Ministry of Education
SINGAPORE

Report of the Committee on University Education Pathways Beyond 2015 (CUEP)

Greater Diversity, More Opportunities

Final Report

August 2012

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Ministry of Education
SINGAPORE

20 August 2012

Mr Heng Swee Keat
Minister for Education

Dear Minister,

In September 2011, I was appointed to chair a committee to examine how to provide more degree opportunities for Singaporeans, and to propose feasible models and strategies to achieve this.

2.   In determining this, we were mindful of the need to preserve the high standards of our university sector and good employment prospects, so as to safeguard the value of a degree education. We also believed that these opportunities should cater to a wider group of students with varying abilities, learning preferences and interests, to develop their potential fully. To ensure the accessibility of these opportunities, we also acknowledge the importance of maintaining the affordability of a degree education, while ensuring fiscal sustainability for the Government.

3.   The year-long review culminates in this report, which incorporates the views of a broad range of stakeholders, gathered through our numerous engagement sessions, and our insights from overseas study trips. We have also considered the comments of the 9th International Academic Advisory Panel in July 2012, which had endorsed the preliminary findings of the Committee.

4.   The Committee recommends raising the publicly-funded, pre-employment training (PET) university cohort participation rate (CPR) to 40% by 2020, thereby creating about 3,000 additional places then, compared to today. In order to diversify the current university landscape and create differentiated options for Singaporeans, we also propose that this increase should be through a new applied degree pathway, which would have close nexus with the economy and produce graduates equipped

with a strong theoretical foundation and a keen understanding of its real-life applications.

5.   The Committee has identified the Singapore Institute of Technology (SIT) and SIM University (UniSIM) as our fifth and sixth universities to spearhead this applied degree pathway. Specifically, we propose that SIT should become Singapore's fifth autonomous university, and that SIM University (UniSIM) start offering publicly-funded full-time degree courses along with their current part-time degree courses. We believe that SIT and UniSIM will complement the existing university landscape in Singapore with their distinct value proposition.

6.   As the wider private education sector is currently large and of uneven quality, we recommend that an in-depth study of the sector be conducted, to better assess the quality and value of the various programmes offered by private education institutions.

7.   The Committee also affirms the importance of continuing education and training (CET) as a critical avenue for Singaporeans to upgrade their skill sets in the face of a constantly changing and increasingly sophisticated economy. Therefore, we recommend that the Government provide more support for working adults to access a degree education via the CET pathway, such as extending government financial assistance schemes to part-time students at UniSIM. We expect publicly-funded part-time degree places to grow to 10% CPR by 2020, so that combined with full-time places, up to 50% of each cohort could enjoy a government-subsidised degree education.

8.   Finally, with the increase in degree opportunities, the Committee recommends that the Government continues to ensure the affordability of a degree education, and to improve on the provision of information on these different pathways to teachers, students and working adults.

9.   We are confident that our recommendations will enable Singapore's university landscape to become more diversified and vibrant, provide more opportunities for Singaporeans to develop their full potential, and better position Singapore for the future.

10.   I am pleased to submit my Committee's report to the Government for consideration.
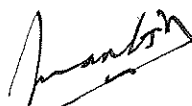
Yours sincerely,

LAWRENCE WONG
CHAIRMAN
COMMITTEE ON UNIVERSITY EDUCATION PATHWAYS BEYOND 2015
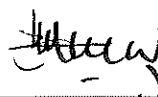
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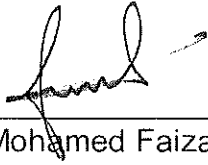Permanent Secretary (Education Policy)
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National University of Singapore

Mrs Tan-Kek Lee Yong
Principal
Pioneer Junior College

24 August 2012

Mr Lawrence Wong
Senior Minister of State (Education and Information,
Communications and the Arts)
Chairman, Committee on University Education
Pathways Beyond 2015

Dear *Lawrence* ,

Thank you for the final report of the Committee on University Education Pathways Beyond 2015.

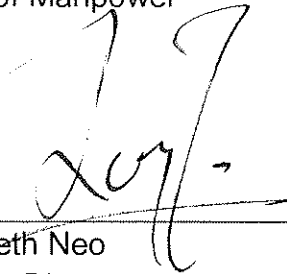2.   The Government has accepted the recommendations set out in your Committee's report. As changes in education policy take time to seed and implement, this review is timely. The Government is on track to achieve the 30% publicly-funded cohort participation rate (CPR) by 2015, and it is therefore necessary to start planning for the university sector beyond this target. This is especially so when the environment around us is constantly changing, and we need to ensure we are ready as a people and a country to respond to the challenges and opportunities of the twenty-first century.

3.   The expansion of the university sector to 40% CPR by 2020, with the Singapore Institute of Technology (SIT) and SIM University (UniSIM) spearheading a new applied degree pathway, will create a larger pool of talent for Singapore, and enhance the diversity of our university landscape.

4.   These initiatives will require much care and effort to bring to fruition, and my Ministry will work together with SIT and UniSIM to ensure that this distinct pathway will bring value to the individual, and society.

5.   The Government also affirms its commitment to Continuing Education and Training (CET), and will work together with other stakeholders to promote CET as a viable degree pathway. We will also continue to ensure the affordability of a publicly-funded university education for both full-time and part-time undergraduates, so that no deserving student is deterred from a publicly-funded degree education due to financial constraints.

6.   With a more diversified university landscape, my Ministry will also continue its efforts to emphasise education and career guidance in schools, and will improve the provision of information on degree courses to teachers, students and working adults.

7.   On behalf of the Government, I would like to thank you and your Committee for your efforts in developing a set of thoughtful recommendations that will strengthen our university sector, provide more opportunities for Singaporeans to develop their potential, and better position us to meet Singapore's economic and social needs of the future.

Thank You!

Yours sincerely,

HENG SWEE KEAT

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BACKGROUND AND APPROACH

1.   At the National Day Rally in August 2011, Prime Minister Lee Hsien Loong highlighted the need to further develop and expand the university sector. In response, the Ministry of Education (MOE) formed a Committee chaired by then-Minister of State (Defence and Education) Mr Lawrence Wong to study the university landscape and propose recommendations on its development.

2.   The Committee was to examine how the university sector could better provide opportunities for Singaporeans and, in particular, to:-

> a. Explore the scope for expanding the publicly-funded university cohort participation rate (CPR) beyond the current target of 30% in 2015; and

> b. Propose feasible models and strategies to achieve this.

3.   The Committee adopted a strong public engagement strategy to gather the views of a broad range of stakeholders, and undertook study trips overseas to understand other systems and trends in the global higher education landscape.

RATIONALE FOR THE REVIEW

4.   The key motivation for the review is to prepare young Singaporeans for a more dynamic and interconnected future, where they will need to be highly-skilled, versatile and resilient, to compete on an equal footing with a highly-mobile international talent pool.

5.   An increase in publicly-funded degree places will cater not only to a growing number of students who are able to benefit from a degree education, but also to students from a broader range of educational backgrounds, with different aspirations, abilities and learning preferences. This will also better meet industry's requirements for a diverse workforce profile. In providing Singaporeans with more opportunities to fully actualise their potential, we will enable them to contribute to the country's development and provide them with a greater stake in the nation's success.

6.   Reviewing our university sector at this time is particularly pertinent, given that other countries are also undertaking efforts to reform their university sector quantitatively and qualitatively. Universities all over the world are evolving to stay relevant in a globalised world, and to become world-class institutions. There is therefore a need for Singapore to keep abreast of international higher education

trends, and to ensure that our university sector is well-positioned to respond to future challenges and opportunities.

7.   This review is also timely given that MOE is on track to achieve a publicly-funded university CPR of 30% by 2015. As changes in education policy take time to seed and implement, it is imperative to start planning for the university sector further down the road.

8.   In determining the expansion of opportunities, the Committee was informed by the following considerations:-

> a. To maintain high standards in university education, thereby preserving the value of the degree and minimizing the potential downsides of under- and unemployment of university graduates.

> b. To broaden our learning pathways, by creating differentiated institutions and programmes which cater to a wider spectrum of students and provide them with opportunities to develop their potential fully.

> c. To ensure the continued affordability of university education while maintaining fiscal sustainability for the Government.

9.   The Committee was also mindful of the risks of expanding the university sector too much and too fast, at the expense of relevance to students' aptitudes, the needs of the economy, and without concomitant resourcing to ensure adequate faculty resources and quality. The consequences of such experiences across Europe, North America and Asia have been high attrition rates, reduced graduate employability and a dilution in the value of university degrees. It is thus important to ensure that this proposed increase in university places does not merely fuel a paper chase, but has a real, positive impact on the lives of students who are able to benefit from a university education.

RECOMMENDATION 1: INCREASE PUBLICLY-FUNDED UNIVERSITY COHORT PARTICIPATION RATE (CPR) TO 40%, BY 2020

10.   The Committee recommends raising the publicly-funded, pre-employment training (PET) university CPR to 40% by 2020, thereby creating about 3,000 additional places compared to today.[1]   This increase will raise the number of publicly-funded PET degree places to about 16,000 by 2020.

11.   The labour market is already able to support a workforce profile where over 40% of a cohort have degrees. In 2011, 46% of *economically-active* 25- to 29-year-

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[1] In AY2012, 13,000 publicly-funded full-time degree places were planned for Singaporeans (~27% CPR). An additional 1,000 places were planned for by 2015, to reach a CPR of 30% by 2015.

old Singaporean residents held degree qualifications.[2] At the same time, 44% of *employed* 25- to 29-year-old Singapore residents were in jobs that paid at least $3,000 a month, which could be taken as a proxy for graduate-level jobs.[3]

12.   The demand for graduates is likely to increase as Singapore needs a highly-skilled and sophisticated workforce to drive its future economy. The 2010 Economic Strategies Committee (ESC) concluded that Singapore had to move towards productivity-driven growth to progress beyond its present stage of development.[4] This could be achieved through a qualitative transformation of our economy and the creation of higher value jobs, most likely Professional, Managerial and Executive- (PME-) type jobs. This is presently the fastest growing segment of Singapore's workforce profile, constituting 32% in 2011, up from 27% in 2001.[5]

13.   The increase will benefit students from both junior colleges (JC) and polytechnics, as a larger proportion from both groups would be able to progress to universities. The actual proportions that secure publicly-funded university places will vary from year to year, depending on the quality of the cohort, manpower planning parameters, as well as student preferences.

14.   In addition to the increase in the number of publicly-funded PET degree places, we also recommend that the Government support the growth of publicly-funded continuing education and training (CET) degree places. Currently, an estimated 7% of the cohort pursues a publicly-funded CET degree. As support and demand for skills upgrading increases, the publicly-funded CET participation rate could increase to about 10% by 2020 (*see details in Recommendation 7*).

15.   Combining provisions for both PET and CET degree places, our overall publicly-funded university CPR would be up to 50% by 2020. This is generally consistent with the needs of our labour market as highlighted above. It is also in line with international benchmarks. For example, among the Organisation for Economic Cooperation and Development (OECD) countries in 2009, the average university entry rate was 59%, and the graduation rate was 38.6%.[6]

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[2] Data from the Ministry of Manpower's *Labour Force Survey (2011).* The 46% includes self-financed degrees obtained through local and overseas universities. According to the Ministry of Manpower's *Labour Force Survey (2011) p.5*, close to 5 in 10 Singaporean residents aged 25 – 29 (46%) and 30 – 39 (47%) in the labour force were degree holders.
[3] Data derived from the Ministry of Manpower's *Labour Force Survey (2011),* p. 149, Table 43. Singapore Residents include Singapore Citizens and Permanent Residents. Data from *Graduate Employment Survey (2011)* of NUS, NTU and SMU indicate that the current starting pay of graduates from our autonomous universities range between $2,500 to $5,000.
[4] *ESC Report (2010)*, p.7.
[5] Data from the Ministry of Manpower.
[6] OECD, *Education at a Glance (2011)*, pp. 316 and 68.

16.   Our university sector is developing into one that is better able to serve an increasingly sophisticated economy, and where there is greater choice and room for our young to excel.

17.   Our two oldest autonomous universities (AUs) – the National University of Singapore (NUS) and the Nanyang Technological University (NTU) – are comprehensive, research-intensive academic institutions, with a total student enrolment of 35,600 and 33,000 respectively. The third AU - the Singapore Management University (SMU) - focuses on business, law and social sciences, and has a total student enrolment of 7,200. The fourth and newest AU - the Singapore University of Technology and Design (SUTD) - offers undergraduate programmes with a focus on technologically-intensive design and recently matriculated its first batch of 340 students. We have also set up new institutions within the AUs, such as the Yale-NUS Liberal Arts College (YNC) in NUS and the Lee Kong Chian School of Medicine (LKCMedicine) in NTU, which will admit their pioneer batches in 2013.

18.   Notwithstanding these positive developments, we believe that there is room for greater diversity in our university sector. Other countries' university landscapes are more variegated, comprising a thriving eco-system of public and private universities, research-intensive and applied pathways, with options for both fresh school leavers and working adults seeking a degree education. Having such a diverse and comprehensive university landscape in Singapore will better enable us to meet the needs of our citizens and our economy.

RECOMMENDATION 3:   INTRODUCE A NEW APPLIED DEGREE PATHWAY, WITH STRONG NEXUS WITH THE ECONOMY

19.   The Committee recommends further differentiation of the university landscape by developing a new applied degree pathway. This pathway will have the following advantages:-

    a. Better caters to a broader range of students, learning preferences and interests.

    b. Strong nexus with the economy to address diverse industry needs and enhance employability of graduates.

 20.   The applied degree pathway should have the following features:-

    a. Strong theoretical foundations.

b. Integration of soft-skills, such as communications and cross-cultural skills, into the curriculum.

c. Innovative applied pedagogy.

d. Close collaboration with relevant industries, through platforms such as a well-integrated industry experience for students and cooperation on applied research.

e. Excellence in teaching and a high-quality undergraduate experience.

21.   The integration of classroom knowledge with real-world applications would create a learning environment that is hands-on and collaborative, with a strong industry orientation. We want to motivate students to master new skills, and apply that knowledge in solving real-world problems. This would better equip them with skills that are valued by employers, and enhance their employability in the global marketplace.

RECOMMENDATION 4: SINGAPORE INSTITUTE OF TECHNOLOGY (SIT) AS A NEW AU

22.   The Committee recommends developing SIT into Singapore's fifth AU, to pioneer this distinct, applied degree pathway.

23.   SIT is well-positioned for this, as it is already implementing several elements of such a model today. Established in 2009 primarily for polytechnic upgraders to obtain industry-relevant degrees, SIT, in partnership with overseas universities (OUs), currently offers a number of programmes with a strong applied element. Some of these include courses in engineering, allied health, early childhood education, culinary arts and digital animation. SIT has also forged close links with industry – in 2011, there were 34 industry partners sponsoring scholarships for 12% of its students in various disciplines.

24.   When SIT becomes an AU, it should start to award degrees in its own name. In highly specialised areas, such as culinary arts and digital animation, however, SIT may continue to tap on the OUs for their established brand name and expertise. By 2020, we envision SIT operating on a hybrid model where there is a mix of SIT and OU degrees, as well as joint and dual degrees.

25.   To strengthen the industry orientation of its academic offerings, SIT should consider offering a Cooperative Education (Co-Op) programme, which integrates meaningful work experience into the academic course requirements.   We recommend that SIT start on a modest scale with a select stable of partner companies prepared to commit to the requirements of the programme. SIT should

be similarly selective in choosing students with suitable attitude and aptitude to benefit from the Co-Op programme.

26. SIT should leverage further on the existing Centres of Innovation platform, to forge closer collaborations with the polytechnics and industry, and carve out a distinct niche of excellence in applied, solutions-directed research and consultancy capabilities. Such projects can provide students with additional opportunities for industry-linked experiential learning, while strengthening the profile of the university.

27. SIT should also admit students from the polytechnic, JC and Integrated Programme[7] (IP) tracks, as a more heterogeneous student body will enrich the learning experience. Its admission criteria must thus continue to take into account a more holistic assessment of the applicant. To meet the educational needs of this broad range of students, SIT will have to move beyond its current "plus two" model[8] to offer three- and four-year degree programmes, enabling the integration of broad-based and applied industry elements into the curriculum for a fuller university education.

28. The new SIT will be a "best-in-class" institution that is different in character but equal in status to the existing AUs. It will augment the options available in our higher education landscape by offering a distinct degree education that caters to a wider spectrum of preferences and abilities, and produces a different type of graduate to meet the diverse needs of our economy.

RECOMMENDATION 5: CONDUCT IN-DEPTH STUDY OF THE PRIVATE EDUCATION (PE) SECTOR

29. In Singapore, publicly-funded universities are at the core of our university sector. However, the Government does provide subsidies for niche courses offered in private institutions such as the external degree programmes offered by the Nanyang Academy of Fine Arts (NAFA) in collaboration with the Royal College of Music (RCM), and the LASALLE College of Arts in collaboration with Goldsmiths College; as well as part-time degrees at the SIM University to promote continuing education and training (CET).

30. During its study trips overseas, the Committee encountered different university systems with varying compositions of public and private universities. In the United States, a spectrum of private degree-awarding institutions of varying quality and reputation operate alongside public universities; while Hong Kong also has a flourishing PE sector, its publicly-funded universities continue to occupy a position of relative prestige; whereas Canada, France and Germany have tended to

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[7] Students enrolled in the IP track would graduate with either an GCE A-Level, International Baccalaureate or school-based diploma.
[8] Students with relevant polytechnic diplomas can obtain a degree within two years.

rely more on public universities, with some provision made for accredited private institutions to award degrees; and Finland only has a publicly-funded higher education sector.

31.   The Committee recognises that private education institutions (PEI) play a role in complementing the public university sector, by injecting greater course diversity and supporting workforce development. However, the PEI landscape in Singapore is large and of uneven quality. We are concerned that this uncertain quality of education could compromise students' learning outcomes, and lead to less-than-ideal outcomes and returns on investment for students.

32.   Currently, there is insufficient data to fully assess the quality and value of the various PEI programmes. Hence, the Committee recommends conducting an in-depth study of the programmes and student profile in the PE sector. An expert panel could be established to advise on key quality parameters and data indicators to be collected through an independent survey.   This will facilitate a better quality assessment of the PEI programmes, and set the stage for tighter regulatory controls, beyond the mandatory baseline standards that are already in place today.

33.   The data collected from the in-depth study can also be published, to help students make more informed choices with regard to PEI programmes.   The disclosure of accurate measures of quality outcomes should galvanise PEIs to raise their quality, thus improving the quality of the sector as a whole and building up public confidence in the value of its offerings.

RECOMMENDATION 6:   INTRODUCE PUBLICLY-FUNDED FULL-TIME (FT) DEGREE PROGRAMMES AT SIM UNIVERSITY (UNISIM)

34.   As the only local private university in Singapore, UniSIM is a step ahead of the rest in the PE sector. It already has degree-awarding powers and a reputation for providing good part-time (PT) degree programmes. Since the extension of government subsidies to UniSIM's PT degree programmes in 2008, the Government has played a stronger role in the governance and quality assurance of UniSIM, to ensure accountability of public monies.[9]   UniSIM also enjoys a long-standing relationship with MOE, having been involved in the early days as an institution providing skills upgrading for teachers.   Therefore, we recommend that the Government takes a first step towards leveraging on the PE sector, by strengthening the existing public-private partnership with UniSIM and introducing subsidised FT degree programmes there.

35.   The Committee sees such public-private partnerships as one possible way forward to better tap on the PE sector in Singapore. In other words, the Government

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[9] For example, there is an MOE representative on the UniSIM Board of Trustees. UniSIM is also subject to MOE's Quality Assurance Framework.

can provide more support to the PEIs that are assessed to be of higher quality. But at the same time, the Government should also play a larger role in the governance and quality assurance of these PEIs, to ensure accountability for the use of public funds.

36.   UniSIM can leverage on its established PT programme model to provide synergies for its FT degree programmes. We recommend tapping on UniSIM to provide these places as UniSIM already has the necessary elements (industry-relevant faculty, pedagogy, curriculum, modular programmes and close industry links) in place to develop a coherent work-integrated FT programme, complemented by PT options.

37.   UniSIM should offer degrees which are rigorous, and in disciplines which serve industry needs. Students should also be encouraged to take up minors to deepen their specialisation and to further distinguish themselves from graduates from other universities.

38.   UniSIM should open its FT programmes to fresh school leavers as well as working adults, and adopt a more open admission policy, which takes into account work experience and talents, beyond academic grades. The programme itself can be designed in a modular and flexible manner, for example, giving students the option to choose between day and evening classes, so that they can work part-time to fulfil their work requirements. Younger students would also benefit from being in the same classes as older students who can share their work experiences in the classroom or provide networking opportunities for prospective employment.

RECOMMENDATION 7: ENHANCE DEGREE-LEVEL CET PROGRAMMES

39.   The Committee recognises CET as a critical avenue for Singaporeans to continually upgrade their skill sets in the face of a constantly changing and increasingly sophisticated economy. In particular, CET provides a degree upgrading pathway to those who entered the workforce after obtaining their diploma or GCE A-Level qualifications. Working first and upgrading later may enable some to gain a firmer sense of their passions and capabilities, and make more informed decisions on their choice of degree study. Graduate surveys by NUS, NTU and UniSIM show that PT degree holders generally experience better employment outcomes during and after completion of their degree courses.

40.   While PT students experience various challenges when pursuing a degree, there is nevertheless a strong demand to upgrade. The Government currently funds over 4,000 part-time degree places at NUS, NTU and UniSIM annually, but application rates continue to exceed the number of successful admits each year. To alleviate the financial burden and encourage CET amongst working adults, the Government adopted initiatives such as the Productivity Innovation Credit (PIC)

introduced in 2010, which provided tax benefits to employers who sent their employees for training; and also increased the subsidy rate for publicly-funded, PT CET degree courses from 40% to 55% for Singaporeans in 2011.

41.   The Committee recommends that the Government provides more support to increase the CPR in CET degree pathways, beyond the current estimated proportion of 7%. Assuming the continuation of past demand for CET degrees and adequate support from various stakeholders such as industry and educational institutions, we expect the CPR in CET degree pathways to increase to about 10% by 2020. We also believe that more can be done to enhance the attractiveness of degree-level CET programmes by:-

>   a. Increasing financial support for adult learners through the extension of government financial assistance schemes, which are currently enjoyed by PT students at NUS and NTU, to UniSIM PT students.
>
>   b. Encouraging industry to provide more scholarships.
>
>   c. Improving access to PT degree programmes, through greater recognition of relevant work experience and alternative qualifications in the admissions criteria.
>
>   d. Enhancing the flexible modes of delivery of PT degree programmes to better accommodate the schedule of working adults.

42.   All this will require concerted effort by the Government, employers and training providers. Through these collective efforts, we hope to build a thriving CET space with more learning and upgrading opportunities for all individuals.

43.   The Committee also looked at a series of enablers that would have an impact on students' decisions on whether or not to pursue a degree. These enablers ensure affordability and accessibility, and informed decision-making so that students are empowered to make better choices for their future.

RECOMMENDATION 8: ENSURE AFFORDABILITY OF UNIVERSITY EDUCATION

44.   The Government has always maintained the principle that no deserving student would be deterred from a publicly-funded degree education due to financial constraints.

45.   Over the years, as the Government expanded degree education opportunities for Singaporeans, it has also instituted various financing measures, such as grants, bursaries and government-subsidised loan schemes, to ensure that university education remains affordable for Singaporeans enrolled at publicly-funded degree

places. Singaporeans also have recourse to their Post-Secondary Education Account (PSEA) and their parents' Central Provident Fund (CPF) Account (under the CPF Education Scheme), to fund their degree studies at publicly-funded institutions. This suite of financing schemes should also be extended to students enrolled at the new SIT and UniSIM FT programmes.

