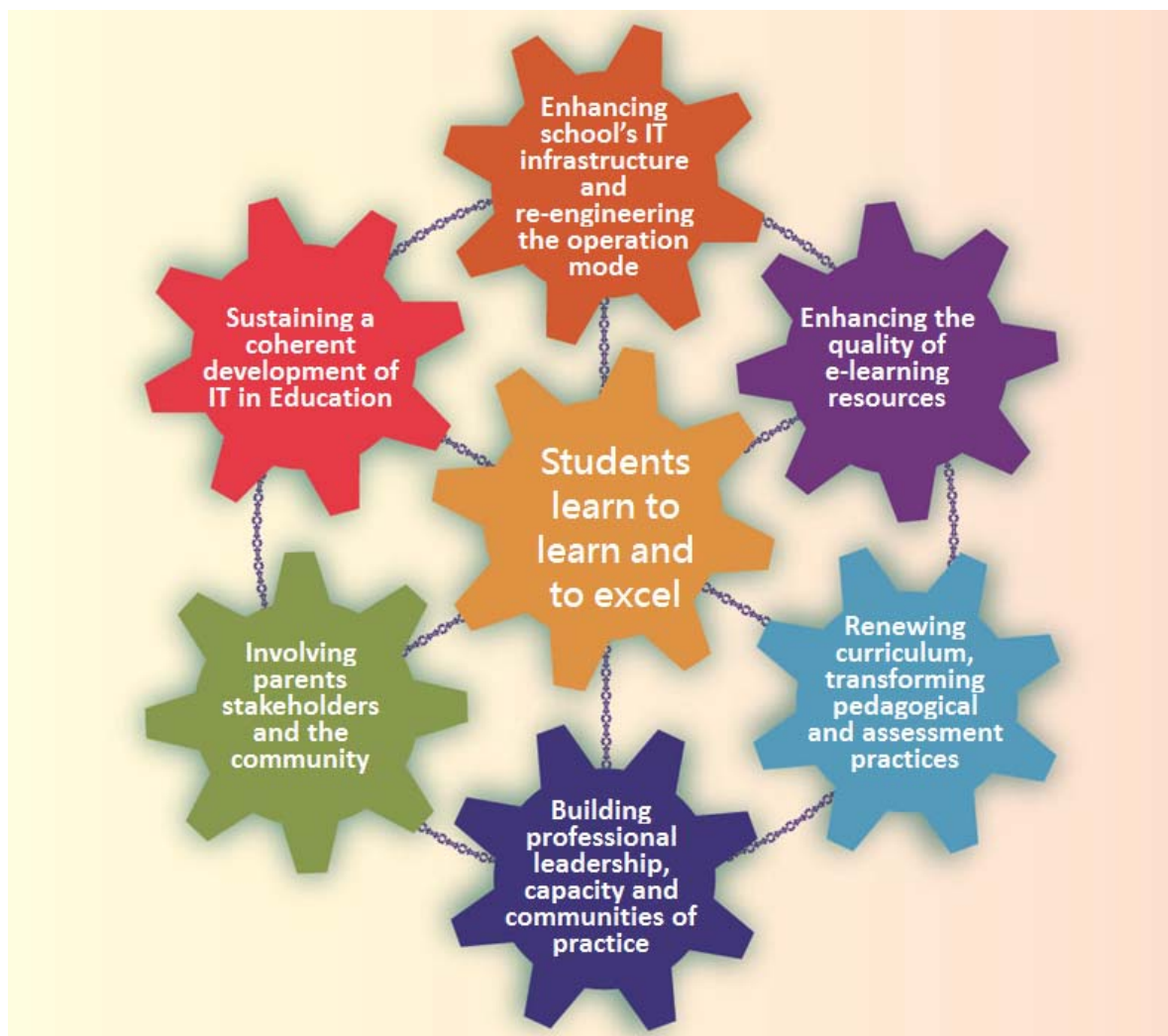
Chapter 8

Action 6 Sustaining a coherent development of IT in Education

This chapter introduces one more Action on top of those proposed in the *Consultation Document*. 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 will also be conducted to understand the progress, the impact and fine-tune the implementation of ITE4. The diagram below illustrates the six actions of ITE4.

Figure 2

The Six Actions of ITE4



Way Forward

Synergizing resources and professional support

- 8.1 An overview of our previous strategies on ITE and e-learning initiatives is presented in paragraph 2.3 (Chapter 2). Hong Kong has taken proactive steps in developing three strategies on IT in education since 1998, various school support initiatives and the current ITE4. They demonstrate the policy continuity and our commitment to the development and implementation of e-learning in schools.
- 8.2 To sustain the impact on the school community, it is worth consolidating and integrating various experiences such as the pedagogical innovations of e-learning, knowledge and practices developed in previous ITE strategies, evaluation studies and other projects. To this end, EDB will formulate a platform for knowledge building among the school community to integrate and synergize different e-resources for effective learning and teaching as well as professional development of teachers. We will commence the preparation in the 2015/16 school year working in collaboration with the HKECL and partnership with other sectors.
- 8.3 In alignment with the building up of learning communities for the enhancement of professional leadership and capacity as deliberated in Chapter 6, EDB will renew the roles of the CoE Scheme and line up various means of professional support, e.g. the QEF Thematic Network (QTN), tertiary institutions, IT associations and industry as well as schools/teachers with exemplary practices in KLAs and pedagogical issues in e-learning, etc., to provide district-based/onsite thematic support to schools on request. This ongoing school support services will start in the 2015/16 school year.

