KEYNOTE ADDRESS BY DR NG ENG HEN, MINISTER FOR EDUCATION AND SECOND MINISTER FOR DEFENCE, AT THE 6TH AUSTRALIAN UNIVERSITIES INTERNATIONAL ALUMNI CONVENTION (AUIAC) ON WEDNESDAY, 11 JUNE 2008, 9.00AM AT SUNTEC SINGAPORE INTERNATIONAL CONVENTION CENTRE

Honourable Datuk Tan Sri Dr George Chan,
Deputy Chief Minister of Sarawak,

His Excellency, Mr Miles Kupa,
Australian High Commissioner to Singapore,

Dr Tony Tan,
Chairman of National Research Foundation, Singapore & Patron of AUIAC 2008,

Mr Simon Ho,
President of Australian Alumni Singapore & Chairman of AUIAC 2008,

Distinguished Guests,

Ladies and Gentlemen,

HIGHER EDUCATION: PAST, PRESENT AND FUTURE

OPENING

1. Thank you for inviting me to speak this morning at the 6th Australian Universities International Alumni Convention.

2. Educational ties between Singapore and Australia are extensive and represented at many levels, in both public and privates spheres. Over the past 5 years, about 4,000 Singaporeans joined Australian universities annually, making Singapore one of the top 20 contributors to the international student population in Australia. Here in Singapore, the University of Adelaide, Curtin University of

Technology and James Cook University, among others, currently operate branches, offering Australian-style education of comparable standard as their home campuses. Australian Universities have also played an important role in educating the leaders of Singapore. Among Cabinet members, our late President Mr Ong Teng Cheong and former Deputy Prime Minister Dr Tony Tan, who is also here at this convention today, both attended the University of Adelaide – Mr Ong graduated with a Bachelor's degree in Architecture in 1962, while Dr Tan obtained his PhD in Applied Mathematics in 1967. My present Cabinet colleagues, Minister of Health Khaw Boon Wan, Minister of Transport Raymond Lim, Minister for Information, Communications and the Arts Dr Lee Boon Yang, Minister for National Development Mah Bow Tan, and some of our most experienced leaders in the civil service, including the Permanent Secretary for Defence and the Prime Minister's Office, Mr Chiang Chie Foo, were all educated in Australia, many of whom as Colombo Plan scholars. These examples illustrate the close educational bonds between Australia and Singapore, that I am sure will continue to grow with increasing exchanges at various levels.

3. I want to congratulate the organisers for the success of this international alumni convention. Now into its sixth year, it indicates the wide support and influence that Australian Universities have, and is a clear example of the global reach of higher education in today's World. In keeping with the sprit of this convention, I would like to address the broader theme of Higher Education in this lecture, particularly on some challenges in the future for my Ministry, and the directions and policies that will guide Singapore forward.

4. Let me begin with a look to the past, which would be useful to set our bearings. In 1948, the right to be educated was affirmed in the Universal Declaration

of Human Rights by the United Nations. Today, primary and secondary education is regarded as an entitlement for citizens and a responsibility of the state. But, the enlightened view that education of the masses is a universal good, let alone a fundamental right, took a long time coming and is a relatively recent phenomenon.

PAST – EDUCATION FOR A SELECT FEW

5. Historical records do indicate sporadic education of selected classes as early as 3000 BCE in the ancient civilisations of Egypt. But public education as official policy was conceptualised much later. One record was around 63-64 CE where according to the Talmud, the High Priest by the name of Yehoshua Ben Gamla established the first public education system – it was a compulsory and unified system of teaching for every child, male or female, over the age of 5. Besides religion, poetry, mathematics, astronomy, and medicine were also to be taught.