46.   The affordability of a university education is a key enabler in ensuring Singaporeans' continued access to universities. Hence, as Singapore looks to expand its university landscape for the future, the Government should remain committed to regularly reviewing its policies and ensuring that these pathways are affordable to students. It is worth noting that other countries have turned to innovative loan schemes (e.g. United Kingdom and Australia) to strike a better balance between the affordability of university education to individuals, and the pressure on the fiscal purse. We recommend that this is an area worth studying further by the Government. The Government should also continue to work with the various institutions to publicise existing financial assistance schemes, and to encourage more students to take them up.   This would ensure that eligible students are receiving the available support and not unduly burdened by the financing of their education.

RECOMMENDATION 9: IMPROVE PROVISION OF INFORMATION TO TEACHERS, STUDENTS AND WORKING ADULTS

47.   The Committee recommends improving the current provision of information to teachers and students at the secondary and post-secondary levels, as well as to working adults looking to upgrade to a degree, in order to assist them in navigating the more diversified university landscape. These could include:-

  a. Developing more teaching and learning indicators to assess universities, and thereby enable students to make more informed decisions.

  b. Equipping teachers and students with better education and career guidance tools.

  c. Establishing an academic CET course directory.

  d. Establishing a one-stop integrated CET and career advisory services centre.

48.   With a more diversified university landscape, we will also need to manage employers' perceptions of the different degree pathways. The onus should be on companies and industry to establish more discerning recruitment practices, which should assess applicants holistically, based on their aptitude, performance,

competencies and suitability for the job, as opposed to judging them simply based on the name of the degree-awarding institution.

<u>C</u>ONCLUSION

49.   For Singapore to respond effectively to the challenges of the twenty-first century, our university sector must be one that is high-quality, student-centric, and able to accommodate the growing diversity of choices and pathways sought after by our young people and our increasingly sophisticated economy.

50.   We believe that these needs would be met through our existing four universities and two additional universities - SIT, positioned as Singapore's fifth AU, and UniSIM, as a private university with publicly-funded programmes. These two universities will spearhead the new applied degree pathway, which will have close nexus with the economy and produce work-ready graduates. In addition, there will be greater support for adult learners to further their studies through subsidized PT degree programmes at UniSIM, NUS and NTU. This greater provision of both PET and CET degree opportunities should be accompanied by the continued commitment to ensuring an affordable university education for Singaporeans.

51.   We believe that our recommendations will enable Singapore's university landscape to become more diversified and vibrant, provide more opportunities for Singaporeans to develop to their full potential, and better position Singapore for the future.

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PART 1: CONSIDERATIONS BEHIND THE COMMITTEE'S RECOMMENDATIONS

CHAPTER 1: INTRODUCTION TO THE COMMITTEE ON UNIVERSITY EDUCATION PATHWAYS BEYOND 2015 (CUEP)

CHAPTER 1A: BACKGROUND OF THE CUEP

1.1   At the National Day Rally in August 2011, Prime Minister Lee Hsien Loong highlighted the need to further develop and expand the university sector. In response, the Ministry of Education (MOE) formed a Committee chaired by then-Minister of State (Defence and Education) Mr Lawrence Wong to study the university landscape and propose recommendations on its development.

1.2   The Committee was to examine how the university sector could better provide opportunities for Singaporeans, and in particular to:-

a. Explore the scope for expanding the publicly-funded university cohort participation rate (CPR) beyond the current target of 30% in 2015; and

b. Propose feasible models and strategies to achieve this.

1.3   The Committee comprised members from the public, private and people sectors, representing a wide range of stakeholders and expertise, from diverse educational backgrounds. A list of the Committee members and their bio-data is at Annex A.

CHAPTER 1B: APPROACH TO THE STUDY

1.4   The Committee adopted a strong public engagement strategy for two main reasons. First, the Committee felt it was important to gather the views of a broad range of Singaporeans, including prospective and current tertiary students, their educators and recent graduates, to better take into account their different aspirations and concerns. We also consulted employers, organisations and government agencies to better understand the wider socio-economic trends and considerations. Second, this strong public engagement approach provided the opportunity to raise public awareness of the complex policy trade-offs involved, and to foster greater understanding and support for the proposed recommendations.

1.5   These engagement sessions were conducted through various means and on numerous occasions. These included a Townhall session that attracted 400

people; and two waves of focus group discussions (FGDs) and smaller dialogue sessions, chaired by Committee members, with about 120 key stakeholders in total. We also sought to reach out to the wider public through online avenues such as the MOE Facebook page, MOE website and the REACH[10] platform. These sessions have helped in refining our recommendations. The main themes that emerged from the public engagement sessions are in Annex B.

1.6   The Committee also studied the university landscapes and experiences of other countries and economies through study trips to Canada[11], Finland, France, Germany, Hong Kong, and the United States. These study trips have increased the Committee's understanding of international higher education trends, and also provided instructive models to draw from when conceptualising the future of Singapore's university sector.

1.7   On several occasions, the local media also participated in these study trips, enabling them to gain first-hand insight into various higher education systems and developments, as well as some of the considerations behind the Committee's recommendations. The coverage of these trips has helped to educate the public about the diversity present in a mature university landscape, generating interest in and useful public discussion on the work of the Committee. The key learning points from the study trips are in Annex C.

1.8   Then-Minister of State Lawrence Wong, Chairman of the Committee, also shared our preliminary recommendations during the Committee of Supply Debate in March 2012, where Members of Parliament had the opportunity to discuss the Committee's ideas.

1.9   Finally, it also consulted MOE's International Academic Advisory Panel (IAAP) on the preliminary recommendations. Their comments helped to refine the recommendations in this report.

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[10] REACH - Reaching Everyone for Active Citizenry @ Home - was previously known as the Feedback Unit.
[11] Members of the MOE CUEP Secretariat visited Ontario as part of a wider MOE study trip.

CHAPTER 2: RATIONALE AND KEY CONSIDERATIONS FOR THE REVIEW OF UNIVERSITY EDUCATION PATHWAYS BEYOND 2015

2.1   The twenty-first century global environment is dynamic and constantly in flux. CUEP is thus the latest in the series of university review committees, which the Government regularly commissions, to ensure that the higher education sector remains relevant and equips our population with the necessary skills to succeed.[12]   The review was commissioned as a response to local and global trends, over the past four years. As changes in education policy take time to seed and implement, this review is timely given that MOE is on track to achieve 30% CPR by 2015, and it is therefore imperative to start planning for the university sector further down the road.

CHAPTER 2A: RATIONALE FOR THE REVIEW

2.2   *To prepare Singaporeans and Singapore for the future economy.* In an increasingly dynamic and interconnected global environment, there is a need to review our higher education policies to ensure that they remain robust enough to respond to new global challenges of greater complexity. Singaporeans must be more highly-skilled, versatile and resilient to change, to thrive in and support an increasingly sophisticated economy, and compete effectively with a highly-mobile international talent pool. The review is thus in line with the recommendations of the 2010 Economic Strategies Committee (ESC), which stressed that "Singapore's future rests on growing a deep pool of highly capable and entrepreneurial people".[13] To this end, the ESC recommended that tertiary institutions must develop professionals with "T-shaped" competencies, so that they possess both the in-depth skills required of their particular disciplines, and broad-based knowledge of other related areas, in order to operate in different environments.[14]

2.3   *To provide publicly-funded degree places for more students, who are better prepared to benefit from a degree education.* The overall improvement in the quality of Singapore's general education has created successive groups of students who are better prepared to benefit from a university education. According to the Organisation of Economic Cooperation and Development's

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[12] Since 2001, four committees have been set up to review the university sector: (i) *The Committee to Review Upgrading Opportunities at Degree Level* (2001); (ii)*The Committee to Review the University Sector and Graduate Manpower Planning* (2003); (iii)*The Committee on Building a Foundation for Research Excellence* (2005); and (iv) *The Committee on the Expansion of the University Sector* (2007).
[13] *ESC Report (2010),* Letter to Prime Minister, Para 8.
[14] *ESC Report (2010),* p. 19

(OECD) Programme for International Student Assessment (PISA) data (2009), when top performers in the domains of Reading, Mathematics and Science were considered as an estimate of each participating country's future talent pool, Singapore had the second highest proportion (12.3%). Comparatively, the average percentage of top performers amongst OECD countries was 4.1%. Given the relatively high proportion of talents, Singapore's current publicly-funded university CPR of 27% appears to be comparatively lower than that of other developed countries. For example, among the Organisation for Economic Cooperation and Development (OECD) countries in 2009, the average university entry rate was 59%, and the graduation rate was 38.6%.[15]

2.4 *To better cater to students from a broader range of educational backgrounds, with different aspirations and learning preferences.* The pre-tertiary education system has diversified its options to better cater to the spread of talent and preferences over the years, with the introduction of the Integrated Programme (IP), specialised schools such as the Singapore Sports School (SSS) and School of the Arts (SOTA), NUS High School for Mathematics and Science, and the School of Science and Technology (SST). While more choices have also been introduced in the tertiary landscape, more can be done to increase the diversity of articulation pathways for young Singaporeans to develop their full potential, through introducing different degree pathways that would provide a better fit with their learning preferences and interests.

2.5 *To provide Singaporeans with a greater stake in the Nation.* Singaporeans have strong aspirations for obtaining a degree education. In 2011, 46% of economically-active 25- to 29-year-old Singaporean residents held degree qualifications, exceeding the 23% publicly-funded CPR of their respective Primary One cohort.[16] Although the junior colleges (JCs) had traditionally been the choice pathway for those with plans to go on to university; increasingly the high-quality of education and investment in our polytechnics have also made them viable pathways for students with the strong desire to further one's employability through a degree education.

2.6 Currently, about 28% and 44% of the Primary One cohort progress to JCs and polytechnics respectively. Out of the students who sat for the GCE A-Level examinations each year, an average of 75% of them were admitted to publicly-funded university places. The Polytechnic Tracer Study[17] (2011)

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[15] OECD, *Education at a Glance (2011)*, pp. 316 and 68.
[16] Data from the Ministry of Manpower's *Labour Force Survey (2011)*. The 46% includes self-financed degrees obtained through local and overseas universities.
[17] The *Polytechnic Tracer Study (2011)* tracked students from the 2005 cohort from Nanyang Polytechnic, Ngee Ann Polytechnic, Singapore Polytechnic and Temasek Polytechnic. Republic Polytechnic did not take part in the study as they only received their first cohort in 2003.

has also indicated that 44.5% of polytechnic graduates from the 2005 cohort had successfully completed a degree qualification within five years of graduating from polytechnic.

2.7   Some students are also choosing to pursue their degrees at private education institutions (PEIs) in Singapore or at universities overseas, for a variety of reasons - i.e they were unable to obtain publicly-funded degree places of their choice or would like to access a wider variety of courses. As Singaporeans become more financially-able, this small proportion of students that leave Singapore to pursue a degree overseas, and who may subsequently decide to stay on in their adopted countries, is expected to grow.

2.8   The strong degree aspiration is unlikely to abate, as society continues to place a high premium on the attainment of a university degree.   Presently, nearly one in two of our Primary One cohort has at least one parent who has attended university, and these parents are likely to aspire to the same or better achievement for their children. Ironically, this perception may be a by-product of the success of our meritocratic education system, which has been a key driver of social mobility.

2.9   This review is thus necessary to explore the scope for potential growth and to create more opportunities to meet Singaporeans' needs and aspirations. In doing so, we hope to encourage a diversity of pathways that will help Singaporeans develop and achieve their full individual potential, and to in turn, contribute towards Singapore's growth as a vibrant and cohesive community.

2.10   *Stay ahead of international higher education trends.*   The review also aims to ensure that our university sector stays ahead of international higher education trends, and that it develops a core of Singaporeans with a competitive edge over graduates from other countries.   This is particularly pertinent as many countries are looking to increase their university participation rates. Developed countries and economies are also reforming their university sector, to ensure that it is well-positioned to respond to the challenges and opportunities of the twenty-first century. For example, Hong Kong, Germany, the United States are all looking to increase their university participation rate further; while Finland and France are attempting to improve the quality of education and research, increase university autonomy and internationalisation, and address the problem of fragmentation by consolidating their sector.

2.11   *Building a workforce for the twenty-first century*.   While there are strong aspirations for degrees, it is necessary to ensure that any increase in degree places maintains the value of a university degree.   A mismatch in the demand and supply of graduates, and specifically between industry demand and the training and skills of graduates, could lead to under- or unemployment. Many of the young people we spoke to during the engagement sessions also feared that the value of their degrees will be eroded if we expanded too rapidly.

2.12   These fears are not unfounded.   Reports from Britain and South Korea have shown that the rapid expansion of degree places had led to a measure of graduate under- and unemployment. *The Guardian* reported that while the percentage of UK population with degrees doubled from 12% in 1993 to 25% in 2010, graduate underemployment had also increased, as over 1.3 million graduates earned less than the average wage of an employee with GCSE A-level qualifications.[18]   *The Korea Times* also pointed out that although the college entrance rate had increased from 51.4% of high school graduates in 1995 to 83.8% in 2008, graduate unemployment had risen to 346,000 in 2010, despite a faster-than-expected economic recovery.[19]

2.13   For Singapore, the demand for graduates is likely to increase as we need a highly-skilled and sophisticated workforce to drive our future economy. The ESC (2010) concluded that Singapore had to move towards productivity-driven growth to progress beyond its present stage of development.[20]   This could be achieved through a qualitative transformation of our economy and the creation of higher value jobs, most likely Professional, Managerial and Executive- (PME-) type jobs. This is presently the fastest growing segment of Singapore's workforce profile, constituting 32% in 2011, up from 27% in 2001.[21]

2.14   Indeed, we need to develop our human capital further in order to support Singapore's knowledge-intensive economy and take advantage of global opportunities. A study by OECD on the growth of the Global Talent Pool has posited that by 2020, there would be 204 million 25- to 34-year-olds with tertiary education across OECD and G20 countries. China and India would

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[18] "How much is your qualifications worth? Average wages compared", *The Guardian Online*, 24 August 2011.
[19] "Number of jobless college graduates hits record high", *The Korea Times Online*, 2 January 2011.
[20] *ESC Report (2010)*, p.7.
[21] Data from the Ministry of Manpower.

make up the largest percentage of such talent, with a share of 29% and 12% respectively.[22]

2.15   Therefore, we need to equip our young with the right skills that will enable them to stand out among graduates from around the world. Expansion must also be in skills and domain areas that are carefully considered – where there is not just current but future economic demand, which will give them a competitive edge, locally and globally.

2.16   This also requires our young to be trained not only in technical skills and knowledge, but also in twenty-first century soft-skills. They should be effective communicators, who are able to work collaboratively with people from different cultures, to solve complex and multidisciplinary problems, and are valued for their integrity, reliability, and commitment to excellence.

2.17   *Increasing opportunities for students to achieve their potential.* The Committee believes that there are merits to further diversifying the university sector. We have made a start with the institutions that were recommended by the Committee on the Expansion of the University Sector (CEUS) 2008, but more can be done. We have examined systems in other developed countries, which have a more variegated university landscape, comprising research-intensive   universities,   teaching-focused   universities   and universities with a strong applied flavour. The high-quality institutions in each of these categories fulfil different needs, and are held in high regard by prospective students and employers. Making these university models available in Singapore would better cater to the different learning preferences and interests of our students.

2.18   We also wish to continue developing our tertiary sector into a more flexible system with multiple entry points. In doing so, we aim to better provide a quality degree education for those who wish to access a university education only later in life, after some working experience; and facilitate those who may adopt a less linear progression through the education pathways.

2.19   *Ensuring the quality of degree education.* Singapore's public education institutions and its graduates are held in high-regard around the world. There is a need to ensure that this reputation is maintained so that local graduates retain a premium when entering the job market.   Our institutions must therefore continue to deliver a high-quality education to their students, and produce graduates who will have a good track record in the workplace. Expansion of the university sector should not lead to a lowering of standards, but rather the creation of different "best-in-class" institutions that have their

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[22] "What will the global talent pool look like in 2020?", *OECD EducationToday*, 31 May 2012.

respective areas of strengths. This ensures that the whole sector moves forward together, and that the value of the degree is maintained.

2.20 *Co-ownership of university education.* Studies have shown that significant benefits of a university degree accrue to the individual. According to OECD data published in 2011, a person with tertiary education can expect to earn over 50% more than a person with post-secondary non-tertiary education. This salary premium also tended to increase with age.[23] Thus having a degree enables the individual to have access to good jobs, instils good habits of the mind, and sets them up potentially for a trajectory that will continue to support their work and life ambitions.

2.21 Nevertheless, the Singapore Government has invested heavily in the capability development of Singaporeans, seen as our only natural resource. In 2010, the government spent about $9.9 billion or about 3.7% of our GDP on education, and of this, $2.7 billion or about 1% of our GDP went towards our university sector alone. This corresponds to the OECD average where public expenditure in tertiary education accounted for about 1% of GDP.[24]

2.22 However, given competing demands of national importance, such as increasing healthcare provision for an ageing population, there will be constraints to continued increases in subsidising university education. Any expansion to the university sector must thus give regard to maintaining fiscal sustainability. We should give weight to options that reap greater value relative to investment, and expect that going forward we should also require Singaporeans who enjoy a university education to pay their fair share, given the private benefits that accrue. Employers and industry should also have a stake in resourcing the university sector, as they enjoy the benefits of a well-trained, highly-skilled workforce.

2.23 The Government should also continue to uphold its long-standing principle that no deserving student will be denied a university education just because of their family financial circumstances; and financial assistance schemes should continue to feature strongly in our university strategy and policies.

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[23] OECD, *Education at a Glance (2011),* p.138.
[24] OECD, *Education at a Glance (2011),* p. 231.

PART 2: ROOM TO GROW THE UNIVERSITY SECTOR – QUANTITATIVELY AND QUALITATIVELY

CHAPTER 3: INCREASING THE PUBLICLY-FUNDED UNIVERSITY COHORT PARTICIPATION RATE (CPR)

Key Recommendation:

- Increase publicly-funded university cohort participation rate (CPR) to 40%, by 2020.

CHAPTER 3A: SINGAPORE'S GRADUATE PROFILE TODAY

3.1   There are two main modes for Singaporeans to obtain their degrees:-

a. Publicly-funded degrees at local universities; and

b. Self-financed degrees at local private education institutions (PEIs) and at overseas universities.

3.2   *Publicly-funded university cohort participation rate (CPR)*. The provision of publicly-funded degree places are measured in terms of the university CPR. This is the percentage of Singapore Citizens (SC) in a Primary One cohort, who obtained publicly-funded degree places at the autonomous universities[25] (AUs), the Singapore Institute of Technology (SIT), and publicly-funded degree programmes at the Arts Institutions[26] (AIs). Today, the publicly-funded university CPR stands at 27%, and we are on track to meet the current target of 30% CPR by 2015.

3.3   This excludes SC who go overseas for their degrees, or who are enrolled in private education institutes (PEIs) in Singapore. As the publicly-funded university CPR currently only considers SC who obtained their degree via the pre-employment training (PET) pathway – i.e. immediately after graduating from junior college (JC) or polytechnic – it also excludes SC who obtained their degrees through publicly-funded continuing education and training (CET) pathways, such as subsidized part-time courses at SIM University (UniSIM), the National University of Singapore (NUS) and the

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[25] The autonomous universities (AUs) are the National University of Singapore (NUS), the National Technological University (NTU), the Singapore Management University (SMU) and the Singapore University of Technology and Design (SUTD).
[26] The Arts Institutions are the Nanyang Academy of Fine Arts (NAFA) and LASALLE College of the Arts.

Nanyang Technological University (NTU). The average size of the group that obtains their degrees via the CET pathway is estimated to be about 7% of each cohort.

3.4 National manpower development needs have shaped the publicly-funded higher education sector, with the proportion of residents with degree qualifications growing in tandem with our evolving economic profile – from a largely-manufacturing based economy in the 1960s and 1970s to the present-day knowledge-based economy. Correspondingly, our publicly-funded university CPR has increased from 5% in 1980 to 27% in 2012.

3.5 *Self-financed degrees.* According to the Council for Private Education (CPE), there were about 47,500 Singaporean students from various age cohorts enrolled at degree-level programmes in PEIs in 2011, out of which about 28,000 were polytechnic diploma holders seeking to upgrade to a degree. A small proportion of students also leave Singapore to pursue a degree overseas.

3.6 *Effective university cohort participation rate (CPR).* The effective university CPR is the amalgamation of the Singaporeans who obtained their degree through publicly-funded and self-financed modes, from both the PET and CET pathways. The effective university CPR among *economically-active* 25- to 29-year-old Singaporean residents was 46% in 2011. This exceeds the estimated 23% publicly-funded CPR of their respective Primary One cohort.[27]

CHAPTER 3B: RATIONALE FOR INCREASE TO 40% PUBLICLY-FUNDED UNIVERSITY CPR BY 2020

3.7 *Shrinking cohort size would raise CPR to 35% by 2022, just by keeping number of university places constant.* Like most other developed countries, Singapore's birth-rates have been declining over the past decade, as a result of socio-economic changes, such as the changing mindsets towards marriage and procreation, and the rising cost of living. Our total fertility rate (TRF) in 2011 stood at a low 1.2. Based on current birth cohort sizes, our university CPR would rise naturally to 35% by 2022, if we hold the number of university places constant at the planned 2015 provision of 14,000 places.

3.8 To achieve a 35% CPR by 2020, we would only have to increase the number of places by 580 compared to the 2015 target. This increase would not be sufficient to cater to the growing number of students who aspire to get a

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[27] Data from the Ministry of Manpower's *Labour Force Survey* (2011).

degree, and who will potentially benefit from a degree education. With this limited number of places, there will also not be enough critical mass for a qualitative change in the university landscape.

3.9   Therefore, we propose for the CPR to rise to 40% by 2020, thereby creating about 2,000 additional places compared to the 2015 target, or 3,000 additional places compared to today (2012). [28] This would provide sufficient capacity to meet aspirations, in line with economic needs; and also for the more effective launch of qualitative changes in the wider university landscape.

3.10   *Demand for graduates in Singapore's tight labour market.*   The labour market appears to be able to support an effective CPR of over 40%. Currently about 44% of *employed* 25- to 29-year-old Singapore residents are in jobs that pay at least $3,000 a month, which could be deemed a proxy for graduate-level jobs.[29]   However, we note that some of these jobs that pay $3,000 or more, may in fact be occupied by those who do not actually have a degree.

3.11   Figure 3.1 shows that about one-third of our resident workforce is currently employed in higher-skilled Professional, Managerial, and Executives- (PME-) type jobs. This is the fastest growing segment of our workforce. We expect this proportion to grow further as our economy becomes more sophisticated. Therefore, there is a need for an increasing number of graduates to help meet the needs of economy and develop the highly-skilled manpower needed to drive it.

Figure 3.1: Occupational Split of Singapore's Resident Labour Force
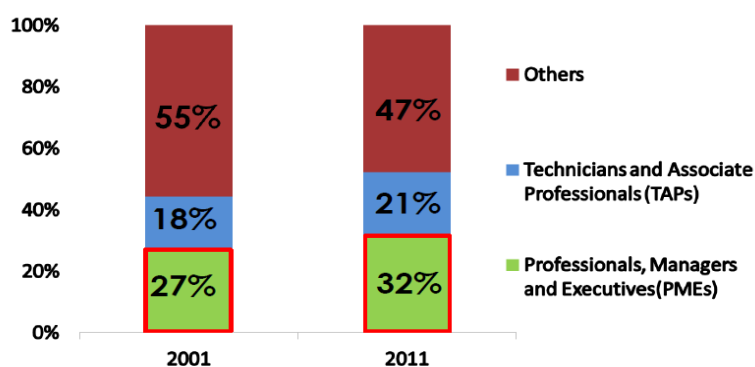
Source: Ministry of Manpower

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[28] In AY2012, 13,000 publicly-funded full-time degree places were planned for Singaporeans (~27% CPR). An additional 1,000 places were planned for by 2015, to reach a CPR of 30% by 2015.
[29] Data from the Ministry of Manpower's *Labour Force Survey (2011)*. Singapore Residents are Singapore Citizens and Permanent Residents. Data from *Graduate Employment Survey (2011)* of NUS, NTU and SMU indicate that the current starting pay of graduates from our autonomous universities range between $2,500 and $5,000.

