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Speech by Ms Grace Fu, Senior Minister of State, Ministry of National Development and Ministry of Education, at the International Science Education Conference 2009 on Tuesday, 24 November 2009, 8.30am at the National Institute of Education

Professor Hubert J. Gijzen
Director, UNESCO Office, Jakarta

Mdm Low Khah Gek
Director, Curriculum Planning and Development, Ministry of Education

Professor Lee Sing Kong
Director, National Institute of Education

Conference Delegates

Distinguished Guests

Ladies and Gentlemen

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Good morning.

1. It gives me great pleasure to welcome all of you to the second International Science Education Conference (ISEC). To our guests and participants from abroad, I warmly welcome you to Singapore. I am sure all the participants are looking forward to the next few days of stimulating learning and sharing of ideas.

2. The Singapore National Commission for UNESCO is pleased to support this International Science Education Conference which is attended by over 700 policy-makers and educators, including those from UNESCO member states. With UNESCO's funding support, educators from neighbouring countries are here to exchange their ideas and experiences on Science education with us.

3. We are indeed delighted to have Professor Hubert Gijzen, Director of the UNESCO Regional Science Bureau for Asia and Pacific, with us today.

Purpose of International Conference on Science Education

4. An international conference on science education can help to foster a common understanding on amongst the international fraternity. By promoting collaboration between policy makers, academics and educators, we hope to raise the quality of teaching and learning of science. The conference also provides a great opportunity for researchers and practitioners to exchange ideas, and a springboard for collaborative research work in science education.

Conference Theme

5. The theme for this International Science Education Conference is "Shared Issues, Common Future". This theme was chosen to reflect the need for collective efforts in addressing the many concerns of the 21st century. It has aptly captured the need for more collaboration among science experts and educators in the face of global challenges such as global warming, scarcity of clean water, the need for sustainable development, as well as ethical and legal issues related to emerging technologies. Irrespective of which country we are from, we all face the same set of challenges and share the same common future. The global challenges can only be dealt with through a concerted and united

effort across different countries. The global community will look to science for solutions to these challenges.

Importance of Scientists and Engineers in Innovation Driven Economies

6. In our world today, science and technology are key drivers of economic value. Many countries understand this and are investing in human resources in the areas of science and technology. Countries such as China and India have seen an exponential growth in the number of engineers and scientists graduating from their universities. Each year, China grows as many as 700,000 engineering graduates, and India grows 350,000.

7. The economic value created by technology is best illustrated by the story of a company called BYD. BYD is a relatively unknown company, started in China in 1995 to manufacture rechargeable batteries. Within 5 years, it became one of the world's largest manufacturers of cellphone batteries, competing directly with traditional giants like Sony and Sanyo. The company's continued emphasis on innovation recently led to its venture into manufacturing of electric cars, and this caught the eye of the American investor, Warren Buffett. Buffett thought that BYD has a shot at becoming the world's largest automaker and invested in the company. Today, this single company employs 10,000 engineers and is still hiring. Start-ups and companies like BYD generate employment and bring economic benefits to the country.

Developments in Singapore to Nurture Engineers and Scientists

8. In Singapore, science and technology have been and will continue to be a key driver of our economic development. And we are investing in education in science and technology. Our new university which focuses mainly on the disciplines of science, engineering, information systems and architecture will open in 2011. Through collaborating with Massachusetts Institute of Technology

(MIT) and Zhejiang University, the Singapore University of Technology and Design will, instead of observing the conventional silos of knowledge, breakdown the boundaries and draw knowledge across the different disciplines. We believe that this will eventually translate into new innovations and enterprises.

Scientific Literacy

9. As we equip our students for life and work, we recognise that scientific literacy is an essential life skill for all. Not only should students know and apply fundamental scientific concepts, they should also learn about the nature of science and the processes in science as well as understand the limitations of scientific knowledge. Our students should learn to challenge assumptions, analyse data, draw evidence-based conclusions, and use their scientific knowledge and skills to make good decisions which will positively affect themselves and the world around them.

10. To develop scientific literacy in the students, teachers must nurture in them an interest and ability to appreciate and understand science. Teachers should tap on students' curiosity and employ a diverse range of pedagogies which will provide opportunities for students to make observations, ask questions, make connections and communicate their ideas. Singapore teachers have taught and engaged our students well. In fact, we are pleased to see that the teachers' efforts have been affirmed in the recent release of the 2007 Trends in International Math and Science Study (TIMSS), as Singapore emerged 1st out of 36 and 49 countries at both Primary 4 and Secondary 2 levels respectively. I would like to take this opportunity to congratulate all Singapore science teachers for their excellent work. I would also like to add that we still have much to learn from our international participants as we seek to improve our science curriculum and instruction.

Keynote Presentations and Workshops

11. There is a wide variety of topics to be presented and discussed at this 3-day Conference. We are privileged to have the following five keynote speakers:

- a. Professor Larry Yore from the University of Victoria, Canada;
- b. Professor Reinders Duit from the University of Kiel, Germany;
- c. Professor Fouad Abd-El Khalick from the University of Illinois, Urbana-Champaign, USA;
- d. Professor Barbara Crawford from Cornell University, USA; and
- e. Professor Benny Yung from the University of Hong Kong.

12. In addition to these keynote presentations, I am glad that our Singapore schools are also sharing their strategies in teaching science. Teachers from Nanyang Primary School will be sharing about their “*Toys @ Work*” programme, which is a project designed to allow primary school students to learn scientific concepts through self discovery. The students engage in student-centred activities which involve playing with simple toys and they then develop their own toys to highlight science concepts learnt.

13. Innova Junior College will present on “*Using Facebook as a Multi-Functional Online Tool for Collaborative and Engaged Learning*”. You will hear about how students’ level of excitement in Biology and Chemistry classrooms is raised through the use of Facebook. The collaborative facility of Facebook enables students to take on the role of content creators, share their subject content and engage in discussion threads and live chats. The multiple applications in Facebook allow the teachers to further exploit its benefits fully as an assessment tool, a one-on-one tutoring tool, as well as a research tool.

Conclusion

14. While we value the economic benefit that science will bring to the society, we should not perceive science narrowly as such. We should encourage our students to look to science for the much greater contribution to mankind that is not measurable in economic terms. To a person who is looking for a cure to his life-threatening disease, to a child in search of clean drinking water, to an older person in need of better quality of life, to the world in search of clean energy, science holds all the promises. We need scientists who will bring hope to mankind. We hope that you will help nurture such scientists for us.

15. Finally, it leaves me to thank the organising committee for organising this meaningful event. I wish you all the best.

16. Thank you.

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