6. But for many centuries to follow, this would be an utopian ideal, as in reality only privileged groups received education right up to the Middle Ages in 12th century. Technology was certainly a limitation. Before the advent of the printed paper, the masses had to depend on a select few for information. Furthermore, not all prevailing political-religious systems saw it in their interest to educate the masses. Feudal Europe from the 6th - 12th centuries was ruled by the aristocratic upper class comprising high officials of the Church and different levels of nobility. Even then, only male children of the noble class were taught reading, writing, code of manner of their rank, and profession of arms. Children of peasants and serfs received no formal education. Their learning consisted of working with parents to develop skills in their menial duties.

7. The West was not alone in their myopia and social stratification. Asian cultures were known to prize scholastic achievements. In China, from the Sui Dynasty (A.D. 581-617) up to the last days of the Qing Dynasty, national examinations were used to select the country's top scholars into the civil service – only the top 2% passed the examinations. But access to education was traditionally restricted only to males. It was not until the May 4th Student Movement of 1919 – the first mass movement in modern Chinese history - that women's exclusion from institutions of learning was put to an end.

8. This differential access to education based on social classes and gender resulted in unequal distribution of social and economic power between the upper and lower classes, and between males and females.

9. From the 13th century, the Renaissance in the West saw general intellectual and cultural progress, and led to a revival of learning. Around 1561, Scotland became one of the pioneers of public education when the Church of Scotland set out to establish a school in every parish and decreed a tax upon landowners to finance these schools.

10. For the rest of the civilised world, the turning point came around the 18th century. This period ushered in modern forms of intellectual liberty, and with it scientific and general inquiry, by the broader public. The democratic revolutions in the later part of the 18th century, together with the development of technology through the Industrial Revolution in the 19th century, provided the impetus for mass education for political and economic motives, rather than religious objectives.

11. It was in that enlightened environment that many of today's top universities were established. Some had been established much earlier, like Oxford and

Cambridge around the 12-13th century; Harvard and Princeton in the 17th and 18th century respectively. But it was not until the mid 1900s, that these citadels of learning provided universal access for education based on merit, rather than background. In the UK, the University College London in 1826, broke the social norms at the time, by opening up university education beyond male members of the Church of England. The University of Sydney, Australia's first university founded in 1850, was also set up to provide university education for students from any class. Such meritocracy provided hope to the masses and spurred them towards scholastic attainment.

12. For China, Communist rulers recognised the need for mass education to support economic development, and as a vehicle for propaganda. Whatever the motivations, they sought to educate men and women alike, because as Mao Zedong famously put it, "Women hold up half the sky". The result was an increase in school enrolment many fold. The Communists made the right choice. Educating women enables society to progress economically and socially. Renowned economist Prof. T. Paul Schultz from Yale University, has shown that countries that have equalized educational achievements for men and women in the last several decades have on the average grown faster than countries that did not.

PRESENT – IS MORE OF THE SAME, LESS?

13. While it has certainly taken a long and often circuitous route, we have progressed in our collective quest to educate all. But now that we have gotten this far, different challenges and questions arise for higher education of the masses. A confluence of factors – ease of global communication and travel, rising wealth and aspirations, private enterprise – have resulted in an exponential increase in the

proportion and numbers of students wanting and obtaining University degrees in developed countries. In Australia for instance, there were almost 180,000 international students enrolled in the higher education sector in 2007, contributing significantly to the AUD$12.5 billion education services (across all sectors) export industry which has now grown to be Australia's third-largest export income earner. Open Universities Australia (OUA), one of the most prominent on-line providers in Australia, has seen a 30% growth in undergraduate enrolments in 2007, on top of the 28% growth experienced in 2006. Worldwide, online degree programme have similarly proliferated. But as the numbers grow, so have some doubts. What should we aim for in educating the public? Does this mean that the majority should get a University education? To what end? I doubt that those who articulated the UN Declaration in 1948 could envision that entirely different questions - more related to the prevalence of higher education at the other extreme, rather than the scarcity of - would be asked in developed countries today. Some would say that these are good problems. Maybe so, but the questions persist.

