

IN THE NATION'S SERVICE

Advancing Australia to a Prosperous Future

An Education Manifesto

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In the Nation's Service: Advancing Australia to a Prosperous Future, An Education Manifesto

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FOREWORD

In January 2007, the Australian Labour Party published its landmark paper titled *The Australian economy needs an education revolution*, which outlined new directions on the critical link between long term prosperity, productivity, growth and human investment. The paper was laudable and built upon a number of policy reforms undertaken by the Commonwealth Government over the past decade.

Further building upon the past decade of education policy reform and the ALP paper, the Deputy Prime Minister and Minister for Education announced in March 2008, that the Commonwealth Government would commission a review of Australia's higher education system, with the aim of charting a new course for the future direction of Australian higher education, so that it will continue to serve as the major purveyor and superstructure in producing a highly adept skilled workforce, which can in turn ensure the nation's ability to compete in the global economy over the next century.

In the Nation's Service: advancing Australia to a prosperous future, is a response to both the Australian Labour Party's clarion call for an education revolution and the Commonwealth's 2008 Review of Higher Education. It is intended as a holistic approach to the education of Australia's greatest national treasure – its children and young people – and provides a road map for how we, as a people, might better serve our nation and advance Australia to a prosperous future over the next century.

Susan Carole Egloff Tennant

July 2008

INTRODUCTION

The premise of the Australian Labour Party's (ALP) clarion call for an education revolution is that human capital investment is at the heart of economic reform and will position Australia as a competitive, innovative, knowledge-based economy that can compete and win in global markets. To achieve this end, the ALP challenged Australians to set for themselves a new national vision – for Australia to become the most educated country, the most skilled economy and the best trained workforce in the world. The argument advanced two broad ideas:

1. Australia's long term prosperity can only be guaranteed by long term productivity growth.
2. Productivity growth is best underpinned by a large scale, sustained investment across the human capital spectrum.¹

The above noted ideas are not new to Australian public policy and have formed much of the consensus of succeeding Governments over the past two decades. The challenge therefore is develop a long term achievable national strategy which ensures that over the next century, Australia not only maintains her rank and place among the prosperous nations of the world, but that she also serves as a bulwark against economic stagnation and a catalyst for innovation and excellence in all spheres of modern life.

Calling for an education revolution and achieving the intended and desired results may be daunting, so the question arises, how do we get from point A to point B in achieving such an ambition undertaking? Do we reform and restructure our national system of education by building around existing structures and systems which are inefficient and unproductive, or do we start anew?

In building construction, a civil engineer follows a blue print. When an error or fault in the blue print is detected, the engineer either builds around the fault or error, or, in cases where the error calls into question the structural integrity of the building, so that the safety of its future occupants is compromised, he or she must make the painful decision to draw up a new blue print and start anew.

The question therefore arises for Australia, how faulty is our current blue print for the development of a highly dexterous labour force which is capable of harvesting,

analysing, evaluating, synthesizing and applying knowledge and information within a variety of national and international contexts?

The 2006 Productivity Commission statistics on workforce participation provide an early warning signal, that if urgent attention is not given to our national system of education Australia will struggle to maintain its current ranking among the most prosperous of nations. First and foremost, we must take an honest look at the contributing factors to our skills shortage, which at the most fundamental level is caused in part to an outmoded education system, whose school year is designed to accommodate an agrarian economy and whose curriculum and pedagogic approach is designed to meet the skill-level of an industrial economy.

In deed, if we remain on the current course, the picture leaves little room for optimism for the next generation of Australians who will be required to carry the lion's share of public support for an aging generation of baby boomers. For example, in 2006, only 42.8% of all year 12 students were enrolled in a higher education program. The picture is much bleaker for early school leavers, with only 1.8% enrolled in a higher education program. Total enrolment in higher education for all school leavers in 2006, including early leavers and year 12 was only 29%. The actual number of students who enrolled in a higher education program in 2006 was only 337,000, with 901,000 students not enrolled in any identifiable post-secondary program. While overall workforce participation appears to be within acceptable levels, with 85% of all Bachelor degree holders and 72% of all year 12 school leavers employed respectively, workforce participation is only 57% for year 11 school leavers with 37% of all residents between the ages of 15-64 identified as not employed² and therefore either unable or unqualified to participate in Australia's predominately knowledge-based service driven economy.