- 8.4 To sustain the role of CoE schools as pedagogical innovators, we will involve the IT industries to facilitate CoE schools to further strengthen themselves and try out new technologies in their schools. In collaboration with the Professional Development Schools Scheme (PDS) and the school-based support team of EDB, selected CoE schools will be transformed to provide intensive mentorship to several schools for trial purposes as well as providing hand-in-hand development opportunities to schools starting in the 2015/16 school year respectively.
- 8.5 To capture the outcomes and fine-tune the implementation of ITE4, EDB will maintain ongoing researches, including annual school survey on use of ITE, curriculum implementation survey, case study on the impact of e-learning and evaluation study of ITE4, etc. in the process to examine the changes resulting from the implementation, and to identify support measures as appropriate. Institutions are also welcome to initiate relevant research studies to inform future pathway of e-learning.

Chapter 9

Funding Arrangements and Way Forward

This chapter outlines the funding arrangements for ITE4.

9.1 We will re-deploy existing resources of the EDB to implement measures under the following actions –

- (a) reviewing curriculum, transforming pedagogical and assessment practices in light of latest development in IT; and
- (b) building professional leadership, capacity and communities of practice in schools to support school leaders and teachers in using IT for enhancement of learning and teaching.

9.2 In addition, we have obtained funding approval of \$105 million non-recurrent fund from the Legislative Council to implement the following measures.

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

9.3 We have already disbursed a one-off grant at an average of \$100,000 per school for the 100 public sector schools under the “Support Scheme on e-Learning in Schools” in March 2014 to acquire around 50 mobile computing devices for shared use among students in class. We will likewise disburse the same average amount of one-off grant to the remaining 900 public sector schools to acquire mobile computing devices to tie in with their acquisition of WiFi services covering all classrooms. The total funding involved will be about \$90 million.

9.4 Separately, EDB will increase the amount of recurrent subsidy to enable all public sector schools to subscribe for WiFi services on a recurrent basis. The increased subsidy will also cover the expenses of replacement/maintenance of the mobile computing devices.

Enhancing the quality of e-learning resources

- 9.5 We will provide \$10 million as one-off subsidy for HKECL to make use of its well-established platform to acquire quality e-learning resources from local and overseas developers, with a view to enriching the pool of quality and readily available e-learning resources for use by both teachers and students. Through this initiative, the HKECL can coordinate evaluation, acquisition and licensing of e-learning resources to support implementation and adoption of e-learning on a large scale, so that the costs of acquiring and using e-learning resources could be lowered in the long run.

Involving parents, stakeholders and the community, and other support measures

- 9.6 We will further set aside \$5 million for the provision of other support measures for stakeholders, such as advice on technical support services for schools, development of web-based tool kits for teachers and supporting services to parents as well as project management on various initiatives under the ITE4.

Glossary

Bring Your Own Device (BYOD)

Bring your own device (BYOD) begins in business sector, in particular IT industry, where employees are allowed to use their personal mobile computing devices to access enterprise data and systems. In education, it refers to the practice of allowing students/teachers to bring personally owned mobile computing devices to schools for learning and teaching activities. BYOD often comes with Acceptable Use Policy (AUP) which includes acceptable practices to be performed using the personal mobile devices in schools.

Cloud computing

It is a general term that describes different services delivered via the Internet. Cloud computing is used for sharing resources and information and providing web-based applications for users working on different computer devices with a web browser. Furthermore, it can also provide virtual server services for users.

Co-construction

“Co-construction” refers to a family of learning and teaching approaches that puts the focus on the class as a community of learners. Tasks are usually about creating knowledge as well as building criteria for judging that knowledge collectively.

Coding

Coding refers to the process of converting a program design into a detailed representation of the program using a suitable computer language/programming tool. Sometimes, the term "programming" would be considered as a synonym to coding in day-to-day usage.

Collaborative Learning

Collaborative learning is an instruction method in which two or more students learn together on a shared assignment toward an agreed-upon goal. There is a sharing of knowledge and acceptance of responsibility among group members for the group's actions.

Computer programming

Computer programming (often refers to as "programming") is a process that leads from an original formulation of a computing problem to executable computer programs. Programming may cover processes such as problem definition and analysis, design of solution, coding, testing and evaluation. Sometimes, the term "coding" would be considered as a synonym to programming in day-to-day usage.