14. A few years ago in 2002, Prof Alison Wolf, Professor of King's College London wrote a book provocatively entitled *"Does Education Matter?*". The book daringly questioned conventional wisdom and asked if more University education for the majority was always beneficial, for both the state and the individual. This was against the background of the incumbent Government in UK, setting higher targets for more to go to university, and tailoring its financial policies to achieve that goal.

15. The book was reviewed extensively, including by *the Economist*. Let me quote snippets from that review to give an essence of the arguments: "Having the right qualifications, in the right subjects, from the right institutions" – did matter. Indeed, it matters more than ever before. But education is also a "positional good".

To some extent, education is a race: if everybody runs faster, that may be good in itself, but it does not mean that more people can finish in the top 10%. In that sense, much of the extra effort may be wasted.

16. Also, more education does not necessarily mean more growth, as most politicians (and economists) unthinkingly suppose. Expanding education thoughtlessly may actually weaken the link with growth, such as it is. Another is that the preoccupation with economic growth narrows and distorts society's idea of what education should be.

17. The economic emphasis has produced a fixation with quantitative targets: the (UK) Government wants ever more people to go to university, and has tailored its financing policies to that end. The increase in numbers appears to have reduced the average quality of a university education. That is one cost. Any gains to be expected from pushing out more graduates are then further reduced by the positional-good effect. In addition, expanded recruitment of teachers at the tertiary level drains the best recruits from teaching posts in secondary schools. Worst of all, maybe, from an economic point of view, the best universities are being starved of resources. As a result, they are no longer able to do as good a job of preparing the very brightest students for their role at the cutting-edge of Science and Technology.

18. Whatever the arguments or benefits, the participation in higher education has certainly been rising in developed countries. For Singapore, over half of each cohort already obtain a publicly-subsidised higher education qualification – either a diploma or a degree – from our polytechnics and universities. In the UK, there was a 67% increase in participation in higher education during the short period between the late 80s to early 90s. Based on OECD figures in 2005, the proportion with degrees in UK

was 39%, Australia even higher at 60%, while the average for the 24 OECD countries was about 36% in the same year.

19. Such numbers have not always translated to higher employment. In fact, in 2003, the graduate unemployment rate in UK was 6% - higher than the national unemployment rate in the same year by over 1%. Even China with its booming economy faces the same problem. According to the Chinese Ministry of Labour and Social Security, China produced about 4.1 million graduates in 2006, of which an estimated 1.2 million graduated without any certainty that their degrees would be market-relevant. Australia facing 17 years of uninterrupted growth has more salubrious results and has a high graduate employment. Singapore too has low unemployment in general, and low graduate unemployment.

Singapore – Strategies and Goals for Higher Education

20. Amid these uncertainties, juxtaposed with the very sensible aspirations of citizens wanting higher education, what is Singapore's response? Our policy for higher education is critical in guiding us forward. Especially for a small city state like Singapore which places a premium on developing our human capital, we deeply believe that education can be the means to help Singaporeans achieve continued success and prosperity. But how we intend to do this, as others have wisely pointed out, is just as important, if not more. Because you can "get it wrong" if the fixation is just on numbers, and not on quality or relevancy. For the next few minutes, I will share not just our philosophy but also highlight some of the specific programmes that we have put in place, to give form to our ideas and beliefs about how best higher education can develop Singaporeans to their full capacity and bring realisable benefits to all.

***Developing diverse strengths, not uniformity*.**

21. Singapore believes that every student should be developed to his/her fullest. But this does not mean equal or similar outcomes. We accept the inherent differences in students' abilities. Thus, our system aims to provide opportunities to the spectrum of different capabilities with varied choices to match strengths and develop talents to the fullest. Our higher education system is also unapologetically, I might add, closely attuned to the need to make education relevant to help Singaporeans find a job and remain employable. This gives them confidence that the education that they have received is meaningful. At the central level, we have the National Manpower Council where three agencies – the Ministries of Manpower, Trade & Industry, and Education – together review annually the economic prospects for graduates, the medium and long term demand, and set places in our institutions accordingly. At the aggregated level, our institutions therefore provide 50 to 55% of graduates in Science and Technology.