The question therefore arises, how important is education to national development and economic prosperity and what are the implications for the next generation of Australians if education attainment remains at their current levels? The following chapters will attempt to answer these questions, but more importantly provide a blue print for how we as a nation can start anew, by designing and constructing a comprehensive education system that services the nation, its people and its interests into the 21st century.

1. IN THE NATION'S SERVICE: THE ROLE OF HUMAN CAPITAL IN NATIONAL DEVELOPMENT

The Global Economy & the Pursuit of the Means of Production

American financier and banker, Walter Wriston, former CEO of Citibank/Citicorp and founding director of *Forbes* magazine, observed in a 1997 *Foreign Affairs* article, that in the global economy:

The pursuit of wealth is now largely the pursuit of information and its application to the means of production. The rules, customs, skills and talents necessary to uncover, capture, produce, preserve and exploit information are now humankind's most important assets. The competition for the best information has replaced the competition for the best farmland or coalfields. In fact, the appetite to annex territory has already attenuated, and major powers have withdrawn from previously occupied territories. In the past when the method of creating wealth changed, old power structures lost influence, new ones arose, and every facet of society was affected.

Over the next several decades, the attraction and management of intellectual capital will determine which institutions and nations will survive and prosper and which will not.³

The global economy, built around the knowledge economy, requires a highly skilled and dexterous labour force capable of harvesting, analysing, evaluating, synthesizing and applying knowledge and information within a variety of national and international contexts. The accumulation and application of knowledge are therefore major factors in economic development and are increasingly at the core of a country's competitive advantage.⁴

Modern society, having evolved from an industrial mode, is now organised around knowledge production. The immediate consequence of such an evolution is that goods no longer constitute the driving force behind economic activity.⁵ Given this new paradigm shift, in which goods no longer constitute the driving force behind economic activity and viability, the academy serves as an indispensable superstructure for the 21st century democratic nation-state, in that it is responsible for ensuring the steady supply of skilled human capital, who serve, sustain and advance the nation and global

community collectively by way of the problem-solving capabilities they bring to both the national and global marketplace.

A nation's pursuit of wealth is therefore primarily the pursuit of information and its application to the means of production. Its natural resources, location, size, and military strength are no longer the primary determinants of its prosperity, but rather the speed and ability with which it is able to uncover, capture, produce, preserve and exploit information together with its ability to attract, manage and retain its intellectual capital.⁶

Participation by a nation in the global economy does not erase its borders or the territorial integrity of a country, but rather makes national borders transparent, enabling people and intellectual property to traverse with ease both within and across national borders. While national identity still retains a primary role within each nation-state's individual society, nations must increasingly measure their performance and productivity against competing friends, foes and allies by constantly re-appraising their national goals and capabilities if they wish to remain economically competitive in the high stakes game of international rankings.

Higher Education and National Prosperity

In 1997, UNESCO and the World Bank convened a Task Force on Higher Education and Society to study the casual link between higher education and economic prosperity. As a result of the study the Task Force findings concluded that urgent action was needed to expand the quantity and improve the quality of higher education in developing nations. The report stated:

'Higher Education is to a knowledge economy as primary education is to an agrarian economy and secondary education is to an industrial economy'.⁷

Universal access to and attainment of higher education is therefore essential to promoting sustainable human development and economic growth. The importance of higher education is underscored by Former U.S. Secretary of Labour and Harvard Economist Robert Reich, who speculated in *The Work of Nations*, that forty-percent of a developed workforce in the global economy will be made up of symbolic analysts who will possess the necessary skills required for harnessing, harvesting, deploying and applying information in an interdisciplinary problem-solving context. Moreover, Reich asserts that we are entering a period of history when the capacity of nations to train

and retain highly skilled human capital and to constantly upgrade their skills and knowledge, will be the single most important determinant of international competitiveness and economic security and national prosperity over the coming decades.⁸

Given this new paradigm shift, the universal attainment of higher education has become an imperative for all nations in the 21st century, for skilled human capital enables a nation to pursue information and its application to the means of production, which in turn enables it and its people to better compete in the global economy and thereby achieve national prosperity for the whole of its population.