Digital resources depository

It is a collection of contents hosted on the Web through Internet technologies where text, images, audio, videos, and/or other multimedia files are linked / and stored. The “EDB Depository of Curriculum-based Learning and Teaching Resources” is an example.

e-Assessment

e-Assessment is an electronic tool which makes use of IT for presenting assessment activities, recording responses and providing feedback and assessment statistics. It can address the needs of various users including learners, tutors, learning establishments, awarding bodies and regulators.

e-Learning

e-Learning refers to an open and flexible learning mode involving the use of the electronic media, including use of digital resources and communication tools to achieve learning objectives. The essence of e-learning is the use of technology to deliver learning content more effectively and the learning process in e-learning environment is expected to consider three key elements for maximising learning opportunities conducive to 21st century skills development. They include blending formal and informal learning approaches, balancing individualised and collaborative learning to help learners to increase awareness of learning achievement and collecting evidence of improvement.

e-Learning platform

It is an online system or learning management system that provides the technical infrastructure for managing student electronic learning activities. Usually, an e-learning platform includes interactive exercises and tools for generating individual students' test scores. It also includes communication tools for peer-to-peer and student-teacher communications to support collaborative learning.

e-Textbook

An electronic textbook is a comprehensive and self-contained curriculum package with digital print-on demand contents and electronic features (e-features include multimedia like video, audio and animation, and interactive learning, teaching and assessment activities) that are designed to support the implementation of a school subject according to the curriculum guide prepared by the Curriculum Development Council (CDC) in Hong Kong. The package should address all the requirements for learning and teaching in classroom lessons in local school settings and for learning in the home environment.

Information Literacy

Information literacy is the adoption of appropriate information behaviour to identify, through whatever channel or medium, information well fitted to information needs, leading to wise and ethical use of information in society.

Innovation

Innovation is about a new idea, more effective device or process in forming a new attitude, creation and application of better solutions in response to social requirements. In business and economics, innovation is considered the catalyst to growth.

Mobile device

Mobile devices include smartphones, tablet computers and laptop computers, which are portable and have WiFi connection capability for access to the Internet.

Mobile learning (m-learning)

M-learning takes place via mobile devices and it is particularly useful for outdoor learning activities like field work and museum visits.

Self-directed learning

Broadly speaking, self-directed learning is an umbrella notion related to self-regulated learning, self-learning and independent learning. Each has its features to enhance the learning autonomy of students through building a sense of agency in their learning process. The individual takes the initiative and the responsibility for what occurs and the individual selects, manages, and assesses his or her own learning, which can be pursued at any time, in any place, through any means and at any age. In the context of IT use, self-directed learning generally has four key characteristics:

- Learners' control;
- Learners' self-management;
- Personal autonomy; and
- Tendency of self-learning – the independent pursuit of learning outside formal settings.

STEM

STEM is an interdisciplinary learning approach engaging specifically Science, Technology, Engineering and Mathematics. When students are making applications of these academic concepts and skills, they will involve in real-world context in connection with the school, community, work, and the global enterprises. This also enables students to develop their STEM literacy. With a view to acquiring higher productivity, technological adaptation and research-based innovative entrepreneurships in society, it has been a world-wide education trend to enhance students' STEM competence.

List of Abbreviations

AUPs	Acceptable Use Policies
AQP	Assessment Quality-assurance Platform
BYOD	Bring-your-own-device
CITG	Composite Information Technology Grant
CoE	Centre of Excellence
CPD	Continuing Professional Development
EDB	Education Bureau
EMADS	e-Textbook Market Development Scheme
eRTL	Recommended e-Textbook List
HKECL	Hong Kong Education City Limited
HKPL	Hong Kong Public Libraries
ICT	Information and Communication Technology
IT	Information Technology
ITE / ITed	Information Technology in Education
ITE4	Fourth Strategy on Information Technology in Education
KLA	Key Learning Area
KS	Key Stage
LCSD	Leisure and Cultural Services Department
LMS	Learning Management System
MIS	Management Information System
NAS	New Academic Structure
NGO	Non-government Organisation
NSS	New Senior Secondary
OGCIO	Office of the Government Chief Information Officer
PDP	Professional Development Programme
PDS	Professional Development Schools Scheme
PISA	Programme for International Student Assessment
PSM(CD)	Primary School Master/Mistress (Curriculum Development)
QEF	Quality Education Fund
QTN	QEF Thematic Network
SA	Student Assessment
SSO	Single Sign-on
STEM	Science, Technology and Mathematics Education
TEKLA	Technology Education Key Learning Area
TPACK	Technological Pedagogical Content Knowledge
TSS	Technical Support Service

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**Summary of the major feedbacks
collected during
the Consultation on ITE4**

