



Speeches

Opening Address by Mr Heng Swee Keat, Minister for Education, at the International Conference of Teaching and Learning with Technology (iCTLT) at the Suntec International Convention and Exhibition Centre, at 9.00am on Wednesday, 9 April 2014

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Academy of Principal (Singapore), 1st Vice President,
Mrs Tan-Kek Lee Yong

Distinguished Guests

Colleagues

Ladies and Gentlemen,

Good morning.

Introduction

1 I am pleased to be with you for the 4th International Conference for Teaching and Learning with Technology, jointly organised by the Ministry of Education and the **Academy of Principals, Singapore**. A

warm welcome to foreign delegates from 23 different countries. I hope your stay in Singapore is a pleasant one.

2 As you have seen in the opening video, Singapore embarked on our journey to leverage technology for teaching and learning more than a decade ago. In our first ICT Masterplan, or mp1, we laid a firm foundation for schools to integrate technology into the curriculum.

3 We provided schools with the physical and ICT infrastructure to enable networked and connected learning. We trained teachers to use basic ICT tools, and provided educational software and resources. At the end of mp1, there was a widespread acceptance of ICT as a useful tool for teaching and learning.

4 With this foundation, we seeded innovation across our schools in mp2. It focused on:

- establishing baseline ICT standards for students;
- supporting schools in achieving higher levels of ICT use; and
- strengthening the integration of ICT into the curriculum.

5 We also experimented with new approaches such as the FutureSchools to generate more innovative practices for the system, and many schools also took their initiative to innovate. At the end of mp2, Singapore schools were well-resourced; school leaders showed strong support for the use of ICT; and most importantly, teachers and students had core ICT skills and were frequently using ICT for teaching and learning.

6 Building on the good work done, mp3 focused on enriching and transforming the learning experiences of our students with ICT. Our aim is simple. It is to equip our students with the critical competencies and dispositions to succeed in a knowledge economy. Specifically, the goal for our students was to develop self-directed and collaborative learning through the effective use of ICT, as well as become discerning and responsible ICT users.

7 As mp3 draws to a close, we see some of our efforts coming into fruition. ICT is more extensively integrated into the curriculum and pedagogy. There is greater alignment of students' learning outcomes to 21st century skills, competencies and dispositions. I want to thank our educators and specialists for your hard work and pioneering spirit. Your enthusiasm to try, to learn, to break new ground was what brought us to this stage.

8 We are now preparing for mp4, so we should look back to distil the lessons we have learnt and build on the foundation. At the same time, we should look forward, stay open and curious, imagine new possibilities and imagine what technology can open up.

Our Changing World

9 In the last decade, technological innovations are reshaping the way we live and work at such an alarming rate, that the only constant is change itself. We must stay curious, to anticipate what is around the next bend, and to imagine the possibilities that technology can offer in order to future proof our children.

10 According to Erik Brynjolfsson from MIT, we have entered The Second Machine Age. It is an age where machines and computers can perform complex and “intelligent” tasks that were once considered uniquely human. From self-driving cars to new technologies that can diagnose illnesses, these innovations challenge us to rethink our roles in the workplace. In this digital age, existing jobs are being redefined and new jobs created.

11 The implications of these changes are profound but one thing is clear - education must equip our students with the necessary competencies to race with and not race against technology.

12 How then shall we respond to the changing world? I would like to share with you 4 key principles that will guide us in future.

STAY FOCUSED

13 The first principle is to stay focused. The goal of our ministry is to bring out the best in every child. We are committed to a student-centric and values-driven education and ICT can help us do this better.

14 For a start, we need digital literacy. In the IT age, digital literacy serves the same function as basic literacy that is allowing our students to learn better, to be ready for the exciting future, which they will live and work in.

15 Being digitally literate is not just being equipped with technical skills; it is about being equipped with the 21st century competencies to collaborate with others, engage in lifelong learning through technology, and make the space they live in a better one. We will provide a student-centric and values-driven education in every school, at every stage, whatever the starting point.