As a result of this paradigm change over the past 150 years, modern society has evolved from agrarian economy in the 18th century to an industrial economy in the 19th and 20th centuries, to our present day knowledge-based global economy. Given this structural shift in political economics, where the pursuit of information to the means of production takes precedence, the most fundamental infrastructure in the 21st century will be the nation-state's national system of education. To ensure the sustained success of these systems, it will be necessary for a nation to constantly measure and quantify the extent to which its institutions are able to deliver the requisite educational outcomes necessary for a highly skilled and dexterous labour force. Such a system must provide a seamless pathway from secondary school to higher education and must ensure the universal attainment of a higher education qualification for all of its citizens, if it is to maintain its ability to compete among the myriad of other competing nation-state actors. Such a system must demonstrate academic excellence, integrity, accountability and transparency by ALL of its institutions, if it is to serve the national interest in producing a highly competent and dexterous labour force, which in turn is equipped with the requisite skills to apply knowledge into practical applications so that solutions to problems encountered by modern society, such as pandemic viruses, environmental sustainability, human trafficking, and international terrorism may be found.⁹

2. IN LOCO PARENTIS REVISITED: HALLMARKS OF A QUALITY LEARNING ENVIRONMENT

University graduate attributes should typically include an area of specialty as well the attainment of a general education, which over the long run fosters life-long learning skills. In a knowledge economy, general education fosters the ability to think, analyse, synthesize and apply knowledge over broad historical, comparative and disciplinary perspectives and serves as a foundation for later and more specialised study.

The 1997 Report of the UNESCO and World Bank Task Force on Higher Education and Society urged for the expansion of higher education in developing countries, as it was deemed in each country's public interest to have individuals who can operate at a high intellectual level in a rapidly changing global environment. Whereas today's problems require problem-solving skills and the ability to amass, digest, analyse, evaluate, synthesize and apply information and knowledge in a variety of contexts, many of the universities either focus on rote learning, where memory is rewarded rather than creativity and curiosity or require students to apply advanced knowledge in complex contexts without the requisite core foundational knowledge.¹⁰

During the May 2002 OECD/US Forum on Trade in Educational Services, Harry Patrinos of the World Bank highlighted the following areas in which higher education was in need of systemic transformation globally.¹¹

- A Shift from Terminal Education to Lifelong Learning.
- A Shift from Information-based Learning Systems to the Application of Knowledge.
- A Shift from Rote Learning to Analysis and Synthesis of Knowledge.
- A Shift from Memorisation to Critical Thinking.
- A Shift from learning things just in case they may be useful to a System that promotes Just in Time Learning.
- A Shift from a Directive-based System to an Initiative-based System.
- A Shift from a Centralised System to a Devolved System