Summary of Feedbacks	Sources										
	School Sector				Parents	IT Association	Tertiary Sector	IT Industry	General Public	Media	Others e.g. LegCo Members, Political Parties, Professional bodies, etc.
	Sec Students	Pri Students	Principals	Teachers							
In general											
Support											
● Goals and objectives of ITE4 are supported.	✓	✓	✓	✓	✓	✓	✓	✓	✓		✓
● The holistic approach of ITE4 is agreed with different aspects of education being coordinated.			✓	✓			✓	✓			✓
● Schools to adopt IT and e-learning at different paces are affirmed.			✓	✓			✓				✓
Concerns / Suggestions											
● EDB should consolidate and management knowledge of the previous three ITE strategies, other initiatives, etc.			✓				✓				
● Teachers should be provided with professional training on e-learning.	✓	✓	✓	✓		✓	✓	✓		✓	✓
Action 1: Enhancing schools’ IT infrastructure and re-engineering the operation mode											
(A) Providing a WiFi campus and adopting a diversified service model											
Support											
● Building up of schools’ WiFi infrastructure through the subscription mode is agreed for more professional technical support services in lessening the workload of teachers in charge of IT /technical staff and ensuring hardware update and network security, etc.			✓	✓		✓		✓			✓
Concerns / Suggestions											
● There are concerns on the arrangement, timeframe and whether schools will have sufficient funding for the subscription fees and purchase of sufficient mobile computing devices (e.g. at least 2 classes with 1:1 student-device ratio), and resources of technical support and manpower during the set-up stage.	✓	✓	✓	✓	✓	✓		✓		✓	✓

Summary of Feedbacks	Sources										
	School Sector				Parents	IT Association	Tertiary Sector	IT Industry	General Public	Media	Others e.g. LegCo Members, Political Parties, Professional bodies, etc.
	Sec Students	Pri Students	Principals	Teachers							
● Implementation guidelines and a technical support team are required, e.g. to facilitate schools in managing the performance of the service providers.			✓	✓		✓		✓			✓
● Provision of Technical Support Staff (TSS) will be essential despite of adopting the subscription model. To lessen their turnover rate, TSS should be turned into a regular staff post with promotion prospects.			✓	✓		✓	✓		✓	✓	✓
● Whether cloud computing would be reliable and secure.			✓	✓				✓			✓
(B) Using mobile devices											
Support											
● Bring-your-own-device (BYOD) should be adopted by schools to facilitate student learning in school and at home.		✓	✓	✓		✓	✓	✓		✓	✓
Concerns / Suggestions											
● Some success factors for implementing BYOD are suggested, including teachers' readiness, parents' acceptance and provision of financial assistance to needy students to acquire the mobile computing devices, etc.			✓	✓	✓						
Action 2: Enhancing the quality of e-learning resources											
(A) Developing an e-textbook market											
Support											
● The e-Textbook Market Development Scheme (EMADS) is useful in developing local e-textbooks and relieving teachers' workload.	✓					✓					
Concerns / Suggestions											
● Whether there will be sufficient quality e-textbooks ready for use in different Key Learning Area (KLA) and Key Stage (KS) so as to reduce teachers' workload.			✓	✓		✓		✓			✓
● Prices of e-textbooks should be reasonable and they can be developed on a modular basis to cater for school-based curriculum.			✓	✓							✓
● Whether students can retain the ownership of e-textbooks used even if they have changed schools or passed them to their siblings.			✓	✓							✓

Summary of Feedbacks	Sources										
	School Sector				Parents	IT Association	Tertiary Sector	IT Industry	General Public	Media	Others e.g. LegCo Members, Political Parties, Professional bodies, etc.
	Sec. Students	Pri. Students	Principals	Teachers							
(B) Leveraging global e-learning resources											
Support											
● Development of quality e-learning resources with a variety of choices from local and overseas developers is supported.	✓		✓	✓		✓					✓
● It will be good for the Hong Kong Education City Limited (HKECL) to provide good quality and user friendly e-learning resources as this can lessen teachers' workload and reduce school cost.				✓							
● The education portal provided by the HKECL is essential as it will help consolidate and coordinate large amount of e-contents as well as to serve as the mass coordinator and licensor of these resources. All these are essential to the success of ITE4.	✓		✓	✓		✓	✓				✓
Concerns / Suggestions											
● Service enhancement of the HKECL should include: i. Setting up a development and accountability mechanism, including with realistic objectives, implementation timeline, performance indicators and collecting feedback for evaluation; ii. Hosting a common platform for local and world-wide e-learning resources, e.g., Massively Open Online Course (MOOC) with contents including local teaching videos and sharing resources among teachers and serving as an online bookstore to address learner diversity, e.g. the gifted and students with special education needs (SEN); and iii. Leading on defining standards of the e-learning ecosystem.				✓		✓		✓	✓		✓
● Whether the e-commercial vendors and the IT industry can participate in the production of digital resources to safeguard potential security, compatibility and software management issues, etc.										✓	
● Whether stakeholders including non-government organizations (NGOs), school sponsoring body, etc. can participate in developing e-learning resources.			✓	✓		✓	✓	✓	✓		✓
(C) Enriching the free resources on EDB One-Stop Portal and sharing of resources by teachers											
Support											
● The learning and teaching resources available on the EDB One-Stop Portal are useful.				✓							
● EDB to encourage schools to adopt Creative Commons in publishing their works is supported.						✓	✓	✓			
Concerns / Suggestions											
● The resources on the EDB One-Stop Portal should be open for public access.											✓