Higher Education Institutions – Best in Class

22. To achieve our educational goals, we build higher education institutions at varying levels to cater to a spectrum of academic ability. These public institutions do differ in mission and types of students they attract but all must have **high standards and strive to be the best in class**. Let me illustrate with specific examples, beginning with our vocational institutes.

Institute of Technical Education

23. The Institute of Technical Education (or ITE in short) was established in 1992. It is meant for the lower quartile of our cohort of students, in terms of academic ability. Lest you misunderstand, I say this with pride. ITE is a shining jewel in our system that deserves pride of place because it has succeeded where most countries have failed. It has given confidence to this group of students, provided them with vocational expertise to be employed to be self-sufficient, and ignited their internal drive to upgrade themselves. ITE's graduates are highly employable and valued by the industry. Over 90% were into jobs within six months of graduation in 2007. Many go on to start successful businesses or upgrade themselves academically. ITE is now an internationally-recognised institution providing school leavers with a unique brand of "Hands-on, Minds-on, Hearts-on" education that meets industry needs. Last year, ITE was awarded the **inaugural global Harvard-IBM Innovations Award in Transforming Government**, in recognition of its excellent vocational education model.

24. Our ITEs continue to seek to improve. It has partnered with global industry partners to set up **Centres of Technology (COTs)** in niche areas such as industrial automation, and offers joint certifications with companies like Microsoft and Sun Microsystems. **It collaborates with our polytechnics to offer diploma-level electives** in different areas, such as IT programming and data networking. It has tied up with a highly-ranked Vocation Education and Training institute in Baden-Württemburg, Germany (Gottlieb-Daimler-Schule) in 2007 to offer the first ITE Technical Engineer Diploma in Machine Technology.

Polytechnics

25. Besides the ITE, our polytechnics also produce diploma graduates with skilled technical and professional knowledge to meet the needs of the Singapore economy. Like ITE graduates, polytechnic graduates are also highly employable. Our polytechnics work intimately with the industries, to respond to their changing needs. For example, the **Centres of Innovation** in our polytechnics provide a platform for collaboration in research, which could become commercially-viable innovations of tomorrow. The contributions our polytechnics have not gone unnoticed. The Singapore Maritime Academy in Singapore Polytechnic, for instance, won the best seafarer training school in Asia Pacific for 4 out of the past 8 years under the Lloyd's List Maritime Asia Awards.

26. Many polytechnic graduates go on to obtain degrees here and abroad, including Australian Universities. Currently, the most popular destinations for Singaporeans are the University of Queensland, the University of Western Australia and the University of Melbourne, which are part of the leading Group of 8 universities in Australia. Other universities like Murdoch University, Royal Melbourne Institute of Technology (RMIT) and Queensland University of Technology are also popular for specific courses, for example mass communication, because of their close ties with industry.

Universities

27. We have three publicly funded local universities: the National University of Singapore (NUS), the Nanyang Technological University (NTU) and the Singapore Management University (SMU). NUS and NTU have established themselves as world-class research universities, ranked amongst the top 100 universities in the

world by the Times Higher Education Supplement World University Rankings in 2007. SMU, though young, has quickly established a reputation for producing high-quality graduates who are confident, street-smart and articulate.

28. To add value to their students, our universities must maintain high standards of admission and performance. They must also act as strategic engines for Singapore's long term economic advancement. Thus, our universities have developed **programmes to nurture and groom top talents**.

29. Take for example, **NTU's C N Yang Scholars Programme**. This is an undergraduate programme designed for top science and engineering students. C N Yang Scholars are assigned faculty mentors who guide their entire academic programme. The programme provides a strong and broad foundation in the basics of science and mathematics, and empowers students to delve deeper into any discipline in science, technology, engineering and mathematics, and to develop an interest in forefront research.