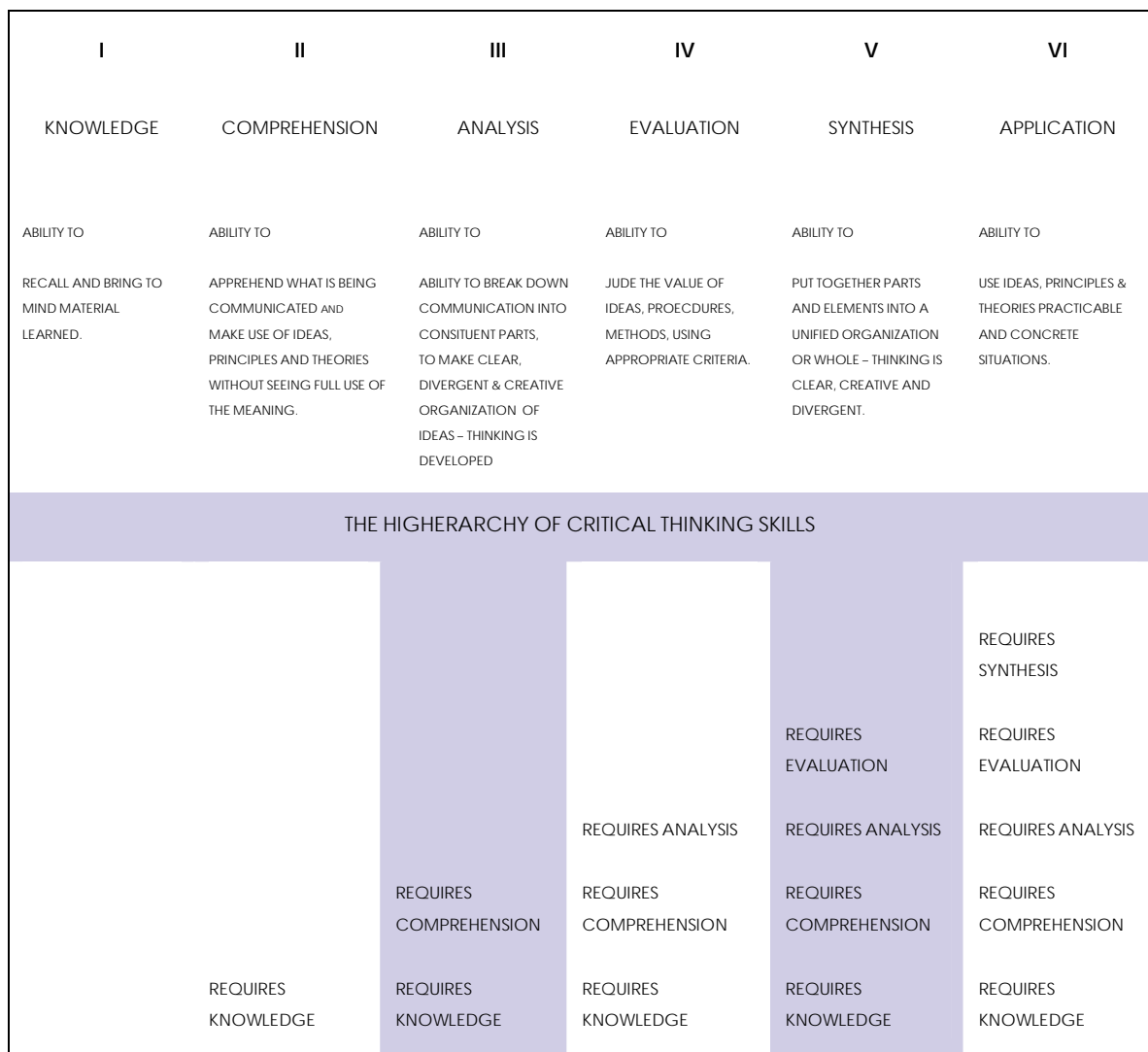
Figure 1 identifies the higher order thinking skills required in a knowledge-based economy. We are all familiar with the theory of higher order critical thinking, but far too often colleges and universities forego core foundational knowledge and leap right into critical thinking without ensuring students have gained the requisite knowledge and understanding to apply the more advanced critical thinking skills. Far too often our undergraduate degree programs require students to undertake the analysis of complex and advanced theories without core foundational knowledge of the topic. For example, one undergraduate Australian university course requires no foundational course work in economics, political science or political economics, yet in an assessment for an introductory first year unit in Human Services and the Welfare Community, students are required to prepare the following essay which is equivalent to 40% of their overall grade:

1. Outline some strengths and weaknesses of two of the following paradigms referred to by Mullaly. Illustrate your argument by referring to particular social fields:
 - a. Neo-liberal
 - b. Liberal
 - c. Social Democratic
 - d. Marxist

In order for students to fully apply higher order thinking processes in evaluation, analysis synthesis and application, students completing the above noted assessment would have been better served in their educational experience had they been first exposed to classical schools of political economics and to the various competing schools of economics such as the Marxian School, Austrian School, Keynesian School, Post-Keynesian School etc. Exposure to core knowledge for this assessment would have enabled the students completing this assessment to more appropriately apply their knowledge and understanding of the various schools of thought to the cross-disciplinary field of human services and social welfare. Without such core knowledge, students do not have the necessary background to apply economic theory to a human services and social welfare context and therefore the full benefit of the learning process is lost and their ability to apply sound core knowledge theory to real-life practical solutions in the workplace is not easily realised.