Summary of Feedbacks	Sources										
	School Sector				Parents	IT Association	Tertiary Sector	IT Industry	General Public	Media	Others e.g. LegCo Members, Political Parties, Professional bodies, etc.
	Sec. Students	Pri. Students	Principals	Teachers							
● e-learning resources can be developed with other parties across platforms.			✓	✓							
● Whether e-learning resources can be updated regularly and teachers invited to give advice.			✓	✓							
● EDB can adopt a more diversified approach for building the One-Stop Portal instead of relying on a particular pedagogy (e.g. Flipped Classroom & EAST model). More agile partners from the IT industry and tertiary institutes may be involved.							✓	✓			
● Teachers should be supported to solve copyright questions, e.g. by exploring free ShareAlike licenses / platforms such as the Creative Commons/ Apache License, etc.							✓	✓			
● EDB should encourage schools/teachers to share their innovative teaching resources and experiences.											✓
● HKECL may negotiate with publishers / content providers for sharing of resources through depository-like model.								✓			
● The HKECL website can facilitate teachers with more user friendly information search engines to support learning and teaching.			✓	✓							
(D) Enabling Single Sign-on and integrating e-learning platforms											
Support											
● The majority of the respondents strongly support the setting up of an online integration services platform by the HKECL to provide students with Single Sign-on (SSO) services to facilitate exchange of learning data on LMSs.		✓	✓	✓		✓		✓			✓
Concerns / Suggestions											
● The SSO is good but may be difficult to implement.			✓	✓							
● HKECL should ensure the interoperability between platforms, e.g. by making use of the Web-based School Administration and Management System (WebSAMS) for the security of students' personal information.			✓	✓				✓			✓

Summary of Feedbacks	Sources										
	School Sector				Parents	IT Association	Tertiary Sector	IT Industry	General Public	Media	Others e.g. LegCo Members, Political Parties, Professional bodies, etc.
	Sec. Students	Pri. Students	Principals	Teachers							
Action 3: Renewing curriculum, transforming pedagogical and assessment practices											
(A) Articulating clear learning objectives											
Support											
● The proposals are generally supported.			✓	✓		✓					
Concerns / Suggestions											
● The Government should strengthen the development and awareness of IT literacy as well as network safety in the school curriculum.			✓	✓							✓
(B) Enhancing problem-solving and programming-related skills											
Support											
● The inclusion of programming in the computer curricula is supported.	✓		✓	✓		✓	✓				
● Programming should be a mandatory element in the junior secondary computer curriculum to nurture students' logical reasoning abilities and IT skills.	✓		✓	✓		✓	✓			✓	✓
Concerns / Suggestions											
● The computer curricula should be reviewed and updated.			✓	✓							✓
● Programming should be a must in the school curriculum to nurture students' logical reasoning abilities and IT skills. EDB should provide teachers with the relevant teaching guidelines, including working in partnership with the tertiary institutions for the teaching contents.			✓	✓					✓		
● The class size in teaching programming should be reviewed.			✓	✓							

Summary of Feedbacks	Sources										
	School Sector				Parents	IT Association	Tertiary Sector	IT Industry	General Public	Media	Others e.g. LegCo Members, Political Parties, Professional bodies, etc.
	Sec. Students	Pri. Students	Principals	Teachers							
(C) Applying IT skills across school curricula											
Support											
● The proposals are generally supported.	✓	✓	✓	✓			✓				
Concerns / Suggestions											
● E-learning is essential but the implementation details e.g. timeline and pedagogical approaches should be provided.				✓				✓			✓
● Some teachers have stated that learning outside classroom will be the next step for IT in education development.			✓	✓							
● Students' information literacy should be enhanced.			✓					✓			✓
● To provide clearer and more concrete descriptions of the ways in promoting the use of e-learning pedagogy across subjects/KLAs, application of IT skills across school curricula, and the use of e-assessment.			✓	✓	✓		✓		✓		
(D) Promoting e-learning repertoire											
Support											
● The proposals are generally agreed.	✓	✓	✓	✓		✓	✓	✓			
Concerns / Suggestions											
● Teachers' professional capacity should be enhanced for e-learning by providing them with more school visits for sharing on e-learning.				✓				✓			