30. There is also the **University Scholars Programme (USP) in NUS**. Graduates from this programme participate in interdisciplinary modules on a range of topics, from Human Relations and Ethics, and the Environment. Part of the programme involves student interaction with top universities around the world, such as Waseda University in Japan.

THE FUTURE – A GLOBAL PARTNERSHIP OF QUALITY INSTITUTIONS

31. Let me now turn to the future. With growing affluence, and rising aspirations, it is inevitable that more Singaporeans will seek to upgrade themselves through higher education. This is a good aspiration, and one that the Government will help

Singaporeans achieve. The Committee on the Expansion of the University Sector is studying the set-up of a 4th University in Singapore. But for the full benefits to flow through to individuals and Singapore, we should ensure that higher education remains relevant and add value.

32. To achieve these goals, our institutions in varying categories will have to upgrade themselves to remain attractive. As the numbers grow, so does the competition. Even top Universities all over the world have had to respond to new competitive challenges. They are **stepping up their R&D**, and are out to get more funding. In Australia, you have the Australian Research Council (ARC), which provides support for the highest-quality research. The University of New South Wales is a clear first in terms of ARC projects funded for Business and Economics, and Engineering, while the Australian National University leads in the field of Science. On the global scale, as exemplified by academic powerhouses in the US such as the Massachusetts Institute of Technology, and UK universities such as Cambridge University - the drive is also to be research-intensive. In Singapore, our Prime Minister chairs a high-level Research, Innovation and Enterprise Council (RIEC) to lead our efforts in enhancing our R&D capabilities and promote innovation and enterprise by encouraging knowledge creation in the fields of Science and Technology. The RIEC has identified three strategic research sectors for Singapore, in the areas of Biomedical Sciences, Environmental and Water Technologies, and Interactive and Digital Media, and has committed S$1.4 billion to fund their development.

33. Established universities are also leveraging on their large endowments to attract the best researchers and students. For example, MIT's endowment fund stands at nearly US$10 billion for a student enrolment of 10,000, including 6,000

postgraduate students. For some, large endowments allow them not even to charge students. For instance, the Cooper Union in New York, the US' top undergraduate engineering college, has an endowment of US$300 million for a total enrolment of 900 students, all of whom are admitted on full tuition scholarships of about US$120,000 each.

34. This drive to be research intensive, to attract top students and faculty together with collaboration with industry and defence science organisations will result in an ecosystem that allow only a few universities to excel in that stratosphere. There will be re-positioning and even relegation in this race. It is no longer about what they teach – in fact, MIT has put almost all its undergraduate and graduate course contents on the Web for all and sundry on MIT OpenCourseWare (OCW). It is about putting key elements together to sustain the **ecosystem and differentiate**. One strategy to differentiate is to **integrate**. For example, Stanford University's degree programmes in Design bring together the Design Group of the Mechanical Engineering Department in the School of Engineering, and the Department of Art and Art History in the School of Humanities and Sciences. Stanford students and faculty in engineering, medicine, business, the humanities, and education can also come together at the **d.school** to work on projects that require multi-disciplinary points of view. Such integration and collaboration allows students to synthesise knowledge from different disciplines and come up with innovative solutions to problems.

35. The other strategy is to **broaden**. Australian universities such as the University of Melbourne are also looking for ways to enhance their students' learning experience. The Melbourne model offers "breadth subjects" within the curricula for their undergraduate students. For instance, "Critical Thinking with Data" teaches students from any discipline to become critical users of statistics and data-based

evidence. The subject deals with judging the likelihood of events, risk measurement and the quantification of uncertainty – skills that are applicable across disciplines.

36. Whatever new strategies are required to differentiate and compete, universities at various levels have realised they cannot respond to rising demands alone. They are establishing **partnerships and collaborations** with other top universities worldwide to provide their students and faculty with expanded opportunities in learning and research. For example, NUS and the Australian National University have concluded agreements to offer several joint degree programmes, such as Doctorate in Physics, Masters of Arts (Southeast Asian Studies), and Bachelor of Social Sciences (Hons) in Actuarial Studies and Economics. Both universities are discussing the possibility of offering more joint programmes.