If we as a nation are to produce a highly skilled and dexterous labour force capable of analysing, evaluating, synthesising and apply knowledge across an increasingly more complex and cross-disciplinary context, we must first ensure our students have content and core knowledge as a basis for higher order applications to knowledge. For it is only when knowledge and understanding are achieved in core knowledge areas that more advanced thinking process such as evaluation, synthesis and application can be achieved.

Figure 1: Higher Order Thinking Skills Required in a Knowledge-based Economy ¹²



3. THE BEST AND THE REST: CHARTING AUSTRALIAN PERFORMANCE IN THE RANKINGS GAME

Australia’s performance in the various world academic rankings is cursory, with only one spot in the top 20, and this spot is only represented in one of the three major rankings. On the other hand, the United States consistently outranks any other single country or region with respect to international academic rankings. Figure 3 identifies the top 20 universities in the 2007 annual *Academic Ranking of World Universities*, published by the Institute of Higher Education of the Shanghai Jiao Tong University in China. Since the ranking was first published in 2003, the United States has maintained an 80% share of the top 10 spots, with Oxford and Cambridge Universities carrying the remaining 20% share for the United Kingdom.

Figure 2: Academic Ranking of World Universities – 2007¹³

	Rank	Institution	Country
Top 10	1	Harvard University	USA
	2	Stanford University	USA
	3	University of California - Berkeley	USA
	4	Cambridge University	UK
	5	Massachusetts Institute of Technology	USA
	6	California Institute of Technology	USA
	7	Columbia University	USA
	8	Princeton University	USA
	9	University of Chicago	USA
	10	Oxford University	UK
Top 20	11	Yale University	USA
	12	Cornell University	USA
	13	University of California-Los Angeles	USA
	14	University of California-San Diego	USA
	15	University of Pennsylvania	USA
	16	University of Washington-Seattle	USA
	17	University of Wisconsin-Madison	USA
	18	University of California-San Francisco	USA
	19	Johns Hopkins University	USA
	20	Tokyo University	Japan
Top 10		Top 20	
USA	80%	USA	85%
UK	20%	UK	15%
		Japan	5%

Figure 3 identifies the ranking criteria, indicators and weighting employed by the Jiao Tong ranking system, with 80% of the weighting assigned to faculty research and 10% to the quality of education.

Figure 4: Ranking Criteria & Weighting Formula for World Academic Rankings¹⁴

Criteria	Indicator	Weight
Quality of Education	Alumni Winning Nobel Prizes & Field Medals	10%
Quality of Faculty	Staff Winning Nobel Prizes & Field Medals	20%
	Highly Sited Researches in 21 Broad Subject Categories	20%
Research Output	Articles Published in Nature & Science	20%
	Articles Published in Science and Social Science	20%
Institutional Size	Academic Performance in relation to Institutional Size	20%

Figure 4: Times World University Rankings – 2007¹⁵

	Rank	Institution	Country				
Top 10	1	Harvard University	USA				
	2	University of Cambridge	UK				
	2	University of Oxford	UK				
	2	Yale University	USA				
	5	Imperial College London	UK				
	6	Princeton University	USA				
	7	California Institute of Technology	USA				
	7	University of Chicago	USA				
	9	University College London	UK				
	10	Massachusetts Institute of Technology	USA				
Top 20	11	Columbia University	USA				
	12	McGill University	UK				
	13	Duke University	USA				
	14	University of Pennsylvania	USA				
	15	Johns Hopkins University	USA				
	16	Australian National University	Australia				
	17	University of Tokyo	Japan				
	18	University of Hong Kong	Hong Kong				
	19	Stanford University	USA				
	20	Carnegie Mellon University	USA				
	20	Cornell University	USA				
Top 10		Top 20					
USA	60%	USA	65%	Japan	10%	Hong Kong	5%
US	40%	UK	25%	Australia	5%		

Figure 5 identifies the top 20 universities in the Newsweek International Ranking and is based upon both the Shanghai Jiao Tong and the Times rankings, with fifty percent coming from equal parts of the three measures used by Shanghai Jiao Tong. Another 40% came from the four equal parts used by the Times, with the final 10% weighted by library holdings.