Summary of Feedbacks	Sources										
	School Sector				Parents	IT Association	Tertiary Sector	IT Industry	General Public	Media	Others e.g. LegCo Members, Political Parties, Professional bodies, etc.
	Sec. Students	Pri. Students	Principals	Teachers							
(E) Using e-assessment for student learning											
Support											
● E-assessment to facilitate student learning is agreed.				✓				✓			
Concerns / Suggestions											
● The Hong Kong Examinations and Assessment Authority (HKEAA) should eventually consider the development of online test as an alternative to written ones.				✓	✓						
● EDB and HKEAA should study the reliability and integration of e-assessment system.								✓			
● To provide teachers with more exemplars of using IT as an assessment tool by subjects.			✓		✓						
● Students’ assessment and learning data should be shared.								✓			
(F) Engaging students in IT-related life-wide learning											
Support											
● The proposals are generally supported.			✓	✓		✓	✓	✓			
Concerns / Suggestions											
● The Government should strengthen the professional exchanges and partnerships with the tertiary institutes/ Vocational Training Council.			✓	✓							✓
● Students should be encouraged to participate in a wide range of local and international competitions.						✓					
(G) Exploring IT-related career paths											
Support											
● The proposals are generally supported.			✓	✓		✓	✓	✓			

Summary of Feedbacks	Sources										
	School Sector				Parents	IT Association	Tertiary Sector	IT Industry	General Public	Media	Others e.g. LegCo Members, Political Parties, Professional bodies, etc.
	Sec. Students	Pri. Students	Principals	Teachers							
Concerns / Suggestions											
● Technology education should be enhanced.						✓					
● More incentive measures should be put in place to nurture and attract students / graduates to join the IT industries.			✓	✓		✓		✓		✓	✓
Action 4: Building professional leadership, capacity and communities of practice											
(A) Empowering e-leadership											
Support											
● School leadership to lead the change and enable whole school e-learning is commonly agreed.			✓	✓		✓	✓		✓		
Concerns / Suggestions											
● The vice-principal / PSM(CD) should be designated to take care of the formulation and implementation of e-learning in schools. Their roles have to be clearly spelt out and provision of relevant training will be essential to facilitate integration of IT across the school curriculum.			✓	✓					✓		✓
● The workload of teachers is heavy that they cannot spare time to attend training programmes.				✓					✓		
● A primary school post of PSM(IT) could be established to coordinate the work of all IT-related matters for development of e-learning.				✓					✓		
● School leaders should attend professional development programmes, both local and international, for capacity enhancement to manage the implementation of e-learning.								✓			
● EDB may report on the effectiveness of e-learning research findings and disseminate good practices, both local and world-wide, through seminar/website for teachers' reference.			✓			✓	✓		✓		
● EDB could review and incorporate e-learning elements in aspiring principal's training and professional development courses.						✓			✓		

Summary of Feedbacks	Sources										
	School Sector				Parents	IT Association	Tertiary Sector	IT Industry	General Public	Media	Others e.g. LegCo Members, Political Parties, Professional bodies, etc.
	Sec. Students	Pri. Students	Principals	Teachers							
(B) Providing a web-based self-learning tool kit											
Support											
● The proposal to develop more resource materials for school’s reference is affirmed.	✓	✓	✓	✓	✓	✓	✓	✓			
Concerns / Suggestions											
● EDB may provide schools with a checklist in assessing its readiness and program management in hardware, software, teachers, students and parents, so as to facilitate the formulation of school-based policy and implementation strategies.			✓	✓							
(C) Enhancing professional development of teachers											
Support											
● Teachers to be provided with professional training on e-learning is well received.	✓	✓	✓	✓	✓	✓	✓	✓			
Concerns / Suggestions											
● Teachers should be motivated to take part in e-learning and relevant training.			✓	✓		✓					✓
● Teachers are heavily engaged and may not have the time to attend training.			✓	✓				✓	✓		✓
● EDB should take the lead in developing teachers’ professionalism in e-learning according to their subject areas.			✓	✓							
● Professional development programmes should be provided to middle managers on BYOD and infrastructure subscription service management etc.						✓					
● To provide teachers with training programme on e-learning pedagogies, information literacy and IT security issues, etc. for them to continue their professional development.			✓	✓				✓			✓

Summary of Feedbacks	Sources										
	School Sector				Parents	IT Association	Tertiary Sector	IT Industry	General Public	Media	Others e.g. LegCo Members, Political Parties, Professional bodies, etc.
	Sec. Students	Pri. Students	Principals	Teachers							
(D) Rendering support services & building communities of practice											
Support											
● To provide teachers with IT training and schools with on-site support for e-learning is highly supported.	✓	✓	✓	✓		✓	✓	✓			✓
Concerns / Suggestions											
● To encourage teachers to have more sharing of resources and practices on e-learning both at school level and at subject level to help solve their teaching problems.			✓	✓		✓					
● School-based support on e-learning activities can be provided that schools could make use of staff development day to arrange talks and workshops for all teachers to attend.			✓	✓							
● The quota for joining the pilot projects / support scheme should be increased to allow wider dissemination, in particular, to include those “weak schools”.			✓	✓		✓					✓
Action 5: Involving parents, stakeholders and community											
(A) Communicating with parents and working with stakeholders and the community											
Support											
● It is agreed that parents should be involved to encourage e-learning at home and their literacy in e-learning, including updates of latest technologies, understanding of Internet addiction, cyberbullying, cybercrime and relevant health issues, etc.		✓	✓	✓	✓			✓	✓		✓
● Parents to support BYOD are widely agreed.		✓	✓	✓	✓			✓	✓		✓
● Synergizing efforts of the community are supported. The IT industry, social workers, parent associations, educational bodies and schools can help the working parents through promotion videos and seminars, and nurture the young IT-talents.			✓			✓	✓	✓			