37. Similarly, our polytechnics are collaborating with high-quality foreign specialised institutions, like Wheelock College and Stirling University, to run degree programmes in niche areas such as Early Childhood Education, Food Technology, and Retail Marketing. Our polytechnics are exploring more potential tie-ups, including some with Australian universities, to broaden the offerings of niche programmes, which could include sports & exercise science, interior architecture, process instrumentation and control.

38. The Singapore Government also recently launched a 10-year **Continuing Education and Training (CET) Masterplan**, under which we will work with our post-secondary educational institutions and reputable private players to establish a number of high-quality CET institutes to support our manpower needs. The Ministry of Manpower, with Ministry of Education's support, is planning to quadruple CET

capacity within just two years, from training 22,000 workers last year, to 80,000 workers by 2010. Even here, we are seeking high quality global partners. Take the pharmaceutical industry as an example in the manufacturing sector. Talks are underway between public sector agencies, our polytechnics, NUS and key pharmaceutical companies such as GlaxoSmithKline to set up a Singapore Academy of GxP Excellence (SAGE) that will facilitate the discovery of new technologies in developing and manufacturing pharmaceuticals, biologics and medical devices.

39. To successfully implement the CET Masterplan, the Government is topping up the **Lifelong Learning Endowment Fund (LLEF)** with S$800 million this year, bringing it up to S$3 billion. Our target is to grow the LLEF to S$5 billion.

40. These concrete examples that I have provided underscore key elements of Singapore's strategy to provide higher education to maximise our human resources. We aim to build world-class institutions through collaborative partnerships, both local and foreign, private and public, so that Singaporeans can have quality opportunities to attain their educational goals.

Inculcating a Global Outlook Among Students

41. We also aim to give our students more opportunities to learn about other countries and cultures, to be **World ready**. We want to start them young – our target is for one-third of our secondary and junior college students, and up to 50% of tertiary students, to have at least one overseas experience. Students are encouraged to participate in overseas immersion programmes, twinning programmes with overseas schools, overseas community projects, with funding support from the Ministry.

42. These opportunities will also be offered in the Universities. Let me cite some examples. NUS students can participate in a **student exchange programme** for one or two academic semesters in any one of eight Australian universities, amongst some 160 other international institutions. These include Monash University, the University of Adelaide, and the University of Sydney. Apart from student exchange programmes, **NUS Overseas Colleges,** provide NUS students with education and experience in leading entrepreneurial and academic hubs around the world. Currently, 250 NUS students spend up to an academic year in overseas colleges in Silicon Valley and Bio Valley in the US, as well as Bangalore, Shanghai and Stockholm.

43. **SMU also organises Business Study Missions (BSM)** that allow its students to interact with people of different cultures. More than 550 SMU undergraduates have embarked on the BSM in countries ranging from China, India, Middle East, Europe and US. These missions cover a range of site visits, networking sessions and presentations by prominent guests from the private and public sector, giving the students insights into the real-world operations of a variety of industries in different cities.

44. **NTU's Global Immersion Programme (GIP),** available in countries like Vietnam and Switzerland, includes a 22-week industrial attachment or internship alongside a study component. Students on the GIP have worked in exciting environments such as an optic fibre cable company in Beijing and a tissue engineering laboratory in the US.

CONCLUSION

45. As a small city state, with limited resources, our strategy to deliver quality higher education to Singaporeans is a simple one. We achieve this by ensuring that every publicly funded institution strives to be the best in class - each must be a gem.

46. Our institutions must provide learning that is current, relevant and make a difference to their students, industry and the overall economy. They must enhance their international standing by leveraging on technology and international partnerships. If we can maintain this focus on quality, we will be able to provide more opportunities to help our young people to develop their interests and talents to the fullest.