Figure 5: Newsweek Top 100 Global Universities – 2007¹⁶

	Rank	Institution	Country		
Top 10	1	Harvard University	USA		
	2	Stanford University	USA		
	3	Yale University	USA		
	4	California Institute of Technology	USA		
	5	University of California-Berkeley	USA		
	6	University of Cambridge	UK		
	7	Massachusetts Institute of Technology	USA		
	8	Oxford University	UK		
	9	University of California at Los Angeles	USA		
	10	Columbia University	USA		
Top 20	11	University of Michigan at Ann Arbor	USA		
	12	University of California-Los Angeles	USA		
	13	University of Pennsylvania	USA		
	14	Duke University	USA		
	15	Princeton University	USA		
	16	Tokyo University	Japan		
	17	Imperial College London	UK		
	18	University of Toronto	Canada		
	19	Cornell University	USA		
	20	University of Chicago	USA		
Top 10		Top 20			
USA	80%	US	75%	Japan	5%
UK	20%	UK	15%	Canada	5%

Figure 6: 2006 Australian Year 12 Completion Rates by Socioeconomic Status¹⁷

	NSW	VIC	QLD	WA	SA	TAS	ACT	NT	AUST
Low socioeconomic status deciles									
Male students	57%	50%	54%	45%	47%	41%	*	10%	52%
Female students	69%	66%	69%	58%	68%	59%	*	16%	66%
All students	63%	58%	62%	51%	57%	50%	*	12%	59%
Medium socioeconomic status deciles									
Male students	57%	53%	60%	57%	56%	53%	*	41%	57%
Female students	69%	72%	73%	70%	75%	63%	*	50%	71%
All students	63%	63%	67%	63%	65%	58%	*	45%	64%
High socioeconomic status deciles									
Male students	76%	76%	73%	70%	74%	65%	73%	*	75%
Female students	81%	86%	76%	81%	88%	82%	79%	*	83%
All students	79%	81%	74%	75%	81%	73%	76%	*	78%
Total									
Male students	62%	61%	60%	58%	59%	49%	73%	27%	60%
Female students	72%	76%	73%	70%	78%	64%	79%	35%	73%
All students	67%	68%	66%	64%	68%	56%	76%	31%	67%

* No published data was available.

4. DISTINGUISHING FEATURES OF THE BEST: HARVARD, A CASE STUDY

Figure 7a & 7b identifies the high school profile of U.S. competitive year 12 school leaver whose academic profile might be considered competitive enough for the U.S. universities which maintain the top 10 spots in the rankings game. The student has taken core knowledge courses during years 9-12 in math, English, foreign language, natural and experimental sciences and social science. In addition, the student has taken Advanced Placement (AP) courses in years 11 & 12. Advanced Placement courses are equivalent to university-level curriculum and are weighted on a 5.0 scale rather than a 4.0 scale (refer to figure 7 for US grading scale and Australian equivalency scale).

Students who take AP courses and who receive a score of 3, 4 or 5 on the AP external exam are usually eligible for university level credit, or advanced standing toward their US bachelor's degree. This particular student is attractive because he/she has taken a rigorous academic program all four years of study, with particularly rigorous course work during year 12. During years 11 and 12 there is a significant upward trend in academic performance particularly in relation to the coursework undertaken, with a 12th grade 1st and 2nd semester cumulative grade point average (CGPA) of 4.71 and 4.63 respectively. The student has a weighted CGPA of 4.06, and an unweighted CGPA of 3.85, SAT I and SAT II subject exam scores in the 700 range, and well rounded extra-curricular activities and community/public service.