Student-centric Education

16 By staying focused on our goal to bring out the best in every child, we will use technology to transform learning in every school and every student, enabling them to develop strong fundamentals for life-long learning.

17 You would have heard that our students have done well in the 2012 Programme for International Student Assessment or PISA computer-based assessment for Problem Solving. It is encouraging as the results indicate that our students have the ability to think flexibly and creatively to solve complex and unfamiliar problems. What is particularly heartening is not so much the positioning, but the trend data for Science, Math and Reading that shows that we have out-performed ourselves.

18 Some of you have also gone for school visits organised by the conference team. You would have seen how our schools are tapping on various technologies to enhance pedagogy and develop 21st century competencies in our students. Let's see how they do it in Gan Eng Seng School [video].

19 We will continue to support schools and ensure all students, regardless of background, have an equal opportunity to learn with ICT. In fact, all our students have access to ICT learning and ICT resources. Our teachers will leverage a wider range of ICT-enabled pedagogies so that every child will succeed.

20 Currently, the Ministry is developing an online Student Learning Space (SLS) to provide all students access to quality digital teaching and learning resources.

21 The resources are aligned to the national curriculum, and students will have opportunity to collaborate within and across schools. With the SLS, we aim to achieve consistently high quality teaching and learning across all schools, as part of our Every School a Good School movement.

Values-driven education

22 We cannot assume that just because our children can handle technology, they know how to use technology responsibly. There is no roadmap for the digital world. We need to give every student a compass and to help them develop navigation skills.

23 Cyber Wellness education is critical. We have positioned it as part of our system-wide Character and Citizenship Education. As of last year, all schools have set aside curriculum time for cyber wellness education.

24 Students are guided to think deeply about online disclosure, netiquette and digital footprint through hands-on activities. They discuss authentic case studies to understand the importance of managing their digital reputation and online presence.

25 We have trained more than 2,200 cyber wellness student ambassadors. These ambassadors use the power of positive peer influence to spread good cyber wellness practices. With the support and guidance from teachers, these ambassadors implement school-wide cyber wellness programmes for their peers.

26 Some student ambassadors create YouTube videos to offer cyber wellness tips for their peers, while others give assembly talks. Let's watch how student ambassadors of Anglo Chinese School (Barker Road) reach out to younger pupils in other schools and help spread the message of cyber safety.

27 This year students of Innova Junior College and School of Science and Technology planned and organised the Cyber Wellness Student Ambassador Conference. Eight hundred primary and secondary students participated in this for-students-by-students conference.

28 Students watched their peers role model the true meaning of active citizenry, moving beyond self to benefit the community. These 800 students later returned to their schools to inspire others to shape the online space they play and learn in, and to make it a safer place for all [video].

29 Our cyber wellness education must also involve parents. They play a vital role in developing strong positive values in our children. Our schools reach out to parents to help them guide their children to understand the importance of online safety in school and at home, and to use ICT responsibly. Through MOE's Parents-in-Education website, we also provide useful digital parenting tips.

30 Moving forward, we will continue to partner parents to develop in every child a moral and digital compass that will guide them in the digital world. The values-driven education must extend to cyberspace.

STAY CURIOUS

31 The second principle is to stay curious and be open to new possibilities. In a race between humans and machines, humans must not do what machines can do better.

32 We must learn to work with technology and not against it. We must stay curious and have the courage to imagine new possibilities and experiment with innovative practices. Technology is rapidly evolving and always present fresh opportunities for teaching and learning.

33 Since mp2, we have been working hard to identify possibilities with emerging technology for teaching and learning. For example, one of our Future Schools, Nan Chiau Primary, experimented with mobile technologies-enhanced pedagogies.

34 Students engage in scientific investigation and move seamlessly from classroom learning to the collection of real-world data, and then back into the classroom to construct new knowledge. This way of learning science within and beyond the classroom is made possible through a suite of mobile apps co-developed with industry partners. The data capturing and analysis capability of these tools help students to become better observers, and develop a more analytical mind as they learn about Science in their everyday lives.