3.12   Taking economic and employment growth into account, we suggest a calibrated increase of places to meet 40% publicly-funded university CPR. This provides some level of assurance to existing and prospective graduates that there would still be good graduate outcomes, and also ensures the prudent and accountable use of taxpayers' money, while better positioning Singapore and Singaporeans for the future economy.

3.13   More specific comparisons of Singapore's publicly-funded university CPR with that of other countries, as represented in <u>Chart 3.2</u>, indicate that it is generally higher than other Asian economies, but lower than the European countries.

<u>Chart 3.2: Singapore's University Participation Rate Relative to Other Developed Countries.</u>[30]

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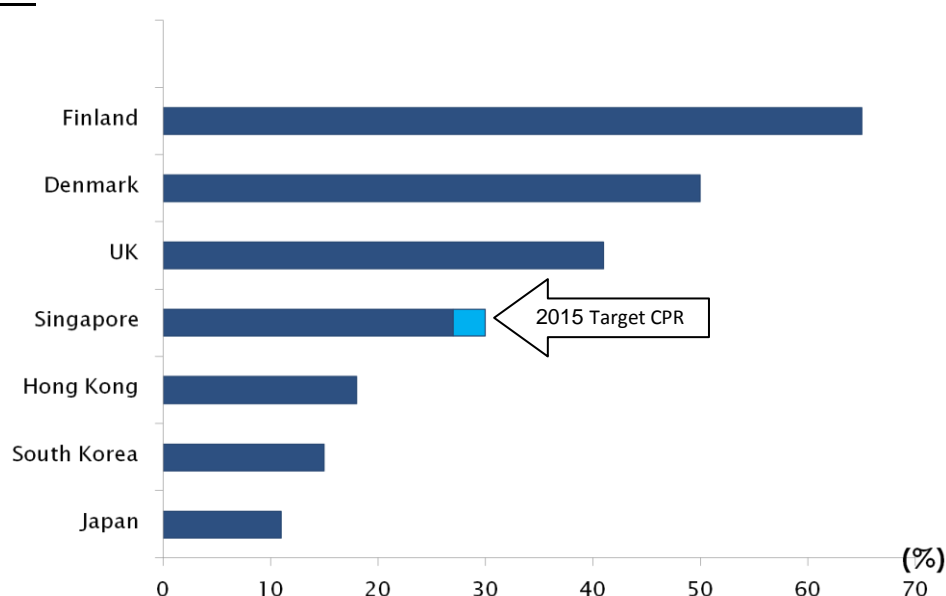
[30] 2009 net entry rate (NER) data from Denmark and UK were taken from OECD's *Education at a Glance (2011)*. 2009 NER data for Japan was derived from Japan's Ministry of Education, Culture, Sports, Science and Technology (MEXT), *School Basic Survey*. 2008/9 NER data for Korea was derived from 2 sources:- (i) OECD *Education at a Glance* (2011) which reported that 71% of the cohort from 18 - 24 years of age entered university (publicly and privately funded) and (ii) According to the Korea Education Development Institute's *Report on Universalizing Higher Education (2008)*, the enrolment of students in publicly-funded universities was 21.2% of the total enrolment in 2008. NER figure for Finland and CPR figure for Hong Kong were shared with the Committee by the Ministry of Education and Culture (Finland) and the Education Bureau (Hong Kong) during the Study Trip to Finland in Oct 2011 and Hong Kong in Jan 2012 respectively. Singapore's CPR is currently 27% and is on target to achieve 30% CPR by 2015, as indicated by the light blue area.
Note: The net entry rate (NER) for a specific age is obtained by dividing the number of first-time entrants to university by the total population in the corresponding age group in a given year. This is a snapshot of university participation rate for a specific age or age band in a given year and does not account for the cumulative university participation rate. On the other hand, the cohort participation rate (CPR) is obtained by dividing the number of first-time entrants to universities from a specific cohort over time by the total population of the corresponding cohort.

3.14   Currently, an estimated 7% of the cohort pursues a publicly-funded CET degree. With more support from the Government and with growing demand for skills upgrading, the publicly-funded CET participation rate could increase to about 10% by 2020 (see details in Chapter 7). Furthermore, we continue to expect that there will still be some Singaporeans who desire to and are able to afford to pursue their degree education overseas; and the local private education sector will continue to absorb additional demand for graduates.

3.15   Combining provisions for both PET and CET degree places, our overall publicly-funded university CPR would be up to 50% by 2020.   This is generally consistent with the needs of our labour market as highlighted above. It is also in line with international benchmarks. For example, among the Organisation for Economic Cooperation and Development (OECD) countries in 2009, the average university entry rate was 59%, and the graduation rate was 38.6%.[31]

3.16   _Caution against over-expansion._ We would caution against moving in the direction of the European countries, as their near-universal access to universities comes at the expense of high attrition and overstaying rates. These countries also levy high taxes in order to fund their largely publicly-funded university sector, as well as other public services. This approach may not be sustainable in the long term, as the government would also have to make provisions for other pressing social concerns, such as an ageing population. See Box 3.3: Case Study on Finland and France.

3.17   Drawing on the experiences from across Europe, North America and Asia, there is a need to avoid or mitigate the risks of expansion at the expense of relevance to students' aptitudes and the needs of the economy, as well as without concomitant resourcing to ensure adequate faculty resources and quality. The consequences in these cases have been high attrition rates, reduced graduate employability and a dilution in the value of university degrees. It is thus important to ensure that this proposed increase in university places does not merely fuel a paper chase, but has an actual, positive impact on the lives of students who are able to benefit from a university education.

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[31] OECD, _Education at a Glance 2011_, pp. 316 and 68.

Box 3.3: Case Study on Finland and France

In both Finland and France, the social compact is that degree education is regarded as a right, and students feel that they are entitled to a free education paid for by taxpayers. While manifested in slightly different ways, this social compact results in both societies' willingness to tolerate inefficiency and wastage in exchange for virtually universal access and provision of university education.

(1) Finland

In Finland, the inefficiencies arise from high attrition, prolonged duration of study, and late entry into tertiary education. **Although around *65%* of each age cohort obtains a place in a higher education institution, only *42%* would complete their degree.** Aside from drop-outs, there is also a high rate of non-standard completion of degrees. Even in Finland's top institution, the University of Helsinki, less than 30% of Humanities students complete their degree within five years.[32] The university only produces about 2,400 to 2,500 graduates each year despite an annual intake of 4,000.

Finnish higher education institutions also have to deal with a **large backlog of mature school leavers as well as repeat applicants** competing for limited places at the universities. According to the Finnish Higher Education Division, the median age of entry into tertiary institutions is 21 years old, about two years after most students graduate from upper secondary school. In addition, about two-thirds of fresh school leavers fail to obtain a place at university immediately after graduation. This has further implications on the labour market, as graduates also enter the workforce later. Students often apply repeatedly to their desired course if they do not gain entry at earlier attempts, while holding on to a place in another course of study. That is, a student who did not get a place in Medicine might accept a place in Biology, and then abandon the Biology course once he gains entry into Medicine in subsequent years. At the University of Helsinki, entrants into Medicine typically only get in on their third attempt.

The Finnish Ministry of Education and Culture have recognised this challenge and included attrition indicators[33] in its performance indicators for universities. Efforts have also been made to decrease the median age of entry into tertiary institutions to address demographic trends. In addition, the Ministry is investing in more career guidance at high schools to help students navigate and make better choices when deciding from the numerous alternatives in higher

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[32] Attrition varies among the various fields of studies with low attrition in highly competitive courses such as Medicine and Law, but much higher rates in fields such as the Humanities and other proxy subjects for Medicine.

[33] Performance indicators for 2010–12 included such indicators as "percentage of graduation after seven years studies" and "percentage of graduate compared to drop-out."

education. However, it is unclear if such measures will have any effect as higher education institutions may not have the necessary tools to compel students to complete their degrees, and to do so within a certain time-frame. From the students' perspective, there is little incentive to rush through higher education. Moreover, once a student has been admitted to an institution on the basis of his matriculation and university entrance examination results, the university is unable to expel the student. Universities therefore have a large number of overstayers. At the University of Helsinki, students take an average of six and a half years to complete a five-year study programme. There is also no limit to the number of degrees that the State will fund for each individual. The Finnish officials say that students can be "practically eternal" if they so choose.

In Finland, the perception of free education as a right is seen in the strong resistance against charging tuition fees. Such resistance stems partly from the Finnish view that tuition fees have already been paid through their high tax rates. Student unions[34] even oppose charging tuition fees for international students, fearing that it would be a slippery slope to introducing fees for Finnish students.

(2) France

French universities similarly suffer from high attrition.[35] At the University of Paris-Sud, they shared that only about 10% of their 1st year Medical students make it to their second year of studies. These students either try again or move on to another course. This high attrition stems from France's generally open access policy and the lack of stringent selection at admissions stage. This is accentuated by poor course selection by students, who may not be appropriately prepared to handle the demands of the choice of study. The French Ministry of Higher Education and Culture are taking steps to develop more effective information dissemination systems so that students are better placed to make decisions on higher education institutions and courses of study. Graduate employment outcomes of individual institutions have been published at the Masters level, and similar data at the degree level will be made available soon.

In France, tuition fees are not as sacrosanct as in Finland. While public universities charge a small "enrolment fee", mainly to cover student insurance costs, the *grandes écoles* are allowed to charge higher fees.[36] Nevertheless, the right to free (or very affordable) education as a fundamental principle is manifested

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[34] Student unions are powerful lobby groups in Finnish society. Every student at a higher education institution has to be a member of the student union, which even runs coffee shops, book stores and other service providers in the institution.

[35] According to Sciences Po, attrition rates are much lower at *grandes écoles* due to the rigorous entrance exams.

[36] The "enrolment fee" is typically about EUR500. In comparison, a *grande école* like Sciences Po is able to charge EUR13,000 a year for a Masters programme and EUR9,000 a year for a Bachelors.

in France's open access policy to public universities where universities are not allowed to put in place selective admissions criteria.[37] This results in high attrition rates, particularly after the first year, as poorly-selected students are unable to handle their chosen field of study. Unlike Finland however, France does not have as severe a backlog of university applicants as the French system gives priority to fresh high school graduates applying for their first degree at a university.

CHAPTER 3C: IMPACT OF INCREASE

3.18   *Impact on JC and polytechnic students.* The recommendation to increase university places would benefit both JC and polytechnic students, as a larger proportion from both groups would be able to progress into universities. The actual proportions from JC and polytechnic that would secure publicly-funded university places will vary from year to year, depending on the quality of the cohort, student preferences as well as manpower planning parameters.

3.19   The number of individuals who would be admitted from each of these pathways should be determined by merit and the admissions criteria of the institutions, and not by any set quota of JC to polytechnic students. This will allow the institutions to develop and apply broader admission frameworks to take into account the applicant's suitability, ability and talent.

3.20   *Impact of increase on types of courses.* We propose that the additional places by 2020 should be in rigorous courses with strong social, industry and student demand. These would include science and technology (S&T) courses such as allied health and aerospace engineering, as well as non-S&T courses in areas like accounting, early childhood studies, business (with technical specialisations), and social work. These areas hold much potential for future growth, and would serve an important role in supporting the well-being of the Singaporean society and economy.

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[37] There are a very few exceptions to this and public universities with the status of grand establishments, as well as the *grandes écoles* are able to institute entrance exams.

CHAPTER 4: A MORE DIVERSIFIED UNIVERSITY LANDSCAPE

Key Recommendation:

- Diversify the university landscape to provide more opportunities.

4.1   With the ongoing implementation of the recommendations made by the Committee on the Expansion of the University Sector (CEUS) in 2008, our university sector is developing into one that is better able to drive an increasingly sophisticated economy, and where there is greater choice and room for our young to excel. While affirming the trajectory of the National University of Singapore (NUS) and the Nanyang Technological University (NTU) as research-intensive universities, CEUS 2008 first mooted the idea of a liberal arts college, and proposed the expanded provision of publicly-funded niche degrees, to diversify our university landscape. These degrees are sited at the new institutions such as the Singapore Institute of Technology (SIT), the Singapore University of Technology and Design (SUTD), the Yale-NUS Liberal Arts College (YNC) and the Lee Kong Chian School of Medicine (LKCMedicine).

4.2   However, we believe that there is room for greater diversity, in line with our local needs and global trends. The Committee's view has been informed by desktop research, and study trips to Canada, Finland, France, Germany, Hong Kong, and the United States. Their university landscapes were more variegated, comprising a thriving eco-system of public and private universities, research-intensive and applied pathways, with options for both fresh school leavers and working adults seeking a degree education.

CHAPTER 4A: SINGAPORE'S UNIVERSITY LANDSCAPE TODAY

4.3   Today, the Singapore university landscape comprises a significant publicly-funded sector, with a total enrolment of 56,700 undergraduate degree places[38]; and supplemented by a flourishing private education sector, with a total enrolment of 54,000 undergraduate degree places[39] in 2011.

4.4   *Publicly-funded university sector.*   Publicly-funded degree places are provided through a range of institutions:-

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[38] Enrolment from NUS, NTU, SMU and SIT.
[39] Enrolment from the Top 10 largest PEIs. Source: Council of Private Education (2011)

a. Four autonomous universities (AUs): NUS, NTU, the Singapore Management University (SMU) and SUTD.

b. SIT.

c. Selected external degree programmes at the Nanyang Academy of Fine Arts (NAFA) and the LASALLE College of the Arts (LASALLE).[40]

4.5   NUS began as a medical school in 1905, and has evolved into a research-intensive, comprehensive university with an enrolment of 25,600 undergraduate and 10,000 graduate students. It has 15 Faculties and Schools – Faculty of Arts and Social Sciences, NUS Business School, School of Computing, Faculty of Dentistry, School of Design and Environment, Faculty of Engineering, Faculty of Law, Yong Loo Lin School of Medicine, Yong Siew Toh Conservatory of Music and Faculty of Science, the University Scholars Programme, the NUS Graduate School for Integrative Sciences and Engineering, the Lee Kuan Yew School of Public Policy, and the Duke-NUS Graduate Medical School. YNC will admit its first intake of 150 students in 2013.

4.6   NTU is a research-intensive university with Science and Engineering as its key strengths. It was established as Nanyang Technological Institute (NTI) in 1981, and subsequently became NTU with the absorption of the National Institute of Education (NIE) in 1991. Today, it has 23,000 undergraduates and 10,000 postgraduate students. It is organised into four Colleges (Engineering, Science, Business and Humanities and Social Sciences) and five autonomous institutions – the NIE, the S. Rajaratnam School of International Studies, the Earth Observatory of Singapore, the Singapore Centre on Environmental Life Sciences Engineering. LKCMedicine, NTU's newest autonomous institution in collaboration with Imperial College London, will admit its first intake of 50 students in 2013.

4.7   SMU, modelled after Wharton Business School, was established in 2000. It has six Schools: the Lee Kong Chian School of Business, the School of Accountancy, the School of Economics, the School of Information Systems, the School of Law and the School of Social Sciences; and an enrolment of 6,800 undergraduates and 400 postgraduates.

4.8   SUTD was established in 2009, in collaboration with the Massachusetts Institute of Technology (MIT) and Zhejiang University. SUTD offers undergraduate programmes with a focus on technologically-intensive design, in

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[40] These include the external degree programmes offered by the Royal College of Music and Goldsmiths College, University of London at NAFA and LASALLE respectively.

the following four areas - Architecture and Sustainable Design, Engineering Product Development, Engineering Systems and Design, and Information Systems Technology and Design. It admitted its inaugural intake of 340 undergraduate students in April 2012, and will have a steady state undergraduate intake of 1,000 students each year.

4.9   SIT was established primarily as an upgrading pathway for polytechnic upgraders, including those with some working experience. It is distinct from the AUs in that it partners reputable overseas universities to offer the latter's degrees in Singapore. It builds on the strength of our polytechnic system, providing a "plus two" model, where polytechnic graduates with relevant diplomas need only about two more years of intensive study to graduate with a campus-blind degree from an overseas university partner. It admitted its first cohort of students in AY2010. Today, SIT offers 24 degree programmes with ten partner universities[41], in areas with high potential for growth, such as applied sciences and engineering, digital media, hospitality, health sciences, design, early childhood studies and allied health. It currently has an enrolment of about 1,300 students. It will also offer part-time programmes in the future.

4.10   *Government funding for selected courses at Arts Institutions.* NAFA and LASALLE are private institutions that receive some government funding for selected degree programmes, offered in collaboration with overseas universities. From AY2012, LASALLE will offer government-funded degree programmes in various arts disciplines in collaboration with Goldsmiths College, University of London. In AY2011, NAFA launched an MOE-funded Bachelor of Music (Honours) programme with the Royal College of Music.

4.11   *Government funding for continuing education training (CET) degree pathway.* In 2008, as part of the broader national plan to promote CET, MOE introduced fee subsidies for eligible Singapore Citizens (SC) and Permanent Residents (PR)[42], who were enrolled in the part-time (PT) undergraduate degree programmes at UniSIM, NUS and NTU. SCs and PRs enjoyed 40% and 20% subsidies of published course fees respectively; this rose to 55% for SCs in March 2011.

4.12   SIM University (UniSIM) is presently the main flag-bearer of the CET degree pathway. Formerly an Open University centre from 1992 to 2004, UniSIM is

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[41] Including the University of Newcastle upon Tyne, Technische Universität München (TUM), the Culinary Institute of America (CIA), DigiPen Institute of Technology, University of Manchester, University of Glasgow, University of Nevada, Las Vegas, the Glasgow School of Art, Wheelock College and Trinity College Dublin.

[42] To be eligible, students must not have previously received government subsidies or sponsorship for a first degree; must be at least 21 years of age; and must have either two years of full-time work experience or be currently employed on a full-time basis.

a private, not-for-profit institution, which was granted university status in 2005. It offers more than 40 Bachelor degree programmes in four broad clusters of Arts & Social Sciences, Business, Human Development & Social Services and Science & Technology. In addition to its own undergraduate degrees, UniSIM also offers Master degrees, Post-Graduate Diploma programmes and a PhD programme, in partnership with overseas universities. In AY2011, UniSIM had an intake of about 3,800 students and a total enrolment of about 12,400 students. More than 95% of UniSIM students are Singaporeans, and the remaining are Permanent Residents.

4.13   In addition, NUS and NTU also offer five and two part-time Engineering Bachelor degree programmes respectively.

4.14   *Non government-funded, private education institutions (PEIs).* The Council for Private Education (CPE) was established in 2009 to provide regulation and quality assurance of PEIs; consumer education and student support; strategic development and promotion of the private education industry; and sustained operations and organisation excellence. CPE's establishment has resulted in a much improved and regulated private education sector. An overview of the Private Education Landscape is at Chapter 6A.

CHAPTER 4B: GREATER DIVERSITY FOR MORE CHOICES AND OPPORTUNITIES

4.15   Singapore's current university landscape is dominated by research-intensive universities. This has served us well, through the provision of high-quality pairing of research and education to train Singaporeans for an increasingly knowledge-intensive economy, as well as its contribution to our knowledge and research base to fuel our economic sectors and move them up the value chain. That NUS and NTU ranked 28th and 58th respectively on the QS University Rankings 2011-2012, is reflective of the quality of our research-intensive universities.[43]

4.16   The Committee examined a proposal to expand places at the existing AUs. However, as NUS and NTU are already large universities by international benchmarks, we were concerned that any significant increase in places may compromise on the quality of education offered. We also agreed that it would be presently beneficial to maintain the more intimate nature of younger institutions such as SMU and SUTD with its smaller steady state enrolments.

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[43] QS Top Universities, http://www.topuniversities.com/university-rankings

4.17   Notably, the Committee perceived that there was value in further diversifying the degree options available. This would better cater to the variety of learning preferences and interests of young Singaporeans, who had enjoyed a differentiated pre-university landscape, where they could excel in their areas of talent and have their respective learning needs met.

4.18   Our scan of other developed economies has revealed that their university sectors are much more variegated with different types of degree-institutions. Countries such as Australia, Finland and the United Kingdom, as well as economies like Hong Kong, have a more balanced university landscape compared to Singapore, comprising a mixture of research-intensive and teaching-oriented institutions. This comprehensive landscape is better able to meet the needs of its citizens and its economic bases.

4.19   As seen from Figure 4.1, Singapore's university landscape is predominantly research-intensive, relative to other developed countries. All four AUs are positioned as research-intensive institutions, whereas SIT offers more teaching-focused courses. In contrast, the UK and Australia have a smaller number of research-intensive universities, as represented by the Russell Group of 20[44] and the Group of 8[45] respectively. Both Finland[46] and Hong Kong[47] have a more balanced publicly-funded university landscape which is split equally between research-intensive and more teaching-focused pathways.

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[44] While the Russell Group takes up only 17% of the total student enrolment, it received about 80% of the available research funding. Aspirant research-intensive universities include the 1994 Group of Universities. Data for UK taken from the Higher Education Statistics Agency (HESA) website. http://www.hesa.ac.uk/.

[45] The student enrolment at the G8 made up 30% of the total student enrolment, but received 65% of the available research funding to universities; aspirant research-intensive universities are those which are part of the Innovative Research Universities grouping, which received about 11% of the total research funding. Data for Australia taken from the Commonwealth Government's *Higher Education Report (2009)* (published 2011) and the Department of Innovation, Industry, Science and Research website. http://www.innovation.gov.au/.

[46] Finland's higher education sector is characterised by a split between the research-intensive universities and the teaching-focused, practice-oriented universities of applied sciences (UAS). Its universities receive core funding for research activities and output, but its UASs do not. However, the latter may receive discretionary government funding or project for specific applied research projects that are of national or regional interests. Data for Finland was shared with the Committee when we visited the Ministry of Education and Culture in Oct 2011.

[47] In Hong Kong, the research-intensive universities – Hong Kong University (HKU), Hong Kong University of Science and Technology (HKUST) and Chinese University Hong Kong (CUHK) accounted for 50% of the total student enrolment, and collectively received 70% of the available research funding. Data for Hong Kong taken from the University Grants Committee (UGC) Datamart Statistics website http://cdcf.ugc.edu.hk/cdcf/statIndex.do?lang=EN.
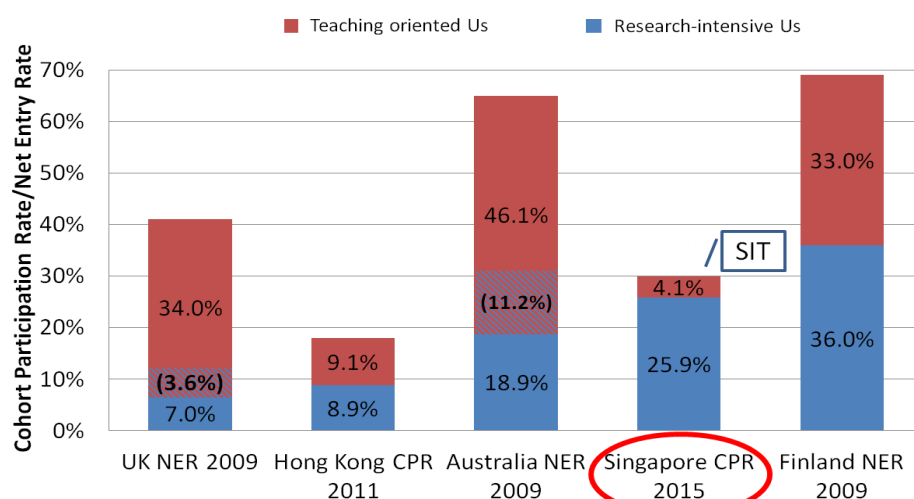
* Numbers in parenthesis refer to % of cohort in "aspirant" research –intensive universities.