Summary of Feedbacks	Sources										
	School Sector				Parents	IT Association	Tertiary Sector	IT Industry	General Public	Media	Others e.g. LegCo Members, Political Parties, Professional bodies, etc.
	Sec. Students	Pri. Students	Principals	Teachers							
Concerns / Suggestions											
● There are concerns of digital divide that needy students and families should be financially supported, in particular, for implementing BYOD.			✓	✓		✓		✓			✓
● Health issues, e.g. influence of radiation and related eye diseases, should be aware.			✓	✓	✓				✓		
● Schools should be supported to provide parents with assistance through parent-teacher associations e.g. on using mobile learning devices and setting up house rules at home.			✓	✓							
Others											
Concerns / Suggestions											
● Whether there would be expected outcomes for schools' reference.			✓	✓		✓	✓				✓
● It will be essential to conduct research and development studies for reviewing the progress of ITE4.							✓				

Summary of the School Survey Results on ITE4 (2014)

Background

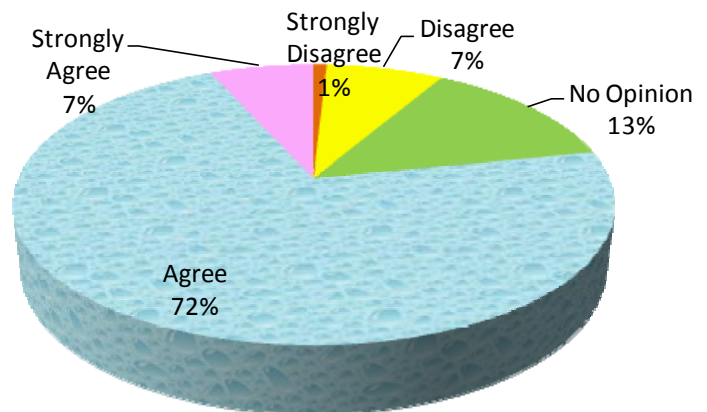
To solicit views from the school sector on the goal and proposed actions of ITE4, EDB conducted a questionnaire survey in the briefing sessions held for the school sector in May 2014. A total of 344 returns was received.

Survey results

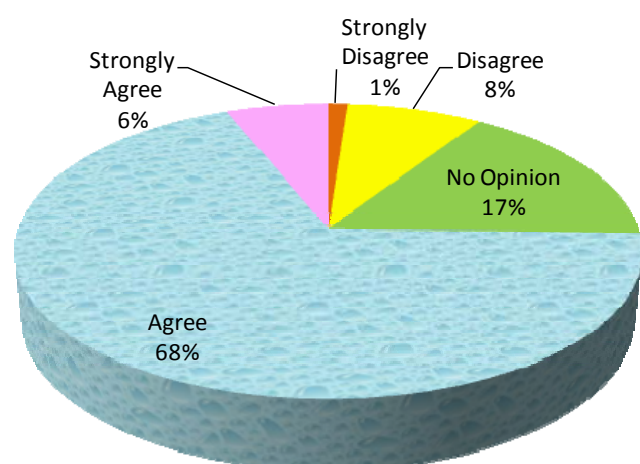
Questions on whether:

1. The goal of ITE4 is appropriate

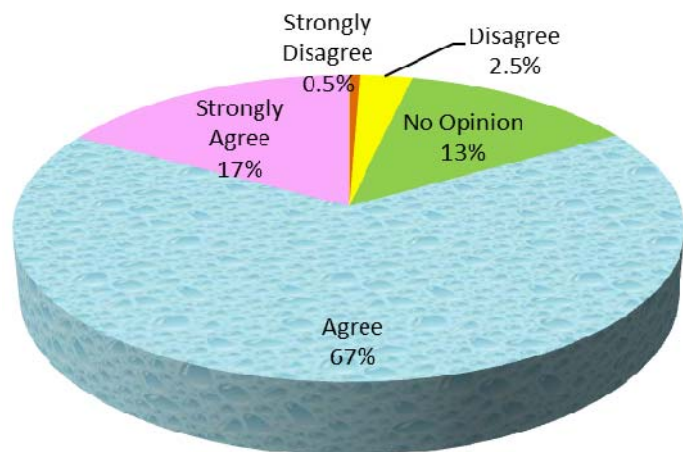
Responses



2. The holistic approach of ITE4, which includes coordinated ITE and curriculum development and involvement of different stakeholders, is professional