35 The technology, together with a well-thought through pedagogy, encourages students to act and think like scientists.

36 Beyond more interactive lessons within and beyond the classroom, let's push the envelope further to see how ICT can personalise learning. This is an important aspect of our student-centric education. The ultimate goal is customised learning and differentiated teaching for every child. With technology, it enables us now to bring a new level of differentiated teaching and personalised learning.

37 Assessment for learning, for example, is one area that we are looking at. There are emerging technologies that can diagnose students' mastery of concepts, or recommend the most useful digital resources. We can better cater to individual students' learning style, pace and interest. ICT can enable teachers to improve teaching and learning, and we can help every child to succeed.

38 Our schools are experimenting with all sorts of interesting ideas, such as flipped classrooms, team-based and collaborative learning. In many cases, students themselves are initiating their own learning and sharing resources with peers. I am happy to see so many of such self-directed and self-initiated learning, and so many innovative practices in our schools. We will help our students to become independent learners, and we must provide the space for them.

STAY GROUNDED

39 The third principle is to stay grounded on pedagogical content knowledge. Technology is the tool but the teacher must be the master. A good technological tool placed in the hands of a skilful teacher can breathe life into lessons, and lessons into life. Our teachers must be grounded in strong pedagogy and have the knowledge to use ICT meaningfully and appropriately. Whatever the technological advances, a caring and skilful teacher must remain at the heart of a good education system. But the roles and skills of a teacher will change. To be masters of technology, our teachers must adapt and learn - learn new skills and

new ways of teaching and learning; learn how the young today are using technology. And remember, do not work against technology, but work with technology and be the master of technology. Don't forget the goal, which is to be always centred on the student as this is what a student-centric education means. Earlier in a video, we saw one of the teacher say that we need "21st century teachers". I would encourage all our teachers to think about what this means.

40 In mp3, we trained about 1,400 ICT mentors. They play the crucial role of inspiring and multiplying ground-up initiatives across the system. Ms Pamela Seet, an ICT mentor from Pei Hwa Secondary, works alongside peers to design and implement ICT-enriched programmes and lead professional learning sessions. Her mentees, Ms Wong Wei Nee and Mr Song Hoo Khim, are now more confident in designing ICT-enriched lessons.

41 They have gone on to design several lessons for their students and did not just stop there. They posted their lesson plans on The ICT Connection - an online platform where teachers share good practices. To date, the school has contributed more than 70 lessons to the teaching community. Indeed, the catalytic influence of these ICT mentors is far-reaching.

42 MOE recognises the impact of ICT mentors in the system. We have put in place various subject-based networked learning communities to grow and sustain the mentorship programme. Today, our programme focuses on engaging teachers in reflective practice. In our learning communities, teachers collaborate to improve the learning processes and engage in professional discourse to discuss how best to improve teaching and learning.

43 We have created opportunities for professional development and exchange of ideas across schools. But many educators who have gone beyond that; they are plugged into various online international learning communities via social media. They keep abreast of the latest developments in the education scene. They learn of interesting lessons that are happening in other parts of the world and adapt them for local use.

44 Whether local or overseas, many school leaders and teachers are establishing their professional online presence. As 21st Century educators, they are harnessing technology for professional learning and constantly refining their craft and art as skilful teachers.

STAY TOGETHER

45 The fourth principle is to stay together. From parents to industry partners, we need to involve the wider community. Together, we can play an active role to bring out the best in each child in every school, at every stage, whatever their starting point.

46 So, in the planning of our next ICT masterplan in education, we have had engagement sessions with school leaders, teachers, students and parents to seek their views [video].

47 A consistent feedback surfaced from the various engagement exercises is the need to bridge students' digital interests to the way they learn in school.