4.20   The overseas study trips also proved to be highly instructive in providing us with insight into the diverse university landscape in Canada, Finland, France, Germany, Hong Kong and the United States.[49] We visited reputable institutions offering more applied degrees, with close linkages between classroom learning and practical industry application. The institutions were successful and well-regarded by students and industry alike, boasting healthy application numbers and good graduate outcomes. For example, Worcester Polytechnic Institute (WPI) boasts a graduate employment rate of 90%, and a median starting salary of US$61,200 (with up to 5 years of experience), which is one of the highest among Engineering graduates in America.[50] These applied institutions exist alongside the research-intensive universities, and enrich the wider higher education sector with their own brand of innovative pedagogies aimed at enhancing the integration between theory and practice.

4.21   The Committee therefore recommends that the approach to expanding the sector would be to further differentiate the university landscape, and to introduce institutions which are non research-intensive in character, but

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[48] The cohort participation rate (CPR) and the net entry rate (NER) are different methods that measure the access to university education in a particular country. Please refer to Footnote 30, Page 26.

[49] The Committee visited Metropolia University of Applied Sciences in Finland; University of Paris-Sud XI in France; Hong Kong Polytechnic University; University of Waterloo and Humber Institute in Ontario; Worcester Polytechnic Institute, Rensselaer Polytechnic Institute, Polytechnic Institute of New York University and Drexel University in the US; and the Baden-Württemberg Cooperative State University, Hochscule Esslingen, Hochschule fur Technik und Wirtschaft Berlin (HTW) and Alice Salomon Hochscule Berlin, in Germany.

[50] Data taken from *Payscale College Salary Report (*2011-2012) website http://www.payscale.com/best-colleges. Engineering graduates from the Massachusetts Institute of Technology have the highest starting median salary of US$69,700.

excel in providing a relevant and good quality university education and student experience that will equip its graduates for the twenty-first century.

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> **Key Recommendation:**
>
> - Introduce a new applied degree pathway, with strong nexus with the economy.

CHAPTER 5: A NEW APPLIED DEGREE PATHWAY, WITH STRONG NEXUS WITH THE ECONOMY

5.1   The Committee believes that there are significant merits in diversifying the university landscape through a new applied degree pathway tailored for the twenty-first century. Today, real-world, industry-focused elements such as industry attachments and internships, are implemented to varying degrees across the degree landscape. We propose to develop a more coherent and prominent pathway along these lines that can complement our existing research-intensive universities. This would better serve the learning preferences and interests of prospective students, and equip them with the essential skills to thrive in the global environment.

5.2   In addition to catering to a broader range of students, this pathway also has the potential to foster closer collaboration between universities and industry. This can be done through more work-relevant pedagogies and content, thus equipping students with industry-ready skills and mindset that would enhance their employment prospects, and ensure they will be attractive to and valued by companies.

5.3   Beyond preparing students for work, this degree pathway should also equip them for life. The new pathway should not compromise on the mission of a university education, which is to develop the individual holistically. This balance between specialisation and generalisation was also emphasised by the 2010 Economic Strategies Committee (ESC), which noted that "T-shaped" competencies[51], having both the in-depth discipline specific skills, and the broad-based knowledge of other related areas, are important in enabling one to navigate the twenty-first century world.

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[51] *ESC Report (2010),* p. 19

A)   RATIONALE

5.4   *Better caters to a broader range of students*. Introducing a distinct applied degree pathway broadens the choices for young Singaporeans, to pursue a degree education that best fits their individual learning preferences and interest.   It provides an alternative to the more theoretical content and pedagogy of our autonomous universities (AUs), and extends degree articulation pathways for a broader segment of young Singaporeans.

5.5   *Strong nexus with the economy to address diverse economic needs and enhance employability of graduates*.   These pathways lend themselves to the establishment of close linkages between the institution and industry stakeholders.   This creates a virtuous iterative loop, where industry input keeps the curriculum relevant and ahead of the curve, while institutions increase their likelihood of producing graduates who are equipped for and committed to the sector.

5.6   We are conscious that this pathway is no less rigorous.   The integration of theoretical, classroom knowledge with real world application is a potent formula to educate a different type of graduate, better equipped to put theory into practice, with the skills and experience valued by employers from a range of sectors, and a strong industry orientation.   This will be their competitive edge, in an age where the proliferation of degree-qualifications has become a global phenomenon.

5.7   While the existing AUs have applied elements in their current offerings and do continuously refine their curriculum to ensure relevance and foster greater integration between theoretical learning and real world application, the value of the proposed applied degree pathway lies in the coherence in which the applied elements permeate the character, curriculum and pedagogy of the institution.

B)   KEY FEATURES

5.8   We propose that this new applied degree pathway should have the following features:-

5.9   *Strong theoretical foundations.*   As a quality applied pathway is premised upon meaningful synergy between theory and practice, students have to be equipped with strong theoretical foundations, in order to reinforce the relevance between classroom knowledge and work place application.

5.10   *Twenty-first century skills.*   Students should be equipped with a balance of technical specialised skills and broader general skills, such as effective written and oral communication, cross-cultural skills, team work, and general financial and info-communication and technology (ICT) literacy, which would help them to navigate the twenty-first century world.

5.11   *Innovative applied pedagogy.*   An applied pedagogy can take many forms, including elements of project-based, team-based learning, and multi-disciplinary problem-solving. The key is to engage students and to enhance the link between classroom theory and real-world practice.

5.12   *Excellence in teaching and the undergraduate experience.*   These applied degree pathways should also provide excellent teaching.   Faculty recruitment and assessment would be based on metrics that reward high-quality teaching as well as engagement with students.   Relevant training opportunities will be provided to part-time adjunct faculty to ensure that the faculty members are equipped with the necessary competency to deliver the programme.

5.13   In order to enhance the close nexus between research and education, students and staff at these institutions should have the opportunity to work with industries and local enterprises on research projects that are primarily applied in nature, and would involve solving real-world problems. These research/project work opportunities would be offered to undergraduates to enhance their learning experience and industry-relevance.

5.14   *Close collaboration with relevant industries, with well-integrated student industry experience.*   The curriculum and pedagogy at these institutions would be informed by industry input through advisory boards, and extensive use of industry practitioners to teach classes or supervise projects.   Its faculty would likely be drawn from among industry practitioners, and its research would be carried out in collaboration with relevant industries.

5.15   For optimum integration between theory and practice, work placements should be made an integral part of the degree requirements. Students should be given ample opportunities to take up internships and work experience in companies while undergoing their degree education, as these jobs may provide valuable grooming and development opportunities for the students, and allow them to assess their own suitability for the industry.

5.16   Hosting these student work placements can potentially be beneficial for companies, in terms of talent identification, attraction and retention. Employers may be persuaded to see these work placements as an extended recruitment interview, as it offers the opportunity to observe a student's capability and fit for the job. The support of forward-looking and progressive employers would be key to making these work attachments meaningful for our students.

5.17   In order to distinguish this from current internships and work placements available at the AUs, this work experience component must have clear learning outcomes that integrate well with the academic programme. Thus, it would be necessary for faculty and industry to have regular feedback sessions, to ensure that the academic programme is industry relevant and is able to equip the students with the necessary skills and preparation to undergo the work experience component. The academic structure also has to be flexible enough for students to be allowed to rearrange their post-work experience modules according to what they have learnt on the job. See Box 5.1: Key Lessons from Successful Cooperative (Co-Op) Programmes.

Box 5.1: Key Lessons from Successful Co-Op Programmes

(1) University of Waterloo – Strong institutional support and commitment to mission

The University of Waterloo (UoW) in Canada has the world's largest Co-Op programme with over 16,000 students across different disciplines. One of the key success factors for the programme is UoW's strong institutional support and commitment to Co-Op education, ranging from deliberate resourcing to facilitative academic structures to support the Co-Op mission.

At UoW, Co-Op students alternate between full-time study and paid work terms every year. These work terms are a formal part of the curriculum (i.e. credited) for Co-Op students, who typically need to complete five work terms in order to graduate. Each work term is about four months long. Before their first work term, all Co-Op students are required to complete a career preparation programme. After their work terms begin, students can take online courses to supplement their practical training. UoW also supports the Co-Op students by ensuring that courses are carefully sequenced and offered often enough to take into account the absences of Co-Op students working full-time.

From UoW's experience, Co-Op needs to be resourced well. A successful Co-Op programme will require dedicated manpower and financial resourcing to

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ensure the quality and availability of internships, as well as good institutional support for students.

(2) Drexel University – Seamless integration of work and study

Drexel University is a private university in USA which is widely recognised for its Co-Op programme that was first started in 1919. A key success factor for its Co-Op programme is its seamless integration of the academic and practical elements of the programme, and the comprehensive measures to maintain quality and ensure value-add.

At Drexel, students choose between a five-year programme (with three Co-Op stints) and four-year programme (with one Co-Op stint) at the point of admission. Faculty members work closely with academic advisors and the Co-Op office to monitor what students learn during their work terms. They vet through all job positions before students can undertake them as a Co-Op placement. They also help to calibrate the demand of the positions to the abilities of students – e.g. senior year students will receive placements with heavier responsibilities than students in their sophomore year. This helps to ensure that the actual job experience builds upon classroom learning and achieves particular learning outcomes. In addition, Drexel regularly reviews Co-Op evaluations and adjusts the curriculum to address any gaps in learning outcomes. The work stint can also impact students' academic programmes – students can adjust their programmes according to interests discovered during the work semesters.

From Drexel's experience, it is important to start the Co-Op programme on a right footing as it determines how the programme is regarded. As such, there is merit in starting the programme small, in targeted disciplines. This will allow the quality bar to be set high from the start, in order to ensure value of the programme.

(3) Baden-Wurttemberg Cooperative State University – Strong culture of industry-driven cooperation

The Baden-Württemberg Cooperative State University (DHBW) is unique to the state of Baden-Württemberg (BW) and is the only such institution in Germany. A key success factor for its Co-Op model is the strong culture of industry-driven cooperation and support.

At DHBW, where students must first have an employment contract to apply for admission, partner companies select their employees/students and DHBW accepts all applicants with an employment contract. Companies pay students during the course of their studies, and host the students during their practical training period. As part of their 3-year programme, students alternate between full-time study on campus and full-time work at their sponsoring company, with each

study or work term lasting 12 weeks, and 6 iterations of each term in total.

Industry drives the integration of applied elements in the educational landscape of BW. BW is host to many large companies, such as Daimler, Bosch, Porsche, as well as many German *mittelstand* (SMEs). This strong industry environment, coupled with a long-standing tradition of links between education and industry stemming from the German apprenticeship model, supports the work-study model of education through ample availability of meaningful work placements. These companies are also at the leading edge of industrial development, and have the resources to involve students in projects not merely to support the education system but also to develop genuine solutions to real problems faced by the company.

The industry-orientation is also evident in the profile of its faculty, where about 60% are adjunct industry professionals, and full-time faculty also have extensive industry experience.

From DHBW's experience, a successful Co-Op programme is premised on the culture and tradition of strong industry support, which is not easily or immediately replicable outside the BW context. Considerable effort will be required by the government and institutions to market the value-proposition of such a model to employers. Employers could see such a model as a good opportunity to acclimatize future employees to the company, and a more cost-effective way of training employees while at the same time providing good graduate outcomes for the next generation.

5.18   *Broader admissions criteria for a heterogeneous student profile.* This pathway should be open to fresh school leavers and working adults who are keen on an applied degree education. A variety of academic qualifications (GCE A-Level certificate, polytechnic diploma, International Baccalaureate etc.) and working experience should be considered. This pathway should also facilitate applicants who choose to defer their university entry in order to obtain relevant working experience or to pursue their non-academic passions first. Having broader admissions criteria, which recognises other talents beyond academic grades, would contribute towards a more heterogeneous student body and positive educational experience for the students themselves, as students can interact with classmates from diverse backgrounds and who bring with them different insights and expertise.

5.19   Understandably, there are some concerns about the viability of this new pathway, as its success is dependent on the support of industry partners and the wider society. We would need to attract the right industry partners to collaborate on curriculum and pedagogical design, overcome initial public unease with an unfamiliar model, and convince prospective students (and their parents) of its merits. This will not be easy but we must be committed to the pathway and adopt a deliberate strategy to establish and communicate the quality and value proposition of such a pathway.

5.20   The key is to secure good quality work placements to reinforce the value proposition of this applied pathway. We propose that having a small pioneer batch of students would make it more manageable for the institutions to source for a strong stable of industry partners, to help set the quality bar for work opportunities.   This has to be coupled with a strong internal commitment from the leadership and faculty towards this model; and an effective external marketing campaign to educate the public about this new model and to highlight successful overseas examples.

5.21   To facilitate the introduction of this new applied degree pathway, we recommend that MOE studies the introduction of new teaching and learning outcomes indicators that would better reflect the different strengths of institutions.   This would help to break down the mindset of "stacking" institutions in a linear fashion which is typical of university rankings, to facilitate greater recognition of the value of such a pathway as a viable, attractive path to success.

5.22   Care should also be taken to prevent the homogenisation of institutions. The experiences of other countries have shown that institutions that started out with distinct missions often face pressures to converge towards the same university models. Our applied institutions would have to be encouraged to remain true to their original mission, through rigorous monitoring and the implementation of an appropriate framework of incentives.

5.23   It is also worthwhile to embark on research efforts to establish the value of the different types of degree pathways. These researchers could embark on quantitative and qualitative studies that measure short-term graduate outcomes, as well as longitudinal studies that track longer-term outcomes, to provide a clearer analysis on the sustained impact of degree education in a diverse landscape. The scope and focus of this research could be designed in tandem with relevant ministries and agencies, to provide them with useful data and analysis, which could feed into public policy formulation.

5.24   It is encouraging to note that the Committee did encounter students at focus group discussions, who had expressed their interest in these pathways for a variety of reasons – namely that it fits their learning preferences, provides them with an authentic learning experience with insight into the job and career, expands their networks and ultimately makes them more attractive to potential employers.

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Key Recommendation

- Develop SIT as Singapore's fifth autonomous university (AU), offering a new model of degree education.

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CHAPTER 5B.1: RATIONALE

5.25   The Committee recommends developing SIT into Singapore's fifth AU. The new SIT will pioneer a different learning pathway that grounds itself on an applied pedagogy and enjoys close linkages to the industry.

5.26   SIT is well-positioned to be developed into a distinctive applied degree pathway, as it is already implementing several elements of such a model today. Established in 2009 for polytechnic upgraders to obtain industry-relevant degrees, SIT currently partners 10 overseas universities (OU) to offer 24 programmes[52] in growth sectors of the economy. A number of these programmes are in disciplines with a strong applied element, such as allied health, early childhood education, culinary arts and digital animation. The current SIT is slated to reach steady state in 2015, with an annual intake of about 2,000 students.

5.27   SIT has also forged close links with industry – in 2011, there were 34 industry partners sponsoring scholarships for 12% of its students in various disciplines. Building on these foundations, we can develop SIT into our fifth AU that offers an innovative model of teaching-focused, industry-linked and applied university education in Singapore.

5.28   As our fifth AU, SIT will need to develop itself into a distinctive institution, different from the existing AUs and polytechnics. The value proposition of SIT will lie in the coherence in which the applied elements permeate the character, curriculum and pedagogy of the institution to benefit its students. In doing so, SIT can add diversity to the higher education landscape by offering a distinct degree education that caters to a wider spectrum of student abilities and preferences, and produce a different type of graduate to meet the diverse needs of our economy. SIT must also provide value-added, higher-order training to polytechnic graduates, so that both students

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[52] These degree programmes are awarded in the name of the OU partners.

and the labour market recognise the value that SIT can create. We outline the proposed features of SIT in the following section.

CHAPTER 5B.2: FEATURES

A)   DIVERSIFY OFFERINGS WITH SIT DEGREES

5.29   When SIT becomes a university, it could start to award some degrees in its own name, but can also continue to tap on its OU partners for expertise in highly specialised areas, such as culinary arts and digital animation. These degrees should be awarded in the name of the OU partner. SIT may also launch some joint and dual degrees with new or existing OU partners. This will allow SIT to build up stronger capabilities and greater brand name awareness even as it launches its own degree programmes. For joint degrees, SIT can add local context and adapt the curriculum in ways that better meet the needs of our students and industry. By 2020, we expect SIT to operate on a hybrid model where there may be a mix of SIT, OU, joint and dual degrees.

B)   TYPES OF PROGRAMMES

5.30   *Applied/professional undergraduate degrees.* The new SIT should offer predominantly applied/professional undergraduate degrees in identified growth sectors of our economy, in line with the ESC's recommendation to strengthen Singapore's position as a leading Global-Asia hub in business and "future-ready" urban solutions[53]; as well as in areas of social need. Where relevant, these degree programmes should be recognised and accredited by their respective professional bodies to bolster employment outcomes of graduates.

5.31   *Expanding non-science and technology (non-S&T) offerings while maintaining S&T focus.* In line with the traditional strengths of the polytechnics, SIT's academic focus when it was first established was designed to be a 60/40 split between S&T and non-S&T courses. However, there is scope for SIT to branch into more non-S&T offerings given the strong student, social and industry demand for such courses, and the strong pipeline of good[54] polytechnic students in non-S&T diploma programmes.

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[53] *ESC Report (2010)*, p. 22.
[54] Students who scored 15 points or better (ELR2B2) in the GCE O-Level Examination.

5.32   To provide more opportunities for this pool of bright diploma students, the new SIT could offer more non-S&T programmes while still maintaining its S&T focus. Around 55% of SIT's programmes could be in S&T areas to complement offerings in the broader higher education landscape. The non-S&T programmes should be rigorous, and with technical specialisations. This will improve employment prospects in a field with more degree graduates.

C)   PEDAGOGY

5.33   SIT should engage students in real-world issues and environments, where the link between theoretical knowledge and practical application is made clearer. Such experiential learning not only provides students with the opportunity to apply classroom theory to the real-world, but also to enhance conceptual learning through practice. Such an applied pedagogy can be reflected in several ways, including a Co-Op programme.

5.34   *Balance specialised training with broad-based knowledge and skill sets.* The proposed new SIT programmes should be structured to equip its graduates with broader leadership, critical thinking, writing and communications skills, in addition to their domain specific skills, to prepare them for a fast-changing workplace. As there are many opportunities to grow our small and medium enterprises (SMEs) sector further, SIT should also consider making Entrepreneurship a core module in its curriculum, to foster a spirit of innovation among its graduates, who can then seize new business and job creation opportunities. In addition, humanities, social sciences and the arts can be injected into the curriculum so that students can better understand the broader social and cultural impact of their work.

5.35   *Co-Op education.*   As a start, the new SIT should start the Co-Op programme on a modest scale with a select stable of good partner companies prepared to commit to the requirements of the programme. This will allow SIT to ensure that its work placements are of high quality, and to start the programme on a right footing. Meaningful, full-time paid work that is well-integrated with the students' educational outcomes can build upon and reinforce their learning by contextualising theories with real-world complexities, and hone students' soft-skills in a real-world environment. Essentially, the Co-Op programme allows students to experience the "best of both worlds" while studying and will better prepare them to be work-ready. We expect such graduates to be highly-valued and sought after by employers.

5.36   SIT should be selective in choosing students with suitable attitude and aptitude to benefit from the Co-Op programme. These students will need to

cope with additional Co-Op requirements, and a steep learning curve as they adjust to full-time work semesters. Hence, they should not be solely assessed on the basis of academic merit. Other attributes such as passion for the job and writing/communication skills should also be taken into consideration.

5.37   On top of the Co-Op programme, SIT should also offer internship opportunities to the rest of its students during the vacation semesters. This is similar to what the AUs currently offer. These internships will provide students with some industry exposure, and can also count towards their academic credits.

D)   STRONG INDUSTRY LINKAGES

5.38   To implement the applied pedagogy well, SIT should maintain a strong outward orientation and remain attuned to the needs and demands of the future workplace. This can be achieved by having a core of industry partners and professors who are experienced in both academia and industry.

5.39   *Close industry partners.* Fostering strong partnerships with industry is the key to SIT's ability in securing high quality Co-Op placements. For instance, Drexel University engages over 1,500 companies to provide students with Co-Op placements. Even when companies do not employ Co-Op students, Drexel continues to engage them to maintain a working relationship for future collaboration.

5.40   SIT should also leverage further on the existing Centres of Innovation platform, to forge closer collaborations with the polytechnics and industry, and carve out a distinct niche of excellence in applied, solutions-directed research and consultancy capabilities. Such projects can provide students with additional opportunities for industry-linked, experiential learning, while strengthening the profile of the university.

5.41   *Experienced and connected faculty.* SIT will require a core of professors who are deeply plugged into both the academic and industry arenas. With their experience and network, these faculty members can tap on their personal links with external organisations for applied learning opportunities and also help tailor the curriculum to keep up with changing industry demands. They will be supplemented by a stable of adjunct professors, who are industry experts and practitioners. These adjunct professors can offer additional real-world perspectives and provide insights into the latest industry trends.

E)   HETEROGENEOUS STUDENT MIX

5.42   Rather than confining its doors to polytechnic students, the new SIT should cater to students from different pathways, who may prefer a more applied model of university education. A more heterogeneous student population will enhance students' learning experience - they will be able to learn from students with different educational background and skill sets. Team-based learning will also provide a more authentic reflection of their future workplaces. Adopting a more open admissions stance is also in line with SIT's position as a pathway that is *different in character but equal in status to* the AUs.

5.43   *Three- and four-year degree programmes.*   At present, SIT operates on a "plus two" model – its offerings are designed to allow polytechnic graduates with relevant diplomas to graduate with a degree after two years of full-time study.   This model restricts GCE A-Level and non-relevant polytechnic diploma students to a limited number of programmes, where they require additional unsubsidised bridging semesters to articulate into these "plus two" programmes.

5.44   Going forward, SIT should offer three- and four-year degree programmes open to all students from the polytechnic, GCE A-Level and IB tracks. This provides sufficient time to incorporate both the broad-based elements and more specialised skill sets into the academic programme for a fuller university education.   Nevertheless, polytechnic students with relevant diplomas should still be able to gain some credit exemptions for prior learning, and may complete the degree programme in a shorter duration. We also expect that SIT will continue to be a popular pathway among polytechnic graduates, given its applied focus and facilitative programme structure for those with relevant diplomas.

5.45   *Holistic admission process.* Currently, SIT and the AUs have started moving towards a more holistic admissions assessment – one that is more in line with "talent meritocracy" as opposed to an "exam meritocracy". The new SIT should continue to assess students across a wide range of criteria, taking into account students' prior work experience, interview performance and quality of portfolio, on top of their academic grades. As the professions that students in applied degrees could enter into are more clearly defined, it would be difficult for students to sustain themselves through the programme without a strong passion for the subject area. As such, it would be important for SIT to assess and admit students who not only meet the academic

requirements but also those who demonstrate a strong passion in the subject.

F)   ENHANCE SIT'S INFRASTRUCTURE

5.46   As SIT expands its intake and courses, there would also be a need to enhance its current infrastructural provisions. It can continue to tap on existing speciality laboratory facilities and equipment at satellite sites located at the polytechnics, but should also consider building up its own campus headquarters, given the infrastructure constraints at the polytechnics. We further recommend that SIT consider developing this main campus as its centre of gravity for core courses and student life. This model can also help to foster a greater sense of university identity and enhance the university campus experience of students, while meeting SIT's needs for an expanded capacity.

CHAPTER 5B.3: MOVING FORWARD: CRITICAL SUCCESS FACTORS AND CONSIDERATIONS

5.47   *Reputation*. There are concerns among stakeholders, students and teachers that new institutions entering the space may suffer from the "new kid on the block" phenomenon, always struggling with its "last ranking" and not competing effectively with the existing players. Through its engagement and consultations with the public, the Committee has received some feedback echoing concerns that SIT, as the newest university, may be perceived as a second-class university in Singapore, as the more established universities are likely to attract the better students. The Committee acknowledges that such a risk exists. However, the Singapore Management University (SMU)'s experience suggests that this challenge is surmountable. SMU has over the past twelve years, developed a strong reputation for its distinctive education and positive graduate attributes and outcomes, and is today a well sought-after university among students.