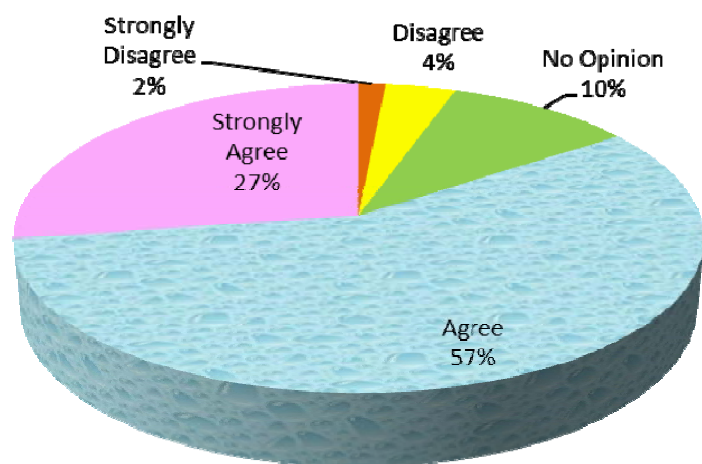


3. e-Learning / Harnessing IT in learning is important

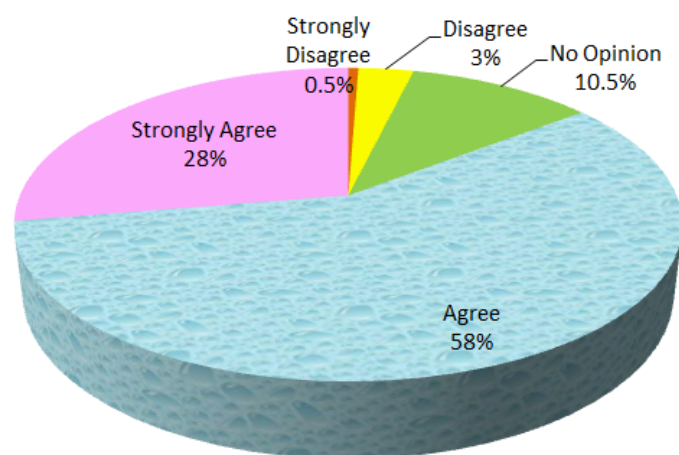


4. Proposed actions of ITE4 are essential

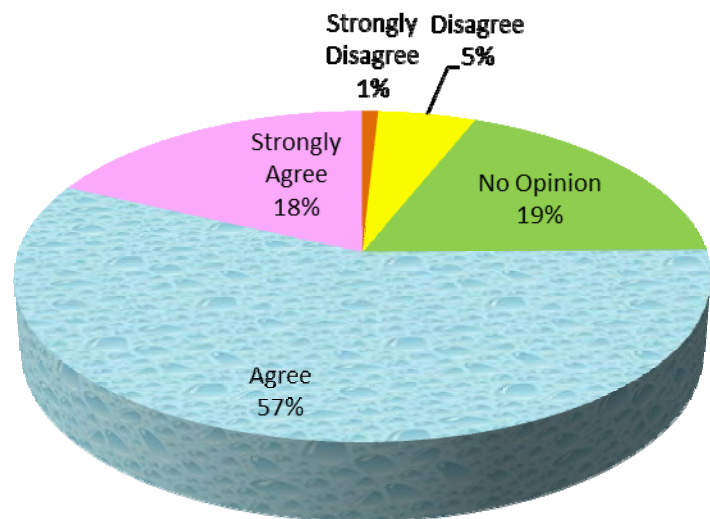
(i) Enhancing school's IT infrastructure and re-engineering the operation mode



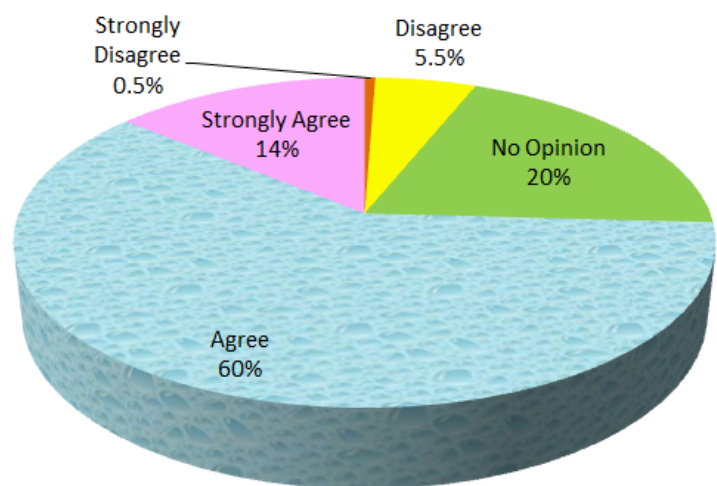
(ii) Enhancing the quality of e-learning resources



- (iii) Renewing curriculum, transforming pedagogical and assessment practices



- (iv) Building professional leadership, capacity and communities of practice



- (v) Involving parents, stakeholders and the community