- 48 Students tell us that they engage in a variety of digital past-times such as writing blogs, contributing to online forums, designing games and creating videos. Don Tapscott in his book, 'Grown up Digital' calls these young people prosumers, who are not passive consumers of information, but active producers of information.
- 49 When I see the blogs, videos and even games or apps created by some of our young people, I am truly impressed. Many of them display such creativity, resourcefulness and collaborative effort.
- 50 There is a 17-year-old boy, Jurvis Tan, who graduated from the School of Science and Technology last year. Jurvis' aspiration is to be a computer programmer who makes a difference.
- 51 Right now, he is doing an internship in a local mobile app development company. Since young, Jurvis loves technology and his teachers recognised it. They gave him curriculum space to pursue his interest in coding, and guided him in understanding how he could use the skill to benefit the community.
- 52 Last year, he won an app design competition. The winning app was inspired by the idea of a torch relay. He hopes to connect people through digital chain storytelling and believes this idea has the potential to go viral and travel out of Singapore.
- 53 There is a growing number of students who, like Jurvis, displays keen interest in deepening their knowledge and know-how of technology-related activities. We must continue to create pathways to encourage this. Let us tap on the energy and creativity of our young people, as we do our best to support them.
- 54 Some schools have developed excellent ICT-related Applied Learning Programmes to support our students.
- 55 For example, in Rulang Primary School, students' computational thinking is nurtured through a school-wide robotics programme. All students have a chance to learn to build and programme robots.
- 56 Over the years, students have become so good that they have clinched many awards at various international platforms, such as the International Robot Olympiad and VEX Robotics World Championship. I understand that they have also built a robot for this conference and I can't wait to see their creation.
- 57 As we move forward, we seek to carve out more opportunities to stretch our students who have an aptitude for different areas. We will help them regardless of their starting point. And we will help them go as far as they can.
- 58 Our work in MOE stretches across the entire system. We are committed to support preschools to put in place age-appropriate ICT for learning and will work closely with Institutes of Higher Learning and industry partners. Under the Applied Study in Polytechnics and ITE review or ASPIRE, we will examine ways to match students' aspiration and career choices.
- 59 For example, students who are passionate about digital media production work can go to Nanyang Polytechnic. The polytechnic works with LucasFilm Singapore to co-design their programme and students may also intern in this world-renowned company.

60 A number of their alumni are already working there and some of them were part of the successful team that worked on Rango, the animation that won the Oscar for the Best Animated Feature Film at the Academy Awards in 2012.

Conclusion

61 We have laid a strong foundation in our three ICT masterplans. As we move into the next masterplan, we will build upon what we have established and position ourselves to help every student succeed in this changing world.

62 As a system, we will continue to strive towards the vision of “Every School a Good School”. A good school is one that cares for its students and motivates them to learn and grow. It is one that has teachers who encourage acquisition of strong fundamentals and provides opportunities to all students, regardless of their family circumstances to become confident and lifelong learners.

63 To support schools in their effort, we are committed to providing all students with access to quality ICT infrastructure, learning resources, and ensure our educators are well-connected and supported by the fraternity.

64 We want to develop 21st Century Competencies in our students. It is meaningful that these competencies are also exactly the very attributes that we, as educators, need to display, as we approach mp4.

65 We must continue to have a strong sense of purpose, and be guided by sound values. We must have the rigour and analytical depth to use and integrate technology sensibly, and not be distracted by gadgets and tools. This is done by staying grounded in sound pedagogy.

66 We must remain open and have the courage, inventive thinking, and creativity to innovate with ICT. And we must collaborate with one another, locally and internationally, to solve problems that technology now enables and demands.

67 I must reiterate the point that technology is a tool. It is you, the educators, who make the difference. And I know that all of you have what it takes to make that difference for our students.

68 In conclusion, stay focused on our goal, stay curious and open to new possibilities, and stay grounded in good pedagogy. At the same time, tap on the creativity and energy of our youth. The digital natives have much to offer us. Finally, stay connected and stay together with one another. This is an exciting journey, which undertaken together, will yield us more productive results and more joy.

69 On this note, I wish you an enriching conference and all the best in your endeavour to enhance Pedagogy, engage Learners, enable Action, and empower Your learning (PLAY) through technology. It is now my pleasure to declare iCTLT 2014 open.

70 Thank you.

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Last updated on 1/01/70