5.48   SIT has the added advantage of a head start, as it already possesses the confidence of and partnership with reputable OUs. To further cement its reputation as a quality institution, SIT will need a strong team of faculty who is dedicated to teaching excellence and committed to supporting the applied pedagogy. The performances of its graduates in the workplace will also play a vital role in shaping the perceived value of SIT's degrees. As the public may not be familiar with an applied degree pathway, SIT will need to effectively communicate its value proposition to prospective students, their parents and industry for their buy-in.

5.49   To prevent unfair comparisons, we should not pit SIT against the other AUs, and SIT should be measured by a different yardstick. SIT should be measured on student engagement, quality of teaching, quality of the student experience and employment outcomes, a different emphasis compared to the instruments used by the more prominent ranking agencies today, which tend to privilege research indicators.

5.50   *Industry ownership*. A critical pillar to SIT's success and traction as an applied degree institution is the level of industry interest and support. For example, their offering of meaningful, substantive work-placement opportunities would drive the quality and sustainability of the Co-Op programme. SIT is not starting from scratch here, as it is already working closely with a strong stable of industry partners. However, we should encourage more progressive industry partners to step forward to co-develop Singapore's pool of untapped talent, and help them to achieve their full potential.

CHAPTER 5C: ALTERNATIVE IDEAS THAT WERE CONSIDERED

5.51   *Expanding existing universities.* As mentioned previously, we did not want to increase the size of existing universities for two reasons. First, there is merit in diversifying the landscape further, through the creation of a pathway that is distinct from the research-intensive focus of the AUs. Second, growing more places at the existing AUs may cause the AUs to operate under sub-optimal conditions and compromise on students' learning experience.

5.52   We also considered whether to introduce some applied pathways in our AUs, which would run concurrently with their existing programmes; or to set up a new applied School within the AUs. However, we assessed that it was not ideal to graft a school with an applied focus on a research-intensive institution. Such an added mission may distract the latter from their primary mission as research-intensive universities, diminishing the value of their research-orientation without necessarily creating a top-rate applied pathway. Therefore, it would be more effective to leverage on existing institutions, which were already offering degree programmes with applied elements, to create a coherent and high-quality, applied degree pathway.

5.53   *Converting a polytechnic into a university.* Another possible option was to upgrade one or more of the polytechnics into a degree-awarding university. However, we have built up a strong, reputable polytechnic sector that is a key feature of our education system, and to convert one into a university

would compromise on their current mission focus, and dilute the value of a polytechnic diploma as a work-ready qualification. The polytechnics play a unique and important role in meeting Singapore's socio-economic needs, and there is a need to ensure that it continues to maintain its value and distinctiveness in the post-secondary education landscape.

5.54   The UK university system's evolution has been particularly instructive. In 1992 the UK government granted university status to its polytechnics. This proved to be a double loss for the wider higher education sector – the vast majority of these post-1992 new universities still struggle with their new mission and are unable to rise in quality and standing; and the UK tertiary system is now devoid of a tier of institutions that were previously instrumental in producing a technically-skilled workforce. Therefore, it would be prudent for us to avoid this path while there are other more viable options.

5.55   While there are other more successful conversion examples, such as Finland's conversion of polytechnics into universities of applied sciences, and the Hong Kong Polytechnic University (HKPolyU), the popularity of our polytechnic courses is such that all five polytechnics are currently running at full capacity. To convert one or more into an applied university would require the creation of new polytechnics, which would bring about an additional set of challenges, not least of having to build up their reputation from scratch.

5.56   On balance, we think that it would be more effective to leverage on existing degree-awarding institutions, such as SIT, which already possess the necessary elements and mindset, to launch these new applied pathways.

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CHAPTER 6: LEVERAGING ON THE PRIVATE EDUCATION (PE) SECTOR

Key Recommendation

- Conduct in-depth study of the PE sector.

CHAPTER 6A: CURRENT PE LANDSCAPE

6.1   Private education institutions (PEIs) currently provide degree programmes of overseas universities to both foreign and local students.   The degrees offered and fees charged depend on market forces.   Therefore, the tuition fees for PEI programmes are higher than those charged by the autonomous universities (AUs), and other government-subsidised institutions.

6.2   *PE Landscape.* According to the Council for Private Education (CPE), there were 71 registered PEIs that collectively offered 819 undergraduate external degree programmes in 2011. Apart from UniSIM, the top four PEIs with the largest undergraduate enrolment are SIM Global Education (SIM GE), Kaplan Higher Education Institute/Academy, PSB Academy and Management Development Institute of Singapore (MDIS).   However, these PEIs, unlike UniSIM, do not have degree-awarding status and instead, offer the degree programmes of its overseas university partners.

6.3   These PEIs admit a significant number of Singapore students every year. In AY2011, there were about 47,500 Singaporean students enrolled in full-time (FT) and part-time (PT) undergraduate degree courses at these PEIs.   Of this, about 29,000 (61%) were aged 25 years and below, and about 28,000 (59%) were polytechnic diploma holders. See Tables 6.1 – 6.2 for student profile at these PEIs.

Table 6.1: Breakdown of Enrolment in Undergraduate Degree Programmes at PEIs, by Age Group of Singaporean Students (Jan - Dec 2011)

Below 21	21-25	26-30	Above 30	Total
3,514	25,553	10,582	7,844	47,493

Source: Council of Private Education.

Table 6.2: Breakdown of Singaporean Student Enrolment by Highest Qualification before Enrolment in Undergraduate Degree Programme at PEIs, (Jan – Dec 2011)

Post-grad	Bachelor Degree	GCE A-Level	Diploma (local Polytechnic)	Diploma (PEI)	Others[55]	Total
169	774	7,375	27,953	8,167	3,055	47,493

Source: Council of Private Education.

6.4   The PE sector plays a role in complementing the public university sector, injecting greater course diversity and supporting workforce development. To regulate and raise the quality of the PEI sector, the CPE was established and the PE Act passed in 2009 to regulate the PE sector more effectively and improve its quality. To this end, CPE manages a two-tier regulation framework – the mandatory Enhanced Registration Framework (ERF) and the voluntary EduTrust certification framework. See Table 6.3.

Table 6.3: ERF and EduTRUST Requirements

ERF	EduTrust
1. Corporate governance 2. Quality of provision 3. Information transparency	1. Management commitment and responsibilities 2. Corporate governance and administration 3. External recruitment agents 4. Student protection and support services 5. Academic processes and assessment of students 6. Quality assurance, monitoring and results

Source: Council of Private Education.

6.5   However, the current EduTrust certification framework only provides institutional accreditation on governance and quality processes. It does not assess the quality of programmes delivered by the institutions per se, and there is limited assurance of the quality of education delivered by the PEIs. Thus the quality of the PE landscape is uncertain, particularly in the area of programme quality. While some provide good quality niche programmes, there are others that lack the capabilities to provide a good educational experience for their students, or may compromise on quality to maximise profits.

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[55] Including Nitec, 'N' and 'O' Level certificates.

6.6   The PE sector provides an alternative market-based solution to the provision of university education offered by the publicly-funded university system. However, countries that have moved in this direction have had mixed experiences.

6.7   The US has experienced a rapid expansion in its PE sector in recent years. The PEIs provide much needed additional higher education capacity in the US, while saving on public expenses as they are funded primarily through student loans. However, many for-profit PEIs in the US build their business model on profiting from the federally-guaranteed loans obtained by the students, rather than ensuring quality outcomes for students.[56] Expert observers from the Steinhardt Institute for Higher Education Policy, New York University, noted that this has led to uneven quality, poor student outcomes and high default rates, which leave students "saddled with debt" with nothing to show for their expense and effort.

6.8   To instil public confidence in degrees offered by PEIs, Canada's Ontario Province and Hong Kong have implemented rigorous processes to accredit the institutions and the programmes. Our study visits suggest that many PEIs find these processes onerous and resource-intensive, and decide to forego the benefits of accreditation altogether.

        a. In Ontario, a review panel, typically comprising senior academics with quality assurance and/or administrative experience, is formed to evaluate each programme. Review materials typically take about one to two years to prepare. The cost of the review, about C$10,000 to C$15,000 (about S$12,500 to S$18,700), is borne by the applicant. There is also a C$5,000 application fee. The application will also be posted online for the

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[56] Committee on Health, Education, Labor and Pensions, United States Senate, *For Profit Higher Education: The Failure to Safeguard the Federal Investment and Ensure Student Success*, 30 June 2012. Taken from US Government Printing Office website: http://www.gpo.gov/fdsys/. According to the Report, although the for-profit higher education sector received "$32 billion of Federal funding in 2009-10, which constituted 25% of the Department of Education student aid programme funds", the corresponding student outcomes have been poor. For example, about 54% of students who were enrolled in these for-profit colleges in 2008-9 left without a degree or a certificate by mid-2010. This can be attributed to the fact that many of these colleges invest a lot more in student recruitment, as opposed to building up on their student support services. In 2010, these colleges employed "more than two and a half recruiters for each support services employee." However, they continue to charge high fees (20% more than public universities) which place a heavier loan burden on their students. 96% of these students took out student loans, compared with 13% of students at community colleges, 48% at 4-year public, and 57% at 4-year private non-profit colleges. Students at for-profit colleges also tended to be high-dollar borrowers, with 57% of Bachelor's students who graduated from a for-profit college having a debt of $30,000 or more.   "In contrast, 25% of those who earned their degrees in the private, non-profit sector and 12% from the public sector borrowed at this level." Taken from the Committee's Executive Summary pp. 1 – 14.

public to provide feedback over 60 days. Ministerial consent to award degrees is applicable for five to seven years before renewal must be sought. Publicly-funded colleges that wish to award degrees and PEIs must undergo a programme quality assessment process, but the latter would have to pass an additional institutional quality review. There is no appeal process for this.

b. In Hong Kong, the quality assurance of the PEIs is undertaken by the Hong Kong Council for the Accreditation of Academic and Vocational Qualification (HKCAAVQ).[57] Although accreditation by HKCAAVQ is voluntary, accredited PEIs, including foreign ones, qualify for a government land grant and a zero-interest start-up loan to build their own facilities. Students enrolled in accredited institutions are also eligible for subsidized loans scheme, whereas those enrolled in non-accredited institutions have to pay higher interest on their loans.

CHAPTER 6C: CHALLENGES IN PROVIDING MORE GOVERNMENT SUPPORT FOR PEIS IN SINGAPORE

6.9   Two main concerns, which are also pervasive in other countries, dominate the issue of leveraging on PEIs for the expansion of the publicly-funded university CPR in Singapore. The first is the uneven quality of the PEI programmes. The experiences of other countries show that that sub-standard provision of education would lead to poor student outcomes, and less-than-ideal employment outcomes.

6.10   Second, there is insufficient data to fully ascertain the quality and value of the various PEI programmes in the uneven landscape. The PE Act and establishment of CPE in 2009 were the first steps in regulating the sector, and only impose baseline standards in the terms of governances and processes. Without better information, it is difficult to provide more government support in a prudent and accountable manner.

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[57] Compared to Singapore's publicly-funded university CPR of 27% in AY2012, Hong Kong's publicly-funded university CPR is lower, at 18%. However, another 7% of each university-age cohort in Hong Kong matriculates into self-financed degree programmes every year.

6.11   Hence, the Committee recommends conducting an in-depth study of the programmes and student profile in the PE sector. An expert panel could be established to advise on key quality parameters and data indicators to be collected through an independent survey.   This will facilitate a better assessment of the PEI programmes, and also set the stage for tighter regulatory controls, beyond the mandatory baseline standards that are already in place today.

6.12   Through this exercise, one possible outcome is that PEIs assessed to be of high quality could enjoy some government support for their programmes. In such a "Public-Private Partnership" model, in exchange for government support, PEIs can expect the government to play a larger role in the governance and quality assurance of such PEIs, to ensure accountability for the use of public funds.   This is akin to the present arrangement for UniSIM (see para 6.15).

6.13   The data collected from the in-depth study can also be published, to help students make more informed choices with regard to PEI programmes. The disclosure of accurate measures of quality outcomes should galvanise PEIs to raise their quality, thus improving the quality of the sector as a whole and building up public confidence in the value of its offerings.

Key Recommendation

- Introduce publicly-funded FT degree places at UniSIM.

CHAPTER 6E.1: RATIONALE

6.14   As the only private university in Singapore, UniSIM is a step ahead of the rest in the PE sector. It already has degree-awarding powers and a reputation for providing good PT degree programmes. Therefore, we recommend that the Government introduce subsidised FT degree programmes at UniSIM, to provide opportunities for students who prefer a degree education with close integration between academic study and practical work-relevant skills.

6.15   MOE and UniSIM have an established relationship, which started in 1992 with SIM's Open University Degree Programmes providing an avenue for non-graduate teachers to acquire degree qualifications. This led to the establishment of UniSIM in 2005, which provided more degree upgrading programmes over a wider range of disciplines to a larger student enrolment. MOE has increasingly recognised UniSIM's quality offerings, and appreciated its mission to give adult learners an opportunity to upgrade to degree qualifications through PT programmes. As part of its efforts to improve accessibility and affordability of continuing education and training (CET), MOE strengthened its relationship with UniSIM by providing subsidies of 40% for Singaporean students pursuing their first degrees at UniSIM[58] from 2008. This was subsequently increased to 55% in 2011. In exchange for funding support, UniSIM is subject to MOE's annual performance review process and five-yearly quality audits where an independent quality assurance panel scrutinises its programmes and features. MOE is also represented on UniSIM's Board of Trustees.

6.16   UniSIM remains the only private institution to date that MOE has assessed as being of sufficient quality to be accorded university status and degree-

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[58] UniSIM students who are Singaporeans and studying for their first degree part-time, currently receive government subsidies of 55% of their tuition fees. The only other PEIs that enjoy government subsidies are LASALLE College of Arts and the Nanyang Academy of Fine Arts (NAFA), for their diploma programmes and selected degree programmes offered in partnership with reputable universities.

awarding powers. Indeed, it has produced good graduate outcomes as a large proportion of its graduates have obtained a higher pay after graduating and have managed to change jobs to an industry of choice.[59]

6.17   UniSIM's established PT programme model can provide synergies for employment-focused applied degree pathways, if it is allowed to offer some FT degree programmes. Besides the strong industry links UniSIM could continue to build on, work-study arrangements for students may be more easily accomplished since UniSIM already has the support structures and "software" (curriculum, pedagogy and teachers) to complement a student's work time with evening- or online-classes. This arrangement will allow students to gain some real-world experiences and better equip them with the knowledge and attributes required in the workforce. Younger students could also benefit from being in the same classes as older students with work experience, as the latter would be able to share their real-world experiences in the classroom and provide networking opportunities for prospective employment.

CHAPTER 6E.2: FEATURES

6.18   *FT degree programmes.* These programmes should combine critical elements of a typical FT education with the flexibility of the PT programmes and could lead to a direct honours degree in four years. Distinctive 'applied' features such as a substantial six-month internship requirement and integrated professional development training should feature prominently.

6.19   *Year 1 and 2.* Students could take day-classes where a common curriculum is taught. This would be unique to the FT programmes and could include general modules in social sciences, business, sustainability, communication, critical thinking and technology. In their second year, students can choose to take specialisation modules in the evenings to accelerate their progress and graduate in a shorter time.

6.20   *Year 3 and 4.* The programmes should largely be modular and more specialised in these two years, where students could take modules pertaining to their majors and minors and have the option to attend day- or evening-classes. Having evening-classes, which could leverage on those offered by UniSIM's PT programme, would allow the FT students the flexibility of completing the mandatory six-month internship in the day during term time. Students should also be allowed to undertake more internships,

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[59] Based on UniSIM Graduate Survey 2011 by Market Probe.

to extend the same internship over a longer period, or to move into a FT job while completing the degree on a PT basis.

6.21   *Types of programmes*. Mainly non-Science & Technology (S&T) majors, in rigorous programmes and in disciplines with strong industry and student demand. Students could also be encouraged to take up minors to deepen their specialisation in areas such as business analytics, IT and organisational psychology.

6.22   *Pedagogy.* The programmes should build on UniSIM's existing pedagogical strengths and offer the following value propositions with the aim of producing graduates ingrained with a "dare to do" spirit.

6.23   *Industry linkage and career focus*. Besides internships, industry experience can also be infused into the programmes through modules conducted by industry partners, and recognising in-company training towards graduation credits.

6.24   In order to maximise students' learning from their internships, an Internship Office should be established to assist in sourcing for and matching internship openings. This could be part of a larger Industry Relations Cluster which could also provide career counselling, and liaise with industry for student projects and research collaborations. Students should also be equipped with relevant skills and aptitude, in preparation for their internships, through professional development courses that are integrated into the curriculum.

6.25   *Flexibility*. Besides the flexibility provided by a modular third and fourth year programme and the option of day- or evening-classes, students should also be allowed to switch to the PT programme if they decide to take on FT employment during the course of their studies. Furthermore, as most of the specialisation modules do not begin until the third year of studies, it should also be possible for students to change majors before then.

6.26   *Soft-skills*. The core curriculum should help students build up soft-skills such as communication, adaptability and cross-cultural competency. Students should also be required to gain overseas experience, participate in community service and learn through project work.

6.27   *Self-directed learning*. UniSIM's existing multi-modal delivery of education makes self-directed learning possible through technology and online learning components. To encourage more self-directed learning, students in the FT programmes should be encouraged to initiate internship opportunities and overseas experiences on their own.

6.28   *Student mix*. Diploma/ GCE A-Level/ IB holders[60] including some working adults should be allowed to enrol for the programme.

6.29   *Admission criteria.* Academic merit, interview performance (in terms of attitude, personal qualities etc), portfolio presentation and any work experience should be considered for admissions. This relatively "open" admissions criteria is in line with UniSIM's existing CET mission.[61]

6.30   *Faculty profile*. There should be a small core of dedicated faculty for the FT programmes, while PT faculty with industry experience could also be deployed where relevant and necessary.

CHAPTER 6E.3: MOVING FORWARD: CRITICAL SUCCESS FACTORS AND CONSIDERATIONS

6.31   *Infrastructural constraints.* There are infrastructural constraints for the proposed UniSIM FT degree programmes due to the lack of capacity for day-classes on the premises that are presently shared with SIMGE.

6.32   *Reputation and partnership.* Although UniSIM's PT degree programmes have a strong track record, the popularity of these FT programmes could be uncertain, as this would be the first time that UniSIM will be offering FT degree programmes. Thus, UniSIM could consider partnering with overseas universities and local companies in order to 'jump-start' the appeal of its FT degree programmes and differentiate them from existing programmes in the sector. This is especially critical in the early phase, where the initial spread of students enrolled and the quality of graduates produced will also affect future demand for UniSIM's FT programmes.

6.33   *University partner.* As local institutions such as the Singapore Management University had successfully started up through partnerships with well-known overseas universities (OU); UniSIM could consider establishing similar partnerships, to tap on the experience and know-how of the OU to improve its internal processes and build up its network, as well as to leverage on the OU's brand name where possible to gain public appeal and attract better quality faculty members.

6.34   *Industry partner.* Another way for UniSIM to enhance its FT degree programmes is to collaborate with big industry partners which are employers

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[60] Applicants with other qualifications are required to submit SAT 1 scores.
[61] UniSIM only admits students 21 years old and above who are currently employed FT or have at least two years of working experience. The academic criteria are also more open, requiring a polytechnic diploma or two H2 passes for GCE A-Level.

of choice. Students would be keen to enrol if there are opportunities for internships, and possible subsequent employment, in such companies. UniSIM could also explore the possibility of partnering companies and organisations to run programmes customised to meet their needs, such as the existing UniSIM-SAF and the UniSIM-Home Team collaborations.

6.35   *Staying true to CET mission.*   UniSIM should still remain predominantly a CET institution – its PT student enrolment should not fall and we expect that its FT students would not be larger than its PT enrolment even at steady-state.   Furthermore, UniSIM should continue to maintain the graduate outcomes and standing of its PT programmes even when the FT programmes are launched. The popularity of its FT programmes may in turn boost awareness for and more wide-spread acceptance of its PT programmes and the CET pathway in general.

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Key Recommendations

- Increase financial support for adult learners through the extension of Government financial assistance schemes to UniSIM part-time (PT) students.
- Encourage the provision of more industry scholarships.
- Improve access to PT degree programmes through greater recognition of work experience and liberalising access to alternative qualification holders such as GCE A-Level graduates.
- Make available flexible learning avenues.

CHAPTER 7A: RATIONALE FOR DEVELOPING CET AS A VIABLE DEGREE PATHWAY

7.1 The Committee recognises CET to be a critical avenue for Singaporeans to continually upgrade their skill sets, especially in the face of a constantly changing and increasingly sophisticated economy. Continual upgrading allows Singaporeans to keep their knowledge content updated, enhances their productivity and improves their job mobility.

7.2 In particular, CET provides an upgrading pathway to a degree for those who entered the workforce after obtaining their diploma or GCE A-Level qualifications. Working first and upgrading later may enable some to gain a firmer sense of their passions and capabilities, and make more informed decisions on their choice of degree study.

7.3 The Committee recognises that PT students experience various challenges when pursuing a degree. These can range from personal commitments such as work and family, to financial constraints, and a lack of pre-requisite academic qualifications. These challenges pose significant barriers to accessing CET.

7.4 The Government currently funds over 4,000 PT degree places at NUS, NTU and UniSIM annually, which works out to a cohort participation rate (CPR) of about 7%. Notwithstanding, there is still a strong demand to upgrade. Application rates in these programmes continue to exceed the number of successful admits each year. For example, in 2011, NUS, NTU and UniSIM

saw over-subscription rates of 270%, 360% and 130% respectively.[62] Thus, more can be done to facilitate upgrading via the CET degree pathway.

7.5   Moreover, graduate surveys by the universities show that PT degree holders generally experience better employment outcomes during and after completion of their degree courses. See Box 7.1 Improved Employment Outcomes for PT Degree Holders. This attests to CET being an effective means to help Singaporeans improve their skills, knowledge and standard of living.

Box 7.1: Improved Employment Outcomes for PT Degree Holders

Generally, those who pursue PT degree upgrading enjoy improved employment outcomes. A 2011 Graduate Survey by UniSIM found 60% of its graduates to have experienced an average increase of about 20% in their annual salary. A recently concluded exit survey of NUS Bachelor of Technology (Electronics Engineering) graduates found 48% to have received a promotion or more than normal salary increments since they started on the programme.

In addition, PT degree graduates also provided feedback that NUS, NTU and UniSIM programmes have prepared them well in various aspects of personal development, such as the ability to learn, interpersonal effectiveness, oral communications and team work.

"I believed that having an education in NUS Faculty of Engineering would heighten my career opportunities. My efforts paid off when, upon completion of my B.Tech degree, I was promoted to an engineer in the Public Utilities Board and awarded a scholarship to pursue a Master degree in Environmental Science and Engineering under the Singapore-Stanford Partnership Programme."
        -   Toh Kah Poh, 2005 NUS B.Tech (Mechanical Engineering) graduate

"It had been a long five years of studies at NTU. Finally, I had completed my degree! I consider convocation in July 2007 as one of the most important moments in my life. During the early years of my studies at NTU, I had wished that this moment would arrive faster. But when it arrived, I was both sad and happy. Happy because I had finally graduated and yet sad, as I had to leave this wonderful place after getting so used to it. I had to readjust my life - no more trips to school for evening classes three times per week. Finally, I would like to thank all professors and my project supervisor for their guidance and help. I appreciate this experience very much and perhaps I may return for further studies in the future."

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[62] UniSIM caters to more than 90% of the publicly-funded part-time degree places available. It offers more than 40 courses, in both science & technology (S&T) & Non-S&T disciplines.

7.6   Recognising the need to further support PT students in their upgrading efforts, the Government increased the subsidy rate for publicly-funded PT degree courses from 40% to 55% for Singaporeans in 2011. Other initiatives such as the Productivity Innovation Credit (PIC) introduced in 2010, provided tax benefits to employers who sent their employees for training.

7.7   However, more can be done to develop CET into a viable degree pathway. Study trips by the Committee have found innovative approaches taken by overseas institutions in making CET an attractive pathway to a degree. See Box 7.2: Learning Points on CET from Study Trips.

Box 7.2: Learning Points on CET from Study Trips

In March and April 2012, Committee members visited New York University School of Continuing and Professional Studies (NYU-SCPS) and Temple University to find out more about CET practices in overseas institutions. The key learning points from each institution are as follows:-

(1) NYU-SCPS

The NYU-SCPS caters to adult learners returning to school, to begin or complete an undergraduate degree programme. Key elements for its success include:-

- *Branding*. SCPS is popular among adult learners as it awards the same degree as other schools in NYU. Although the name of the School is indicated on the scroll, it is still regarded as an NYU degree. SCPS programmes were also priced at the top end of the market to signal their value and equivalence to a NYU full-time (FT) degree.

- *Customised programme and curriculum*. Compared to programmes for fresh school leavers, SCPS programmes focus more on critical thinking and writing skills instead of content knowledge per se. The rationale is that adult learners are expected to be comparatively better-equipped in the latter given their work experience. The curriculum is developed closely with industry through their representation on Advisory Boards. Class sizes are kept small[63] to provide more individualised attention.

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[63] A typical class size would comprise about 15 students.

- *Rigorous assessment of adjunct faculty*. SCPS employs a large number of adjunct faculty[64] from industry to provide a practical perspective. Adjunct faculty are also rigorously assessed for teaching performance by first being deployed to teach non-credit CET classes and undergoing observational assessments and professional development.

- *Differentiated admissions criteria*. Relevant work experience is taken into consideration for older workers who may have weaker academic credentials.

- *Not an "extension" model*. SCPS is able to hire its own faculty and not rely on other NYU Schools to offer their faculty for "extra teaching time".

(2) Temple University

To improve the provision of accessible and quality education to adult learners, Temple University adopted several measures including:-

- *Multiple lesson slots*. Some classes are offered at multiple slots (evenings, Saturdays and online) and repeated at different parts of the year to offer adult learners greater options and flexibility. After-work class timings were also introduced to make it more convenient for adult learners to juggle education and family.

- *Flexible admissions criteria*. Academic requirements are often waived in favour of interview performance and work experience. Some adult learners are allowed to try out certain courses on conditional admission or as "non-matriculated" students before being formally matriculated.

- *Remediation before start of course*. Students enrolled are required to take placement tests in writing and math skills. Those who fail will have to take a 7-week remedial class before the start of the course.

- *Seamless transition between PT and FT*. Students are allowed to switch between part-time and full-time versions of the same course at any point in time to adjust to their schedule.

- *Risk assessment of students*. Students are profiled on a 10-scale to gauge their risk of dropping out of their course. Those identified as "high-risk" will be tightly monitored by academic advisors who will help them to plan their courses and chart their progress.

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[64] NYU-SCPS has about 1,500 adjunct faculty members compared to about 120 full-time ones.

7.8   The Committee recommends that the Government provide more support to encourage Singaporeans to consider CET as a viable pathway to obtain their first degree. Assuming the continuation of past demand for CET degrees, we expect the CPR to increase to about 10% by 2020. We also believe that more can be done to enhance the attractiveness of degree-level CET programmes, by addressing the various challenges that PT students face when pursuing upgrading.

7.9   This would help to address the need to provide more degree opportunities for those who defer university entry to later in life, and to provide a viable alternative for those who were unable to obtain a publicly-funded university place straight after obtaining their GCE A-Level certification, International Baccalaureate or polytechnic diplomas. Presently, in their bid to obtain a degree qualification, many in the latter group choose to self-finance their degree education either locally, at PEIs, or at overseas universities. These are not only costly, but also may not provide the requisite quality of university education.

CHAPTER 7B: MEASURES TO CREATE MORE OPPORTUNITIES FOR ADULT LEARNERS TO UPGRADE TO A DEGREE

7.10   *More government financial support for adult learners.* Government financial assistance schemes (FAS) that are already available to PT students at NUS and NTU, i.e. MOE Bursaries, Tuition Fee Loans (TFL) and Student Loans (SL), should be extended to UniSIM PT students. This will ensure that the individual's consideration of financing their first degree is not skewed towards immediate upgrading since Government FAS will now also be available to PT students.

7.11   *Provision of more scholarships.* The Committee advocates that companies take greater ownership and play a larger role in continually updating and upgrading the skills of employees through CET. In addition to productivity gains, investment in staff training helps retain talent in an increasingly fierce global competition for talent.   In particular, one such human resource management tool is the company-sponsored scholarship in degree education.

7.12   *Improving access to PT degree programmes.* Currently, good academic qualifications are pre-requisites to gaining entry into PT degree programmes at the public universities, and minimal consideration is given to work experience. We believe that there is scope for greater recognition of work

experience in adult learners, especially where it is relevant to the course of study. Recognition can take the form of allocating more admission credits to work experience, or even credit and module exemptions in areas where adult learners can demonstrate competency in. The Committee recommends that relevant work experience be given greater consideration when assessing an application to a PT degree programme. Admittedly, as the recognition of prior learning and work experience is not easily done, MOE and the respective institutions could consider undertaking further study in this area, so as to improve the current situation.

7.13   Some GCE A-Level graduates who are unable to progress to the universities may choose to work first or articulate into private institutions. As part of continual upgrading, some of these graduates may wish to pursue a PT degree at the public universities subsequently. The option to do so should remain open to them. To ensure that university admissions criteria keep up with current-day purpose and needs, the Committee recommends for NUS and NTU to explore liberalising access to PT degree programmes for alternative qualification holders such as GCE A-Level graduates.

7.14   We also believe that NUS and NTU could explore expanding their PT offerings beyond the seven Engineering programmes that they offer today. This will provide greater choice and diversity in the CET landscape, and better meet student demand.

7.15   *Making available flexible learning avenues*. The Committee recognises that there is scope to enhance the mode of delivery of PT degree programmes to better cater to the schedule of working adults. While face-to-face classroom engagement remains important, alternative delivery methods, which do not compromise on the quality of education, should be introduced. A start has been made at the diploma-level, where CET diplomas at polytechnics have been repackaged into shorter modules. These lessons can also be applied to CET-mode Bachelor degrees.

7.16   PT degree classes are mostly conducted on weekday evenings. Given the need to juggle work in the day and studies in the evening, time management is a real issue for those pursuing or planning to pursue PT degrees. Flexible learning avenues, such as online lectures and tutorials, video correspondence and instructor-guided self-directed learning, can empower adult learners by giving them greater control over when and how they learn. See Box 7.3: Flexible Programme Delivery.

UniSIM employs "blended learning", which uses online learning tools to supplement its face-to-face programme delivery. One critical component of online learning at UniSIM is the guided online discussion. This facilitates peer-learning and collaborative learning that goes beyond classroom teaching. Leveraging on technology also allows busy working adults to *learn at their own pace, space and time.*

"UniSIM gives working adults like me the opportunity to upgrade ourselves while juggling other commitments through its unique e-based and student-oriented learning. I have also learnt essential communication skills which are critical to me as a frontline officer in the Singapore Police Force."
- *Nuf Ideal bin Abu Bakar, 2011 Bach. of Communication, Student*

The New Jersey Institute of Technology (NJIT) adopts a "weekend university" model by allowing students to cover 50% of each module through online learning. This helps working adults to juggle their schedule by restricting classroom timings to Friday and Saturday only. However, NJIT acknowledges that this best applies to programmes that do not suffer from reduced in-class interaction time.

7.17   Critical success factors for flexible learning include strong commitment from faculty involved in developing the flexible learning modules, as well as resource commitment by the universities to develop new platforms to deliver such programmes. The Committee recommends for the universities to explore making available more flexible learning avenues as an effective means of lowering access barriers to PT degree programmes for working adults.

7.18   Finally, the Committee believes that developing CET as a viable degree pathway will require concerted effort by the Government, employers and training providers. Some of the challenges will have to be collectively addressed by MOE, the Ministry of Manpower (MOM) and the Workforce Development Agency (WDA) in consultation with the various stakeholders. It would also be important for these agencies to promote greater public awareness on the CET pathway, so as to equip potential CET applicants with a better understanding of the options available, and to improve the perception and stature of CET among employers. With this, a thriving CET space with viable opportunities for all individuals can be created.

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8.1   The Committee also looked at a series of enablers that would have an impact on students' decisions on whether or not to pursue a degree. These enablers ensure affordability and accessibility, and informed decision-making so that students make better choices for their future.

CHAPTER 8: ENSURING THE CONTINUED AFFORDABILITY OF A DEGREE EDUCATION

Key Recommendation

- Continue to review and ensure that existing financial schemes remain effective in providing students with an affordable degree education.

8.2   It has been the Singapore Government's long-standing principle that no deserving student is deterred from a publicly-funded degree education due to financial constraints. Over the years, as the Government worked towards increasing opportunities for Singaporeans to obtain a degree education, it has also put in place various measures to ensure that education, at all levels, remain affordable for Singapore Citizens (SCs).

8.3   A large proportion of the costs (approximately 75%) in providing a publicly-funded degree education is funded by the Government through grants. This is further supplemented by a full range of financial assistance schemes (FAS), which taken together, is able to fund students through their degree education without requiring them to make any cash outlay:-

a. Students can use the amounts in their Post-Secondary Education Accounts (PSEA) to offset university tuition fees; and

b. Students can also fund their university tuition fees using Tuition Fee Loans (TFL) or CPF monies, under the CPF Education Scheme.

8.4   In addition, needy students have access to additional financial assistance that provides them with greater help in funding their degree education:-

a. They can take up Study Loans (SL) to finance part of their tuition fees, as well as their living expenses while studying; and

b. They can also take up government bursaries, at varying amounts depending on their financial need. These bursaries, which cover up to

66th percentile of households by per capita income, help students to effectively lower the amount of loans taken from the onset, so that their loan burden upon graduation is reduced. This complements one key objective of higher education, which is to improve social mobility.

8.5   These FAS provided by the Government are reviewed on a regular basis to ensure that the schemes continue to be relevant to the students. For example, government bursaries were recently reviewed in 2011 and student coverage and bursary quantum were enhanced.

8.6   Educational institutions and the wider community have also stepped forward to supplement the available government FAS. We encourage more to do so. More bursaries could be administered by the institutions and other organisations; and more programmes, which allow students to supplement the financing of their costs of education via part-time employment, could be introduced. <u>See Box 8.1: Many Helping Hands: Tapping on the Community for Financial Assistance.</u>

<u>Box 8.1: Many Helping Hands: Tapping on the Community for Financial Assistance.</u>

Community organisations are important sources of assistance for the needy.

For example, the North East Community Development Council (CDC) rolled out the North East Community Assistance Programme in 2012, to help needy students living in the district with their degree education in various publicly-funded higher education institutions and private education institutions (PEIs).

Students eligible for and accepted into the Programme will have a proportion of their course fees covered by the CDC. In return, the student will have to repay the amount covered by partaking in community service. This not only allows the community to help these students, but also provides the students with an opportunity to contribute to their community.

8.7   Taken together, financial assistance from the Government, educational institutions and community groups go significantly towards helping students to finance their education.

8.8   However, take-up rates of these schemes can be improved. For example, when Government bursaries were enhanced in 2011, approximately 18% of SC students took up such bursaries, even though we estimate that close to

two-thirds of SC students were eligible. More can be done to encourage eligible students to take up these schemes, to ensure that they are receiving the support available to them to fund their cost of education. The Committee recommends that MOE works closely with higher education institutions to raise students' awareness of the various schemes and thereby increase the take-up rates amongst eligible applicants.

8.9   It is also worth noting that other countries have turned to innovative loan schemes (e.g. United Kingdom and Australia) to strike a better balance between the affordability of university education to individuals, and the pressure on the fiscal purse. We recommend that this is an area worth studying further by the Government.

8.10   In the Financial Year 2010, the Government disbursed approximately $63 million in new loans and $6 million in bursaries to students at the publicly-funded universities. This large annual investment underscores the need to balance the provision of financial assistance for students, and fiscal prudence and accountability in using taxpayers' monies. Hence, the Government's financial assistance has been limited to students studying in publicly-funded universities, and has not been extended to students in PEIs, where the quality of education is currently still uneven.

8.11   As our recommendations expand the number and availability of degree places to an even wider pool of students, it is important that the Government continues to monitor and review the effectiveness of the FAS available to students. A degree education should not burden students with excessive debt and impede their social mobility as they move on to the labour market. In order to achieve this, the costs of obtaining a degree should be fair in relation to a student's financial means.

8.12   The affordability of a university education is a key enabler in ensuring Singaporeans' continued access to universities. Hence, as Singapore looks to expand its university landscape for the future, both in terms of degree places for students, as well as via differentiated pathways; the Government should continue to undertake timely reviews of government FAS, in particular loan schemes, to ensure that these pathways are financially attainable and affordable for its students.

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Key Recommendation

- Improve provision of information to teachers, students and working adults.

9.1 In order for the new degree pathways to provide more choices for a wider range of people, the presence and value proposition of these pathways have to be communicated. The Committee recommends improving the current provision of information on the various pathways to teachers and students at the secondary and post-secondary levels, as well as working adults looking to upgrade to a degree, in order to assist them in navigating the more diversified university landscape.

CHAPTER 9A: PROVIDING EFFECTIVE EDUCATION AND CAREER GUIDANCE TO SECONDARY AND POST-SECONDARY TEACHERS AND STUDENTS

9.2 *Develop more teaching and learning indicators to help students make informed decisions.* We recommend that MOE develop a set of teaching and learning indicators to gauge the level of student satisfaction with their undergraduate experience. These indicators could supplement the information provided by international ranking tables, such as the QS University Rankings and the Shanghai Jiaotong University Rankings, which tend to place more emphasis on research outcomes. This information should be published, as part of the broader effort to better measure learning outcomes and quality of higher education, and to enable prospective undergraduates to make more informed decisions, and allow the new pathways to stand on their own merits.

9.3 An example of this would be the UK's National Student Survey (NSS), which was first introduced in 2005. NSS provides an opportunity for final year undergraduates to express their opinions on what they liked about their institution/course as well as things that they felt could be improved upon. Student feedback is used to compile year on year comparative data, and results are publicly available to prospective students and advisors to help them make informed choices. Institutions also use results to facilitate best practices and to enhance their undergraduate learning experience.

9.4 *Equip teachers with tools to provide better guidance on careers and educational pathways.* While both the JCs and polytechnics have trained

teachers/staff who can provide education and career guidance, the average polytechnic lecturer appears better positioned to provide career guidance compared to the average JC teacher. The former would typically have had some industry experience, and would be familiar with both the academic and industry landscape, compared to the latter, who would be mainly familiar with academic pathways. Given the increased diversity of the university landscape, education and career guidance should continue to be emphasised in schools; especially at secondary schools, where students should be given guidance on the various options available to better tailor their education pathway to their aptitude and interests.

9.5   The Committee recognises that MOE has made significant inroads in improving career guidance, through the launch of the Education and Career Guidance (ECG) portal – for secondary/ pre-university levels in 2009, and Primary Five and Six students in 2010. The portal is intended as a useful gateway where teachers and students can find out more about suitable programmes across the post-secondary educational institutions (PSEIs), based on aptitude and interests, and obtain guidance on related careers and salaries. With the development of more pathways in our education system, the Committee understands that the portal is currently being enhanced from September 2012 to April 2013, to ensure that it remains current and relevant. Information on part-time courses or CET options would also be included in these enhancements, to supplement its current full-time offerings. This would provide students and parents with a useful guide when making choices on educational pathways.

9.6   As teachers are key levers for effective ECG delivery, there has also been greater effort made towards capability buliding, through strengthening of support to teachers and school counsellors, and equipping them with skills and competencies to provide guidance to students at the classroom and individual levels. However, MOE may need to study the current school staff structure further, to ensure that it is optimal for effective ECG implementation. In addition, different schools may also need to customise their education and career guidance programmes according to their unique student profiles.

CHAPTER 9B: NAVIGATING THE CET LANDSCAPE

9.7   *Establish an academic CET course directory.* The principle of improving accessibility of information to courses and careers should also extend to adult learners who are seeking to upgrade to a degree. Currently, there are over 200 academic CET courses available at the PSEIs and adult learners who wish to further their studies would have to approach individual PSEI to

enquire about particular courses. This can be prohibitive to navigate and is very time-consuming, thus posing a barrier to entry for upgrading via the CET pathway. We propose the establishment of a centralised online directory of all academic CET courses offered by PSEIs, UniSIM, NUS and NTU to be made available to the public. Course listings could offer users a prospectus of each course, including course synopsis, fees, entry requirements and likely graduate job and wage levels. This directory could enable sector- and industry-specific searches, so that prospective learners can search for the courses that best fit their desired academic and career progression.

9.8   *Establish a one-stop integrated CET and career advisory services centre.*
        We believe that there is also scope for a physical centre capable of offering training and career advisory services to individuals. This would complement the above online course directory. The Singapore Workforce Development Agency (WDA) established CaliberLink in early 2012, as a one-stop service point integrating training assistance with career services for Professionals, Managers and Executives (PMEs). At CaliberLink, PMEs can have access to services such as career coaching, training advisory, career transition programmes, networking sessions with employers and employment facilitation. This one-stop service concept will eventually be available in the two CET campuses set up by WDA in the western (Jurong) and eastern (Paya Lebar) parts of Singapore.

9.9   Leveraging on this concept, we propose the establishment of a similar one-stop CET centre at a centralised location, which would be able to provide comprehensive advice on academic CET courses and job matching for adult learners. Notably, this Centre could assist adult learners by assessing their areas of need, navigating through the CET courses available at PSEIs or even those offered by WDA and other training providers, and proposing a viable schedule to put their plans into action. It would be ideal for this proposed integrated services centre to be spearheaded by existing CET advocacy groups, such as MOE's CET Council (which includes the Principals of the five polytechnics, Director and CEO of ITE, and MOE's CET Office), in collaboration with WDA.

CHAPTER 9C: LABOUR MARKET PRACTICES

9.10   With a more diversified university landscape, we will also need to manage employers' perceptions of how SIT and UniSIM degrees compare to that of the existing universities (NUS, NTU, SMU and SUTD). Although SIT and UniSIM are not research-intensive universities and will not be ranked in

international university league tables, they will be positioned as best-in-class institutions that provide quality offerings in applied degrees.

9.11   At the same time employers will have to establish more discerning recruitment practices to evaluate applicants holistically, based on their aptitude, performance and suitability for the job, as opposed to assessing them based on the name of the degree-awarding institution.   Academic institutions should also engage the employers, such as the Singapore National Employers Federation, through outreach programmes and career fairs, to promote greater understanding of the various degree pathways.

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CHAPTER 10: CONCLUSION

10.1   For Singapore to respond effectively to the challenges of the twenty-first century, our university sector must be one that is of high-quality, student-centric, and able to accommodate the growing diversity of choices and pathways sought after by our young people and our increasingly sophisticated economy.

10.2   We believe that these needs would be met through our existing four autonomous universities (AU) and two additional universities – the Singapore Institute of Technology (SIT), positioned as Singapore's fifth AU, and SIM University (UniSIM), as a private university with publicly-funded programmes. These two universities will spearhead the new applied degree pathway, which will have close nexus with the economy and produce work-ready graduates.

10.3   In addition, we believe that there is scope to provide more support for adult learners to further their studies through subsidized part-time degree programmes at UniSIM, the National University of Singapore (NUS) and the Nanyang Technological University (NTU). This greater provision of both pre-employment training (PET) and continuing education and training (CET) degree opportunities should be accompanied by the continued commitment to ensuring an affordable university education for all Singaporeans.

10.4   We believe that our recommendations will enable Singapore's university landscape to become more diversified and vibrant, provide more opportunities for Singaporeans to develop their full potential, and better position Singapore for the future.

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<u>ACKNOWLEDGEMENTS</u>

LIST OF COMMITTEE MEMBERS

Name	Designation
Chairman	
Mr Lawrence Wong	Senior Minister of State (Education and Information, Communications and the Arts)
Members	
Mr Jonathan Auerbach	Managing Partner McKinsey & Company, Southeast Asia
Dr Beh Swan Gin	Permanent Secretary Ministry of Law
Ms Chan Lai Fung (Served on Committee from April to August 2012)	Permanent Secretary (Education Policy) Ministry of Education
Prof Cheong Hee Kiat	President SIM University
Mr Chia Mia Chiang	Principal Ngee Ann Polytechnic
Mr Kelly Choo	Co-Founder and Business Development Director Brandtology
Mr Mohamed Faizal Mohamed Abdul Kadir	Deputy Senior State Counsel/DPP Attorney-General's Chambers
Ms Aliza Knox	Managing Director, Commerce Google, Asia Pacific
Mr Lee Kok Choy	Managing Director Micron Semiconductor Asia Pte Ltd
Mr Loh Khum Yean	Permanent Secretary Ministry of Manpower
Ms Low Yen Ling	Chief Executive Officer Business China
Mr Kenneth Neo	Managing Director Advanced Tech Automation Pte Ltd
Mrs Tan Ching Yee (Served on Committee from September 2011 to April 2012, as Permanent Secretary, Education)	Permanent Secretary Ministry of Health
Prof Tan Eng Chye	Provost National University of Singapore
Mrs Tan-Kek Lee Yong	Principal Pioneer Junior College

BACKGROUND OF COMMITTEE ON UNIVERSITY EDUCATION PATHWAYS (CUEP) MEMBERS

Lawrence Wong – Chairman of CUEP
Senior Minister of State, Education and Information, Communications and the Arts
Acting Minister, Culture, Community and Youth (wef 1 November 2012)
- Bachelor of Economics – University of Wisconsin-Madison
- Master of Economics – University of Michigan-Ann Arbor
- Master in Public Administration – Kennedy School of Government in Harvard University

SMS Wong is a member of the Board of Directors of the Monetary Authority of Singapore, and was elected as the Member of Parliament for the West Coast Group Representation Constituency (Boon Lay Division) in the 2011 General Election. He was previously Chief Executive of the Energy Market Authority, Singapore's electricity and gas regulator, and was the Principal Private Secretary to Prime Minister Lee Hsien Loong from 2005 to 2008.

Jonathan Auerbach
Managing Partner, Southeast Asia
McKinsey & Company
- Bachelor of Arts – Dartmouth College
- Master of Arts – University of Oxford

Mr Auerbach on how his experiences in McKinsey had informed his perspectives on education: "In the past, McKinsey has worked closely with Singapore on education, analysing key factors contributing to the sustained progress of Singapore's education system. That work has given me a strong appreciation of the Singapore's education system, and the country's drive to offer Singapore's students world-class opportunities at every stage of their development.''

Dr Beh Swan Gin
Permanent Secretary
Ministry of Law

- Bachelor of Medicine & Bachelor of Surgery – Faculty of Medicine, National University of Singapore (NUS)
- Master of Science in Management – Sloan Fellowship Programme Graduate School of Business, Stanford University

Dr Beh's thoughts on Singapore's Education System: "The education system in Singapore offers a diversity of options and seeks to develop excellence in many more dimensions. With greater porosity and bridges between different paths, it is a system with multiple and varied peaks of excellence."

Chan Lai Fung
Permanent Secretary
Ministry of Education

- Bachelor of Economics (First-Class Honours) – University of Monash

PS Chan is also the Chairman of the Energy Market Authority and the Energy Studies Institute. She also sits on the Boards of the Singapore Civil Service College, PSA International Pte Ltd and the Nanyang Technological University. She served on the Committee from April to August 2012.

Prof Cheong Hee Kiat
President and Professor
SIM University

- Bachelor of Engineering (First-Class Honours) – University of Adelaide
- Master of Science, DIC and PhD – Imperial College, University of London, England

Prof Cheong's sentiments on the strong degree aspirations amongst Singaporeans: "Having been in university education for about 25 years, I have seen how much a degree qualification matters to students as well as parents. The university system could allow more adult students to pursue a degree and encourage more to work before going for a degree in a discipline they have discovered to be suitable for their life career."

Chia Mia Chiang
Principal
Ngee Ann Polytechnic
- Bachelor of Engineering (Honours)(Civil) – University of Singapore
- Postgraduate Diploma in Sanitary Engineering (Distinction) – Institute of Hydraulics & Environmental Engineering, Netherlands
- Master of Business Administration – NUS

Mr Chia on being part of the Committee: "I was appointed Principal of Ngee Ann Polytechnic in 2000 after a rewarding 23-year career with the Ministry of Environment. I feel honoured to be invited by the Ministry of Education to join the Committee, and will do my best to contribute ideas on how the degree aspirations of polytechnic and JC graduates can be met."

Kelly Choo
Co-founder & Business Development Director
Brandtology Pte Ltd
- Diploma in Computing (E-Commerce) – Ngee Ann Polytechnic
- Bachelor of Computing (Hons) Major in E-Commerce with Technopreneurship Minor – National University of Singapore

Mr Choo's thoughts on the ideal educational experience for Singaporean students: "I believe that every Singapore student should have the chance to go overseas or at least do a number of internships to 'test their passions' before actually going out to the job market. I also believe that basic financial education should be taught at the Primary and Secondary levels and that students should learn how to learn - not rote learning."

Aliza Knox
Managing Director, Commerce
Google, Asia Pacific
- Bachelor of Arts in Applied Math and Economics, magna cum laude, phi beta kappa – Brown University
- Master of Business Administration in Marketing (Distinction) – New York University Graduate School of Business Administration

Ms Knox has been Director of the Online Sales Group for Japan and Asia Pacific at Google (based in Singapore) since 2007. She assumed the Commerce portfolio in Jan 2012 and is also responsible for Google's Women in Leadership programs in the region.

Lee Kok Choy
Managing Director
Micron Semiconductor Asia Pte Ltd

- Bachelor of Engineering (Electrical) Major in Power Systems & Computer Science – University of Singapore
- Master of Engineering (Research in Semiconductors) – National University of Singapore

Mr Lee on his motivation to serve on the Committee: "My personal experiences, both of the benefits of a great local tertiary education and also of the possibility of talented local youth not being able to obtain a place in a local university motivate me to serve on this committee."

Loh Khum Yean
Permanent Secretary
Ministry of Manpower

- Bachelor of Economics – Hitotsubashi University, Japan
- Master in Public Administration – Kennedy School of Government, Harvard University

PS Loh on the role of local universities in equipping Singaporeans for the future: "It is my hope that universities in Singapore will continue to provide the enriching world-class developmental experience that helps to realise the full potential of every student, and develop a competitive core for the Singapore workforce."

Low Yen Ling
Chief Executive Officer
Business China

- Bachelor of Business, Second Upper Honours (majoring in Financial Analysis) – Nanyang Technological University

Ms Low was elected Member of Parliament for Chua Chu Kang Group Representation Committee (Bukit Gombak Division) in the 2011 General Election; and is a member of the Government Parliamentary Committee for Education and Information, Communications and the Arts. She serves on the Chinese Development Assistance Council Board and heads its Student Education and Development Committee. She is also Chairperson of the National Youth Endowment Fund Advisory Committee.

Mohamed Faizal Mohamed Abdul Kadir
Deputy Senior State Counsel/ Deputy Public Prosecutor
Attorney-General's Chambers
- Bachelor of Law (First-Class Honours) – National University of Singapore
- Master of Law – Harvard Law School, Harvard University

Mr Faizal on the importance of open engagement and public feedback as part of the Committee's work: "The ability of the Committee to discharge its role of charting the way forward is dependent upon its ability to question, critique and re-examine conventional wisdom, and the extent to which this can be done is dependent on how actively Singaporeans embrace the work of the Committee and engage it with their views on how the objectives set out can be best achieved."

Kenneth Neo
Managing Director
Advance Tech Automation Pte Ltd
- Diploma – Singapore Polytechnic
- Bachelor of Engineering (Hons) – Loughborough University

Mr Neo on the need to provide graduates with relevant workplace skills: "With limited skilled people to support the Aerospace industry, where students receive largely theoretical education, we are in active discussion with EDB on providing support for an institution to conduct practical lessons.''

Tan Ching Yee
Permanent Secretary
Ministry of Health
- Bachelor of Arts (Economics) – Cambridge University
- Master of Science in Management – Graduate School of Business, Stanford University

PS Tan has served in various portfolios in the Ministry of Education, Ministry of Information, Communications and the Arts and the InfoComm Development Authority of Singapore. She was appointed Second Permanent Secretary (Education) in 2005 and Permanent Secretary (Education) in 2007. She served on the Committee from September 2011 to April 2012, during her term as Permanent Secretary (Education).

Prof Tan Eng Chye
Deputy President (Academic Affairs) and Provost
National University of Singapore

- Bachelor of Science (First-Class Honours) – National University of Singapore
- Master of Science and PhD – Yale University

As Deputy President and Provost, Prof Tan provides strategic directions and sets academic policies. He also has oversight of the development and implementation of new educational programmes and initiatives; and is responsible for educational quality assurance, overseeing admission policies and processes to ensure best quality enrolments.

Mrs Tan-Kek Lee Yong
Principal
Pioneer Junior College

- Bachelor of Arts/ Social Science – University of Singapore
- Postgrad Diploma in Education – National Institute of Education
- Master of Arts (First-Class Honours) – University of Auckland
- Diploma in Educational Administration – National Institute of Education

Mrs Tan on the importance of higher education in equipping Singaporeans for the future: "The creation of a generation of workforce flexible enough to take on a variety of roles and able to lead the nation-state to stay ahead of her competition is likely to materialise, with a more conscious effort put into developing a highly proficient Higher Education system to overcome our challenges."

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SUMMARY OF FEEDBACK FROM ENGAGEMENT SESSIONS

This annex provides a thematic summary of the feedback received from the Focus Group Discussions (Sept-Oct 2011 and May 2012), Townhall session (Feb 2012), then-Minister of State Lawrence Wong's dialogue with PEI students (Feb 2012) as well as the comments generated in response to the postings on MOE's website and Facebook page. In summary, the feedback received centred on the following themes:-

    a. Aspirations for a University Degree;
    b. Concerns Regarding Expanding CPR;
    c. Feedback on a Teaching-Focused, Practice-Oriented Pathway;
    d. Perception Towards Private Education Institutions (PEIs) and continuing education and training (CET); and
    e. Feasibility of Part-Time (PT) Degrees and Reverse Scholarships.

ASPIRATIONS FOR A UNIVERSITY DEGREE

A Degree for Better Employment

2.   **Students generally perceived a university degree as the ticket to better employment outcomes**. A degree was commonly cited as the requisite for gainful employment, or as a stepping stone for career advancement. One student commented that without a degree, "it would be hard to climb the ladder as paper qualifications seemed to be the first barrier now". Employers affirmed this mindset, sharing that a degree is usually required for employees to move up to supervisory and management positions.

Affordability of University Education

3.   **The cost of a university education was still significant, and affordability remained an issue**. There were suggestions to consider subsidizing overseas education for strategic courses, which were offered at diploma-level by the polytechnics but not at degree-level by our local universities, in order to mitigate the high cost of an overseas education.

CONCERNS REGARDING EXPANDING CPR

Employment Outcome is Key

4.   The different groups of stakeholders largely agreed that **there was scope to increase the publicly-funded university cohort participation rate (CPR) to meet the rising aspirations of the young people. However, many emphasized that employment outcomes must not be compromised.** Students themselves were particularly concerned that increasing the number of university places would lead to

an over-supply of graduates leading to graduate unemployment. A small number was also worried that the "prestige" and market value of the autonomous universities' (AU) degrees would be eroded with the "over-supply". There were contrary voices to this, as some online comments asked that we consider that our graduates would also be employed outside of Singapore, and therefore graduate employment outcomes would remain positive, in spite of the increased CPR, due to the global demand for skilled labour. Singaporeans should thus be equipped with degrees that would allow them to pursue opportunities overseas.

5.   **Many stakeholders (including students, parents, teachers and industry representatives) thus reflected that with the expansion of CPR, more upgrading opportunities could be given to polytechnic students, particularly those who were JC-eligible and had performed reasonably well at the polytechnics.**   Many students and employers felt that the polytechnic route would better prepare a student for employment as the polytechnics were more vocation-focused than the JCs. At least one employer shared that he preferred degree holders who went through the polytechnic route as they had hands-on experience. Given the current design of the system, however, only a small percentage of polytechnic students were able to progress to the AUs.

Capacity Constraints at Existing AUs

6.   **University leaders were concerned with the expanding CPR as they opined that there was not much headroom for the AUs to expand intake within their institutions.**   NUS and NTU were concerned about maintaining quality as they were already fairly large universities, with 35,600 and 33,000 students respectively. SMU's current physical facilities were operating at full capacity, with post-graduate classes running in the evenings. SUTD will remain with the planned steady state intake of 1,000 students at its new campus. SIT, on the other hand, commented that it could offer more programmes with its OU partners, but the speed of ramp up would depend on the resources available.

7.   The university leaders were not in favour of setting up a new university. Citing from experience, representatives from SUTD shared that **setting up a new university was very resource-intensive**. In addition, **carving a brand name for the new university from scratch would likely be very challenging**.

The Value of Soft Skills[65]

8.   Industry representatives suggested that the **AUs could dovetail their offerings with potential areas of growth in the economy.**   The representatives listed several areas for consideration, namely data sciences (e.g. statisticians and data miners), risk management and applied technologies. However, they cautioned that it was difficult, if not impossible, to identify future areas of growth accurately given the increasingly volatile nature of the global economy. **Rather than finding a fixed formula for future graduates, we should train students to think critically,**

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[65] Here defined as being innovative, risk-taking, creative, resilient, global-minded, and able to communicate effectively.

and to encourage them to pursue the fields that they were interested in. To many employers, hiring the "right" people meant getting those who can think critically and who have the right heart and attitude for the job.

9.   Beyond providing more degree places, employers requested that **the quality of education be enhanced to address the skills gap/shortcomings of graduates from our AUs today. While the AU graduates were technically competent, many of them lacked the "soft skills" needed by industry.** One industry representative pointed out that companies based in Singapore could hire from a large regional pool. The increased competition meant that local graduates would need to have an edge over others, and developing "soft skills" among our local graduates would stand them in good stead. This was echoed by many students, who agreed that the value of a university education was not in imparting content knowledge or technical expertise, but in developing "soft skills" that would help them succeed in life. One student commented that multi-disciplinary learning was very useful in helping him develop such "soft skills". There was a suggestion that rather than limiting access to good programmes to a small group of elite students (e.g. the National University of Singapore's University Scholars Programme), perhaps the AUs could consider exposing more students to the pedagogy. Online commentators also shared similar views.

Social Mobility Objectives of University Education

10.   **The general sentiment was that university education was a major enabler of social mobility.** By expanding the number of publicly-funded degree places, we would allow more Singaporeans from lower socio-economic backgrounds but who were willing to work hard, to obtain a degree and a good job subsequently. However, one online commenter felt that simply increasing publicly-funded university places might in fact reduce social mobility and increase inequality - the gap between the upper/middle income and lower income groups would widen as the middle income group gained greater access to tertiary education. As such, the online commenter opined that an increase in CPR should be accompanied by greater efforts to help the lower income group level up.

Views on International Students

11.   Many online commenters felt that by **reducing the number of international students (IS) admitted, more university places for Singaporeans could be freed up**. Some also felt that the reasoning behind the influx of foreigners and university places were paradoxical: on the one hand foreigners are needed to meet talent shortages in the job market and on the other hand they perceived that university places were being limited to prevent graduate unemployment. However, others have also cautioned against a situation where outstanding foreign students, who may eventually be committed to contributing to Singapore, were kept out because of pro-Singaporean policies.

Practice-Oriented Pathway and Co-Operative Education as a Good Learning Platform

12.   Many students agreed that **work exposure provides good learning experiences**, reinforcing what they had learnt in school while at the same time picking up skills that could not be taught through textbooks and classroom teaching. Industry representatives also echoed such sentiment, commenting that such attachments of a few months to a year benefited both the industry and the students.

Delayed Graduation and Pay

13.   However students commented that such a pathway may be less attractive as the **compulsory work attachment may delay graduation and their earning of a full graduate pay, which was a concern especially acute for male students who were already "two years behind" their female peers as they had to serve national service**. Most students felt that the pay earned during the work attachment was likely to be insufficient to make up for the delayed graduation.

Differentiating Course Options

14.   There were also concerns about how such a pathway would be different from what was already being offered in the AUs presently, as many degree programmes already have compulsory internships and attachments.

15.   Furthermore, there was a general consensus on **the need to offer a greater variety of courses, particularly for courses offered at the diploma level which currently had limited degree articulation pathways**. Some of these included courses in Veterinary Sciences, Accountancy and Business.

16.   There were also queries on the **feasibility of having work attachments across the board**. Industry representatives shared that the length of work attachment depended on the nature of the industry, with some preferring a one-year full-time internship, while others were receptive to a part-time internship of a few months. The general consensus was that such **work attachments were more applicable for certain programmes such as engineering and hospitality**. Furthermore, industry representatives and university leaders anticipated that it would be **difficult to accommodate varying models of work attachment which could meet the needs of the industry while at the same time balancing timetabling constraints**.

Concerns about Tiering

17.   While stakeholders were generally amenable to the proposed applied degree pathways, there were **concerns that it would be perceived as being "second-grade" compared to the traditional research-intensive model.** They observed that a subtle discrimination currently existed between the various dichotomies such

as public versus private universities, full-time versus part-time study and overseas education versus study at local institutions offering degrees from overseas universities.

18.   Some online commentators were not supportive of **a tiered landscape – i.e. by introducing a lower-tier teaching or vocational college.** They felt that the goal of university education should not be that of skills-upgrading, but rather of intellectual stimulation and interaction through either a liberal arts approach or a rigorous analysis for the sciences. If our goal was to make university education more accessible for polytechnic graduates, we should not devalue the university degree by compromising on intellectual content. As such, these commentators felt that university graduates should not be pigeonholed through tiering into two groups – i.e. those who can think, and those who can do.

A More Discerning and Equitable System Needed

19.   To mitigate the possibility of tiering, the need for more discerning university admissions criteria was raised, as many stakeholders including students, parents and university leaders felt that **academic grades could not adequately reflect a student's potential. The over-emphasis on academic grades also created unhealthy competition**. A commenter opined that Singapore placed too much emphasis on paper qualifications and rankings, and suggested that the committee take concrete steps to mitigate this mindset. There were **suggestions to include interviews, work experience and other activities as part of the admission criteria to universities**. In this perspective, industry representatives saw a **practice-oriented pathway as a good system to sieve out students who were really passionate about a certain vocation or job**.

PERCEPTION TOWARDS PEIS AND CET

Poor Perception of PEIs

20.   **Many stakeholders opined that PEIs were well-placed to shoulder the increase in CPR, but were concerned that employers may not regard the PEI degrees to be on the same level as the AU degrees.** This was affirmed by industry representatives, where many shared that they did not accord the same recognition to PEI graduates as the PEI programmes were perceived to be less rigorous than the AU programmes. Some employers had even blacklisted degrees from some foreign universities, and had concerns that SIT which offered foreign degrees may be inadvertently affected by the negative publicity.

21.   Many PEIs **attributed the stigma to the lack of parity in treatment of the AUs and PEIs**. They shared that the PEIs faced two main disadvantages – (i) students studying at the PEIs could not finance their education using their parents' CPF savings, and (ii) most PEIs often operated out of refurbished schools and might not have fixed locations, making it difficult for the PEIs to invest in better learning facilities for their students. Many students and PEIs felt that the Government should take the lead in signaling the recognition of the quality of PEI degrees.

22.   **There were a few suggestions on improving the perception of PEIs. In terms of funding, two options were presented – (i) subsidizing established, well-recognised programmes and (ii) subsidizing selected qualified students.** While (ii) might pose administrative challenges on the government's end, the PEIs preferred this option as it was more market-based and would allow students to have more flexibility in choosing programmes. Some online commenters also suggested that the **use of funds in the Post-Secondary Education Account (PSEA) and National Service Recognition Award (NSRA) be extended to be tenable for studies at PEIs.**

23.   Other suggestions were - (i) providing more internship and attachment opportunities, (ii) provide professional accreditation and certification as part of their degree offerings, (iii) improve access to good quality resources and reputable faculty, (iv) publish data on employment outcomes, and (v) partner reputable overseas universities to build credentials.

Poor Perception of CET

24.   In general, **students did not favor working for a few years before going back to study to obtain a degree**. Many cited the societal perception and parental pressure against such a pathway. Furthermore, many students were concerned that such a pathway would limit their pay and career progression. This was especially acute in the competitive job market today, where they could be easily replaced if they left their position for studies. Industry representatives echoed this, admitting that although many companies had systems in place to allow employees time off to upgrade and pursue a degree, the companies did not see much value in such a move as the skills that they required could be learnt on the job.

FEASIBILITY OF PART-TIME DEGREES AND REVERSE SCHOLARSHIPS

25.   The general consensus was that although **part-time degrees would be useful in helping students find out what they were truly interested in, they were less preferred to full-time degrees and more suitable for polytechnic upgraders.** Students also lamented that the workload for part-time students was very heavy, especially for those with families to take care of and a part-time degree did not allow one to experience real university life.

26.   **Employers were not supportive of the reverse scholarship scheme**. Employers did not see the value in promising a scholarship to fresh recruits. Rather than waiting a few years for an employee to prove his worth before pursuing degree qualifications, employers opined that it would be **easier to simply hire someone with higher skill sets directly from the market**. Another reason was that **any need to plug skills gaps in companies was typically urgent and required immediate intervention.** The definition of "promise" was also tricky and could potentially lead to dispute later. In addition, employers felt that **promising fresh recruits scholarships was difficult to justify to existing staff** in their companies.

<u>CONCLUSION</u>

27.   There was overall consensus across the different stakeholder groups that the economy would be able to support a higher CPR. However, the general sentiment appears to be for expanding CPR gradually, in steps, to safeguard against eroding the value of a degree. There also seemed to be a perception that there was a greater shortfall of publicly-funded places for polytechnic graduates than for JC graduates; and that there was a need to diversify course offerings further to create more articulation pathways for both groups. While there is scope to leverage on the PE sector to expand places, there was also recognition that these degrees were not as "prestigious" or valuable as those from publicly-funded institutions. The establishment of a teaching-focused, practice-oriented pathway in the PE sector may further perpetuate such a mindset. Hence the main challenge in implementing the new degree pathway appears to be in improving the public perception of SIT and UniSIM. Students currently perceive a stark stacking order of the institutions – i.e. NUS, NTU, SMU, SUTD, PEIs (including SIT and UniSIM). The points of differentiation of the new degree pathway will need to be further refined to avoid being perceived by the public as a second-rate option. There was also a lack of buy-in from students and industry partners for part-time degrees.   Hence, CET degree pathways and reverse scholarships, may not be a tenable option for increasing the CPR in the near future.

KEY LEARNING POINTS FROM STUDY TRIPS

This annex provides a summary of the key learning points obtained from the study trips to Finland and France (Oct 2011), Hong Kong (Jan 2012), North America (March and Apr 2012) and Germany (Jun 2012). In summary, the key observations made during the trips centred on the following themes:-

        a. Diversification of Pathways;
        b. Keys to Implementing a Successful Co-Operative Education Model;
        c. Role of Private Education;
        d. Other Models of Continuing Education and Training (CET);
        e. Funding Mechanisms; and
        f. Pitfalls to Avoid in Expanding Publicly-funded University Cohort Participation Rate (CPR)

DIVERSIFICATION OF PATHWAYS

A Trend Towards Diversification

2.   In all the countries visited, there was a **trend towards diversifying the progression pathways** available to students, alongside the expansion of the higher education sector. This was mainly to **meet the rising aspirations and growing needs of the economies**. Such diversification, however, usually **created more tiering within the higher education sector**, with the traditional research-focused universities remaining at the top of the hierarchy.

3.   In Finland, the government expanded the higher education sector by creating a distinct tier of polytechnics/universities of applied sciences (UAS). These UASs were upgraded from existing diploma-awarding vocational institutions during the 1990s, completed by 2000. Their **mission was clearly defined as providing vocational and professional training for labour market and industry needs**. The programmes are practice-oriented and students would typically graduate with a Bachelor degree after three to four years of study. Conversely, a university graduate would receive a research-oriented, academic grounding in a chosen discipline, and would graduate with a Master degree after four to five years.

4.   In France, there was **differentiation** within universities, through the existence of both **academic and professional streams**. For example, at the University of Paris-Sud, students who were unable to clear their first year exams in the academic stream were encouraged to transfer to the professional stream. Although grounding in core theories remains the same, those in the **academic stream would subsequently take on lab-based research projects**, as opposed to students in the **professional stream**

who would do their projects/thesis with a company, and are engaged in applied research.

Improving Porosity Across Pathways

5.   The trend towards greater diversification of the higher education landscape was accompanied by **efforts to increase porosity across the different pathways**.

6.   In Finland, it was **possible, though uncommon for polytechnic graduates to subsequently pursue an academic Masters at a university**. Polytechnics were allowed to offer professional Master degrees, but to prevent "academic drift", they may only admit polytechnic graduates, who have had at least three years of work experience into these courses.

7.   In North America, some institutions offered **multiple progression pathways and options for students, making the institution more attractive to prospective applicants**.[66] For example, the Humber Institute of Technology & Advanced Learning (Humber) offered certificates, diplomas, and degrees, and organised its faculties by fields/discipline areas as opposed to qualification-levels. The main value proposition was that it allowed the institution to take into account the ease of articulation from one stage to another, at the point of curriculum development. This **optimised the articulation pathways** for the student. It **allowed mix-and-match of programmes to give students greater flexibility to achieve their next qualification**. For example, fashion diploma graduates would be able to enter the workplace directly, or top-up to an applied business degree by undergoing Years 1 and 2 of the latter programme (and "skip" Year 3, which is typically a "specialisation" year for a regular business degree undergraduate). There were also synergies to be tapped by having students of different qualification-levels participate in practical sessions together (e.g. nursing). Simulating the different roles they would play in the workplace, they could mirror real-life working environments and enhance the value of their education. **Degree programmes also strengthened diploma programmes through the sharing of stronger faculty**.

8.   This availability of multiple progression pathways could also be observed in the City University of New York (CUNY) system. Community colleges were integrated within the CUNY system, such that all community college graduates were guaranteed a place in one of the CUNY four-year colleges. CUNY community colleges thus had a dual mission of preparing students for the workplace as well as for transfer to four-year colleges. However, not all pathways equally prepared one for four-year colleges. There was notable attrition or underperformance among transfer students.[67]

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[66] Citing the example of the diploma in interior decorating and degree in interior design, Dr Michael Hatton, Vice President (Academic) at Humber, noted that in contrast to initial concerns that the new degree offering would cannibalise the diploma programme, enrolment in the latter had in fact increased as students were attracted to the options for progression and multiple pathways.

[67] At Hunter College, first-to-second year retention of transfer students was at least 10% worse than those who had started at Hunter. Possible reasons are that some students decided to drop out sometime after

Infusing Broad-based Education Across Pathways

9.   In majority of the countries visited, there was a conscious effort to further **incorporate a broad-based education into higher education to develop higher order thinking and soft skills.**[68]

10.   Finland and France were in the process of reforming their higher education system and the mergers of institutions had facilitated pedagogical reforms. There was an increasing **emphasis on the importance of multidisciplinary learning and critical thinking skills that would better equip students for the future**.

11.   There were also structural changes occurring in Hong Kong's education system. A key impact was the extension of university education from three to four years. This extra year had enabled universities to restructure their curriculum to be more broad-based and adapted to the needs of the economy going forward. For example at the Hong Kong Polytechnic University (PolyU), **all students must undergo common modules in languages and communication skills, and participate in a 100-hour Service Learning module where students have to use the skills in their disciplines to serve the community** (e.g. civil engineering students to build schools in villages in China).

12.   In North America, institutions also paid a significant amount of attention to ensure that their students were **well-grounded in the humanities, social sciences and the arts, so that they may better understand the broader social and cultural impact of their work, even if they were in science and technology (S&T) majors** For example, at the Cooper Union where students entered with a specialisation in engineering, architecture or art in mind, it was mandatory for all students to take a set of common core humanities courses. Similarly, all Worcester Polytechnic Institute (WPI) students, including the engineering, S&T majors, had to complete a humanities and the arts project in their second year.

13.   Institutions also acknowledged the **importance of good writing skills, and integrated such skills into their curriculum proactively**. For example, writing was a major component of WPI's project work, and faculty were expected to incorporate writing elements into their classes. Students of Drexel also had to take compulsory writing classes during their course of study.

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transferring to enter the workforce for a variety of reasons, while others were simply not adequately prepared or lacked sufficient peer support to progress in a four-year college.
[68] Here defined as being innovative, risk-taking, creative, resilient, global-minded, and able to communicate effectively.

14.   The underlying principle of applied pathways was to **engage students in realistic issues and environments where the link between theoretical knowledge and practical application was made clearer, allowing for better applied learning**. Such experiential learning not only provided students with the opportunity to apply theory learnt in classrooms to the real-world, but also enhanced the learning of theoretical concepts through practice. To effectively achieve such outcomes, it was clear during the study trips that there were a few key factors that determined the success of the applied pathway.

Close Integration of Co-Op Elements into the Academic Programme

15.   The institutions that the Committee visited operated the Co-Op in different ways. For example, in the University of Waterloo, Co-Op students alternated between full-time study and paid work terms[69] every year. These work terms were a formal part of the curriculum for Co-Op students and completion was a requirement for graduation.[70] Students could also take online courses during their work term to supplement their practical training. In Germany's Baden-Wurttemberg Cooperative State University (DHBW), students also alternated between semesters of full-time study and work. However, students had to have an employment contract with a partner company to apply to DHBW, and had to return to their companies for their work terms. On the other hand, New York's Pace University's Co-Op programme was more akin to an enhanced internship programme. Students typically had a full course load while working 12 to 20 hours a week at internships, which were not part of the academic structure.[71] Pace internships were not mandatory and may not be paid.

16.   Whatever the model adopted, it was clear that the applied elements had to be **closely integrated into the curriculum and work opportunities had to be carefully considered and supervised closely**. **Most of the successful Co-Op programmes we observed also included a compulsory pre-employment course to prepare Co-Op students for the workplace.**

Relevance of Work Elements, Close Supervision and Timetabling

17.   All the institutions visited made considerable effort **to ensure a good fit between the work elements and the academic aspects of learning, to create a coherent, applied pedagogy and educational philosophy**. In Drexel, the Co-Op

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[69] Peggy Jarvie, Executive Director of Co-Op Education and Career Services at Waterloo shared with the delegation that requiring a minimum pay for internships made companies more motivated to provide a good work experience as they would have invested more in the student as well.

[70] Not all students at Waterloo undertake the Co-Op programme. Most courses have both Co-Op and non-Co-Op students. However, some courses, such as Engineering and Computing & Financial Management, are completely Co-Op, i.e. all students are on the Co-Op programme.

[71] Except for a few fields where a practicum is usually built into the curriculum, such as teaching or nursing.

opportunities were closely vetted by members of the faculty to ensure relevance to the fields of studies and to particular learning outcomes. **Work done during the Co-Op was closely supervised to ensure that the work was meaningful and related to the field of study**.

18.   At the same time, institutions had to make **significant adjustments in timetabling and scheduling to ensure close integration of the Co-Op elements into the programme**. For example, Waterloo and the New Jersey Institute of Technology (NJIT) ensured that **courses were carefully sequenced and offered often enough during the year, to take into account the absences of Co-Op students working full-time**.

Perception of the Applied Pathway

19.   In some North American institutions, **Co-Op students were typically perceived as being superior to non-Co-Op students and thus the programme was a prestigious and popular option**. For example, at NJIT, the Co-Op was only **mandatory for students in the honours programme, which emphasised the "prestige" of the programme**. Similarly in Drexel, students saw the Co-Op programme as an **opportunity to build up their resume, networks and experience, therefore boosting their future employment prospects.[72] Employers also saw it as an extended opportunity to better assess their prospective employees**. The value of the Co-Op was clearly manifested in the impressive employment outcomes that the Co-Op students enjoyed upon graduation.

Building a Symbiotic Relationship with Industry Partners for Good Outcomes

20.   The most successful Co-Op institutions all boasted a strong outward orientation, remaining **closely connected to industry to understand the needs and demands of the future workforce**.   Institutions engaged industry partners and individual practitioners extensively to provide different avenues for experiential learning and an applied education. For example, Drexel engaged over 1,500 companies to provide students with Co-Op placements. Even when companies did not employ Co-Op students, the university continued to engage them to maintain a good relationship for future collaboration.

21.   At WPI, **faculty members tapped on their personal links with external organisations to organise projects for applied learning opportunities**.   At the Cooper Union, the small core of full-time tenured faculty was supplemented by a stable of adjunct professors, who held full-time industry jobs in New York City. These adjunct faculty members **offered additional real-world perspectives and provide insights**

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[72] In the institutions visited, there tended to be two main types of Co-Op students: (a) the more financially-needy students who viewed paid work terms as a means to defray tuition fees; and (b) ambitious, driven students capable of handling the more intense and demanding schedule.

into the latest industry trends to enhance students' classroom learning, and introduced dynamism and a constant churn of ideas at the institution.

22.   Germany's DHBW was highly successful due to the strong support from the small and medium enterprises (SMEs) in the region. These SMEs drove the interaction and collaboration with institutions through projects and internship offerings.

23.   In Hong Kong, many institutions **aligned their curriculum closely with industry needs**. One example is PolyU (formerly the Polytechnic of Hong Kong) which was made a full-fledged university in 1994. It had **carved a niche for itself by ensuring that almost all its courses (90%) were in industries that required accreditation by a professional body**. Doing so ensured that salaries of its graduates were not inferior to those of the established universities. Coupled with its focus on offering programmes to meet industry demand (e.g. social work, allied health, tourism and hospitality), it had achieved good employment outcomes for its graduates, which had in turn bolstered its popularity amongst prospective students.

Factors Affecting Level of Industry Participation

24.   There were a number of factors which usually resulted in a higher level of industry participation in the applied pathways:

   a. Where there was <u>seasonal demand for manpower</u>, such as hospitality and retail, and employers could factor Co-Op students into their manpower planning for peak periods;

   b. <u>Shorter learning curves and initial training period</u>, which allowed Co-Op students to contribute to the company despite their short stint;

   c. <u>Discipline-dependent</u>, e.g. most degrees at NJIT were applied in nature, such as engineering, and had a better fit with a practical component. On the other hand, LaGuardia cancelled the compulsory Liberal Arts and Social Sciences Co-Op programme as they found that students preferred to take more academic and theoretical classes rather than participate in a work term;

   d. <u>Location.</u> Internships with industries that were in closer vicinity to the university made work-study arrangements easier to accommodate. For example, students from Pace University benefited from the university's location in New York City, where many media, business and accounting firms were based. Similarly, Waterloo students tapped on the surrounding technology companies and its proximity to Toronto for work placements. This was also the case in Baden-Wurttemberg where many of the SMEs were located near the institutions.

   e. <u>Context</u>. This was particularly the case in Baden-Wurttemberg (BW), where its unique socio-cultural and economic context resulted in strong industry

participation. Key elements included the culture and tradition of education-industry links stemming from the German apprenticeship model, and strength of its *mittelstand* (SME) sector, which would not be easily replicable elsewhere.

Private Education Provides Flexibility

25.   The development of the private education sector was uneven across the various countries visited. Although it was recognized that the **PEIs do provide diversity and flexibility within the higher education sector, however there were many concerns about the proliferation of PEIs**.

26.   For example, the US had experienced a rapid expansion in its for-profit private education sector in recent years partly due to rising demand for higher education. This sector was distinct from the traditional non-profit private sector and they **provided much needed additional higher education capacity in the US, while saving on public expenses as they were funded primarily through student loans.** Hong Kong had also seen steady growth in the number of PEIs in its higher education sector.

A Rigorous Accreditation and Regulatory Framework

27.   However, many for-profit institutions in the US built their business model on **profiting from the federally-guaranteed loans obtained by the students, rather than ensuring quality outcomes for students**. **The lack of a rigorous accreditation and regulation framework for PEIs in the US had resulted in heavy debt burdens coupled with poor employment outcomes for PEI graduates**.

28.   Hong Kong, on the other hand, had a rigorous (but protracted) accreditation process implemented by the Hong Kong Council for the Accreditation of Academic and Vocational Qualification (HKCAAVQ). **The accreditation process not only ensured a baseline standard of educational quality but also served as a benchmark for funding in Hong Kong**.

29.   Accreditation by HKCAAVQ is voluntary, but accredited PEIs, including foreign ones, qualified for a government land grant and zero-interest start-up loan to build their own facilities. **Students enrolled in accredited institutions were also eligible for subsidized loans scheme, whereas those enrolled in non-accredited institutions had to pay higher interest on their loans**.[73] Nonetheless, we understand that many

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[73] Students who enroll in sub-degrees or degree programmes that are locally accredited by the HKCAAVQ can enjoy means-tested government grants and loans which are interest-free during the period of study and attract a subsidised interest rate of 2.5% thereafter. Students enrolled in other programmes can take up non-means-tested loans with an interest rate of 3.17%. The income threshold is set at about the median household income, and the take-up rate of government loans is high (about 80%).

PEIs do not apply for accreditation because the process was too onerous and resource-intensive.

30.   Ontario on the other hand had been very guarded in opening up its higher education sector to private players, due to **concerns over quality and potential abuse**. Nonetheless, there was a process to do so, which required the consent of the Minister of Training, Colleges and Universities. However, the barriers to entry were high. According to the Postsecondary Education Quality Assessment Board (PEQAB)[74] which had the responsibility to make a recommendation to the Minister on applications, only one private college had been given the authority to award degrees.

31.   This concern over quality and potential abuse was also highlighted by the Director of the Steinhardt Institute for Higher Education Policy, Prof Ann Marcus who noted that **for-profit institutions build their business model on profiting from the federally-guaranteed loans obtained by the students, rather than ensuring quality outcomes for students.** This had led to **uneven quality, poor student outcomes and high default rates, which leave students "saddled with debt"** with nothing to show for their expense and effort. Based on the American experience, Prof Ann Marcus cautioned against moving in the direction of the private sector, without due consideration of quality and outcomes. Professor Teboho Moja, Clinical Professor of Higher Education, New York University, also observed that in other countries, the **trend was to regulate very tightly the standards of private institutions, which also helped to instil greater public confidence in the quality of the sector.**

<u>OTHER MODELS OF CONTINUING EDUCATION AND TRAINING (CET)</u>

An Open University System

32.   Courses that were specifically conducted on a part-time basis were uncommon in Finland. Instead, their CET was more informal and less structured, where **students may prolong their course of study across an extended period of time**. This flexibility allowed them to work and study at the same time. This was possible in the Finnish education system as students did not have to pay for tuition fees and there were **no restrictions on how long they could take to complete a degree, or the number of degrees that they could take**. Employees (in both Finland and France) may also enter into an agreement with their employers, **allowing them to continue working and receiving their salary while taking relevant classes, in return for a service obligation with the company**.

33.   In line with their education system's principle of "no dead ends", Finland's Open University system **allowed any individual with a baccalaureate to enrol in courses conducted by both universities and polytechnics**. This system did not award degrees, but students may **accumulate course credits which could be counted**

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[74] Other institutions such as publicly-funded universities and faith-based colleges have a separate legislative act that enables them to award degrees.

towards their degree should they gain entry into a degree programme subsequently.

34.   In the Hong Kong Open University, majority of its students were enrolled on a "**distance-learning" basis (i.e. learning through the Internet and other electronic materials), and travelled to the campus about every fortnightly for face-to-face consultations or tutorials.** It had an **admission policy of "open access", i.e. no minimum academic requirements.** The programmes were largely self-financed. The government provided institutional support only through a land grant and zero-interest loan for development expenditure, and did not provide recurrent funding.[75]

Customization of Delivery to Suit Adult Learners

35.   In North America, programmes and curriculum at the McGhee Division at New York University's School of Continuing and Professional Studies (NYU SCPS) were **customised to better meet the needs of adult learners**. Compared to programmes for fresh school leavers, McGhee degree programmes **focused more on critical thinking and writing skills instead of content knowledge** per se as adult learners were expected to be comparatively better-equipped in the latter given their work experience. The curriculum **was developed closely with industry through advisory boards, in contrast to the more "theoretical" programmes designed by academics for fresh school leavers**. Class sizes were also smaller – about 15 students, due to the need for more individualised attention.

36.   **A flexible curriculum delivery also helped to overcome the time constraints of working adults**. For example, the "weekend university" at NJIT adopted a hybrid in-class / online delivery model, which effectively allowed students to take on a "full-time equivalent" load by spending three-hours of study in classes covering the equivalent of two modules, once on Friday evening and once on Saturday.[76] A **more open admission criteria for the adult student balanced recognition of work experience with the need to maintain academic standards and rigour**. Pace University, for example, offered "conditional admissions" for adult learners, who were **admitted into a programme based partly on work experience, but were required to meet stipulated academic requirements in the first semester to stay on in the programme**.

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[75] The Hong Kong Open University has recently started to offer full-time, face-to-face programmes. The university management did not openly say whether or not these face-to-face programmes were also "open access", but explained that there was only one-way porosity from full-time programmes to part-time programmes, and not vice versa.

[76] Each three hour slot comprises two 1.5-hour sessions, covering two modules   As a typical full-time course would require a 3-hour class for each module, students are expected to "complete" the remaining 1.5 hours of each module through online learning on their own time. This means part-time students can take about the same number of courses as a full-time student in a semester/term.   However, this applies best to programmes that will not suffer from reduced in-class interaction time.

37.   At Temple University[77], **graduation rates were low due to high drop-out rates[78] as adults had many more commitments to family and work** which left a negative effect on university's rankings. Furthermore, adult learners were typically less-prepared for the academic rigours after years away from school.   However, Temple University had made a deliberate decision to take in academically poor students[79] to provide opportunities for learning.

38.   To improve the provision of accessible and quality education to students, Temple University adopted several measures including:-

    a. **More regional campus locations and more convenient class timings**. After-work class timings were introduced to make it more convenient for adult learners to juggle education and family. Some classes were offered at multiple slots (evenings, Saturdays and online) and were repeated at different parts of the year to offer adult learners **greater options and flexibility**.

    b. **Differentiated programme offerings**. Adult learners were **more goal-oriented** and typically chose courses which would improve their employment outcomes. Courses that were **specialised and directly relevant to work,** such as Horticulture, Fire Safety and Criminal Science, **were popular**.

    c. **Alternative admissions criteria**. SAT requirements were often waived in favour of interviews or past work experience. Past community college experience and grades could be considered for entry. Students could also start on "conditional" admission or as "non-matriculated" students to try out some courses before being formally matriculated.

    d. **Remediation**.   All students (not just adult learners) enrolled had to take placement tests in writing and math skills. Students who failed had to take a 7-week remedial class before the start of the course.

    e. **Seamless transitions between part-time and full-time**. Students enrolled in courses could switch between part-time and full-time versions of the same course at any point in time according to their schedules. Although the completion time of part-time courses was extended, it also allowed for a lower course load, which **helped adult learners to cope better**.

    f. **"Intrusive" advising**. To improve retention rates, Temple profiled its students and assessed their likelihood of dropping out of course on a 10-point scale. Students who were identified as being at high-risk of dropping out were tightly monitored by academic advisors, who would help students to plan their courses,

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[77] Set up as Temple College and started as a night school for young working adults. Later, it was renamed Temple University when it evolved into a comprehensive research and academic institution.
[78] Average drop-out rates are 15% a year.
[79] Students of SAT scores less than 900, but many of them were top-performers in their school districts.

and to **intervene early to provide help to the students before they got into trouble.**

Improving the Perception of CET via a CET arm in an Established Institution

39.   CET degree pathways at North America were not popular due to the need to juggle studies, work, family and other commitments. In order to address this, NJIT implemented innovations such as a weekend university and more flexible admissions criteria. However, there was also the **perception that part-time degrees were not as "prestigious" or "rigorous" as full-time degrees, leading to sub-optimal employment outcomes**. There were also some **synergies to be reaped by having the PET and CET pathways within the same institution**. For example, the SCPS served as an **incubator and experimental arm** of NYU, where **new programmes could be mounted quickly in response to market need and to test out potential new degree offerings**.

FUNDING MECHANISMS

Diversification of Funding Sources

40.   Finland and France were both restructuring the higher education landscape to address the fragmentation in their respective higher education sectors, through the merger and clustering of institutions. This would enable the institutions to **tap on each other's strengths and avoid duplication of government funding**. In order to reduce the reliance of universities on state funding, the government in both countries had **incentivised the universities (through enhanced government matching of funds) to grow their endowments by tapping on non-traditional sources such as the private sector and alumni networks for contributions**.

Additional Costs in Implementing a Co-Operative Model of Education

41.   At Waterloo, the **Co-Op programme was "not an inexpensive model" of education**. **Dedicated manpower and financial resourcing was required to ensure the quality and availability of internships, and good institutional support for students**. Waterloo, for example, had a team of close to 140 staff in their Co-Operative Education and Career Services office that facilitated and provided advice to Co-Op students for work placements and scheduling of classes to accommodate work terms. There was also a dedicated group that cultivated industry relations[80] in order to develop more and a wider range of internships for students. The university also had to **offer the same modules more than once a year and the campus had to run year-round**. As

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[80] These relationships are built up over the years alongside the reputation of the Co-Op programme. Most of the Co-Op programmes we studied were several decades old. Strong alumni networks are also a rich source of potential industry partners. For example, Waterloo tapped on their Dubai-based alumni when they launched the Co-Op programme in their Dubai campus in 2009 to offer places to their students in their first year.

a result, Waterloo estimated that the Co-Op programme was about 19% to 28% more expensive than a traditional course. Waterloo Co-Op students also paid an administrative fee of about C$600 to C$650 per work term, over and above tuition fees.[81]

Financial Assistance Based on Quality Assurance

42. While higher education was free in Finland and France, this was not so in Hong Kong and North America. In Hong Kong, an estimated 7% of a 80,000-strong secondary education graduation cohort matriculated into self-financing degree programmes offered by both local institutions (e.g. Open University of Hong Kong) and a broad range of overseas education providers (e.g. the Savannah Institute of Art and Design). **To reduce the financial burden of students enrolled in the self-financed institutions, Hong Kong had a quality assurance system that allowed accredited institutions and their students to access government assistance.**

43. The Hong Kong Education Bureau (HK EDB) was directly involved in student loan administration and did not out-source this function to commercial banks.[82] **Financial assistance schemes were also available to students enrolled in continuing education and training (CET) programmes.** Interestingly, the default rates for financial assistance to CET students were higher than those of pre-employment training (PET) students. Non-local students did not have access to these publicly-administered loans, but were eligible for scholarships.

P̲ITFALLS TO A̲VOID IN E̲XPANDING U̲NIVERSITY C̲OHORT P̲ARTICIPATION R̲ATE

Inefficiencies and Attrition Due to High Costs and Free Access

44. The Finnish and French systems were both highly inefficient, with **high attrition rates resulting in significant wastage of government resources**. This could be attributed mainly to students **taking their free education for granted and the poor provision of information and career guidance in high school**.

45. In Finland, the **inefficiencies arose from high attrition, prolonged duration of study, and late entry into tertiary education**. Although around 65% of each age cohort obtained a place in a higher education institution, only 42% completed their degree. Aside from drop-outs, there was also a **high rate of non-standard completion** of degrees. Even in Finland's top institution, the University of Helsinki, less than 30% of Humanities students completed their degree within five years.[83]

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[81] This covers about 25% of the cost of running the Co-Op programme. Although not intentionally priced as such, the administrative fee works out to about the average one week pay of Waterloo Co-Op students.

[82] HK EDB had made an unsuccessful attempt to move it to the banks earlier.

[83] Attrition varies among the various fields of studies with low attrition in highly competitive courses such as Medicine and Law, but much higher rates in fields such as the Humanities and other proxy subjects for Medicine.

46.   Finnish higher education institutions also had to deal with a **large backlog of mature school leavers as well as repeat applicants competing for limited places in universities or polytechnics**. According to the Finnish Higher Education Division, the median age of entry into tertiary institutions was 21 year old, about two years after most students graduate from upper secondary school. This had further implications on the labour market, as **graduates also entered the workforce later**.[84] **Students often applied repeatedly to their desired course if they did not gain entry at previous attempts while holding on to a place in another course of study, i.e.** a student who did not get a place in Medicine might accept a place in Biology, and then abandon the Biology course once he gained entry into Medicine in subsequent years. At the University of Helsinki, entrants into Medicine typically only get in on their third attempt. This had resulted in a situation where there were approximately 180,000 applicants for 56,000 places each year, and only 36% of fresh school-leavers successfully obtained a place at university immediately.

Inadequate Preparation in Primary and Secondary Education Sector

47.   There was a **high attrition rate among undergraduates in the US system due to inadequate preparation at the K-12 levels and high tuition cost**, resulting in much wastage and lost opportunities. Sub-standard Science and Math teaching in the K-12 levels had negatively affected the talent pipeline feeding into the higher education sector.

Costs of degree education

48.   Some US interlocutors also felt that the **cost of a degree education was becoming prohibitively expensive for some families**. If not adequately addressed, this may **exacerbate the "stratification of opportunity", reducing the opportunities available to low-income or minority segments of US society and diminishing the role of education as a social leveller**. Students were more interested in paper qualifications rather than the actual learning experience, and many of them would drop-out or barely qualify for their degrees.

49.   At the same time, the **funding to state universities in the US was dependent on the state of the economy, which made it difficult for them to invest in and commit to long-term plans**. Furthermore, the **decentralisation of governance had resulted in incoherent goals and priorities amongst the state universities**. Each governing board worked towards their own goals without regard for broader state goals.

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[84] As shared with the delegation by Dr Kari Raivio, Chancellor Emeritus of the University of Helsinki and former member of our International Academic Advisory Panels.

CONCLUSION: IMPLICATIONS FOR SINGAPORE

50.   As we expand our higher education sector and provide more opportunities, we have to be mindful that a more student-centric approach similar to the systems in Finland and France would require a trade-off with efficiency. It is unclear how well-received this would be in the Singaporean context as our education system is premised on efficiency with minimal tolerance for wastage. Given the differences in our tax regimes, shrinking tax base and rising competing demand for public resources, it is also unlikely we will be able to introduce greater inefficiency in exchange for broader university access. Rather we will have to increase efficiency in order to cater to a larger segment of Singaporeans, as the public budget tightens. One way to increase efficiency would be to improve on the matching of courses, through improved career guidance in post-secondary institutions, in order to reduce attrition due to course unsuitability.

51.   The concept of Co-Op education is largely alien to Singaporean students and industry. Hence it remains unclear how Singaporean students will respond to an applied degree pathway. A potential misconception could be that the pathway is second-rate. Hence, it is essential for the applied degree pathway to achieve early success. A positive experience and good employment prospects for initial participants will help to highlight the value-add of the work experience, in terms of building up their resumes and industry networks, as well as equipping them with a broader set of skills beyond those acquired in the classroom. This is vital in generating positive word-of-mouth, shaping public perceptions and ensuring the sustainability of the pathway.

52.   At the same time considerable effort will be required to ensure sufficient buy-in from stakeholders to make such a model sustainable. It is also vital to secure good quality work placements in order to ensure the value-add of Co-Op education and to attract students. This can be accomplished by starting small, with a well-coordinated, quality programme that taps on industries that lend themselves better to an applied pathway, such as hospitality and engineering. This also allows the targeting of a more select group of students, who are more suited to the demands of the Co-Op programmes, thus making success more likely.

53.   In the implementation of an applied degree pathway, it is also critical to ensure that all stakeholders are committed to its mission. University leadership and administrators have to maintain support for and fidelity to the objectives, in order to prevent mission drift. The key messages to faculty should focus on teaching and mentoring, with appraisal systems reflecting the nature of the applied pathway. The governance structure of the university also has to reflect the focus of its original mission.

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