Figure 7a: Harvard Bound Year 12 Student Profile

SAT I VERBAL	750	ENGLISH CORE UNITS	4	EXTRA-CURRICULAR	COMMUNITY SERVICE
SAT I MATH	730	MATH CORE UNITS	4	SPANISH CLUB	TOYS FOR TOTS
SATII ENGLISH	>700	SOCIAL SCIENCE CORE UNITS	4	CHOIR	HABITAT FOR HUMANITY
SATII BIOLOGY	>700	SCIENCE CORE UNITS	4	DEBATE TEAM	GREEN PEACE
SATII AMERICAN HISTORY	>700	FOREIGN LANGUAGE CORE UNITS	4	CHESS CLUB	VOLUNTEER ESL TUTOR
6 AP EXAMS	>3	ADVANCED STANDING	18-36	TRACK	
WEIGHTED CGPA	4.63	UNWEIGHTED CGPA	4.06	THEATRE	

Figure 7b: Harvard Bound Year 12 High School Transcript ¹⁸

AMERICAN COLLEGE PREP CURRICULUM							
9TH GRADE 1ST SEMESTER				9TH GRADE 2ND SEMESTER			
COURSE DESCRIPTION	GRADE	UNITS	POINTS	COURSE DESCRIPTION	GRADES	UNITS	POINTS
ENGLISH COMPOSITION 9	A	.50	2.00	ENGLISH COMPOSITION 9	A	.50	2.00
SPANISH I	A-	.50	1.85	SPANISH I	A	.50	2.00
DEBATE	B	.50	1.50	DEBATE	B+	.50	1.65
ALGEBRA	A-	.50	1.85	ALGEBRA	A-	.50	1.85
AMERICAN HISTORY	A	.50	2.00	AMERICAN HISTORY	A	.50	2.00
BIOLOGY	B+	.50	1.65	BIOLOGY	B+	.50	1.65
PHYSICAL EDUCATION	A-	.50	1.85	PHYSICAL EDUCATION	B+	.50	1.65
WEIGHTED GPA	3.63	3.50	12.70	WEIGHTED GPA	3.66	3.50	12.80
UNWEIGHTED GPA	3.62	3.50	12.70	UNWEIGHTED GPA	3.64	7.00	25.50
10TH GRADE 1ST SEMESTER				10TH GRADE 2ND SEMESTER			
COURSE DESCRIPTION	GRADE	UNITS	POINTS	COURSE DESCRIPTION	GRADE	UNITS	POINTS
ENGLISH COMPOSITION 10	A-	.50	1.85	ENGLISH COMPOSITION 10	A	.50	2.00
SPANISH 2	A-	.50	1.85	SPANISH 2	A	.50	2.00
AMERICAN GOVERNMENT	A-	.50	1.85	AMERICAN GOVERNMENT	A	.50	2.00
CHEMISTRY	A-	.50	1.85	CHEMISTRY	A	.50	2.00
TRIGONOMETRY	B+	.50	1.65	TRIGONOMETRY	B+	.50	1.65
HEALTH	A	.50	2.00	HEALTH	A	.50	2.00
KEYBOARDING	A	.50	2.00	KEYBOARDING	A	.50	2.00
WEIGHTED GPA	3.73	3.50	13.05	WEIGHTED GPA	3.90	3.50	13.65
UNWEIGHTED GPA	3.67	10.50	38.55	UNWEIGHTED GPA	3.73	14.00	52.20
11TH GRADE 1ST SEMESTER				11TH GRADE 2ND SEMESTER			
COURSE DESCRIPTION	GRADE	UNITS	POINTS	COURSE DESCRIPTION	GRADE	UNITS	POINTS
ENGLISH LITERATURE 11	A-	.50	1.85	ENGLISH LITERATURE 11	A-	.50	1.85
PRE-CALCULUS	B+	.50	1.65	PRE-CALCULUS	A-	.50	1.85
PHYSICS	A-	.50	1.85	PHYSICS	A	.50	2.00
SPANISH 3	A	.50	2.00	SPANISH 3	A	.50	2.00
WORLD HISTORY	A	.50	2.00	WORLD HISTORY	A	.50	2.00
AP ECONOMICS	A+	.50	2.15	AP ECONOMICS	A+	.50	2.65
CHOIR	A+	.50	2.65	CHOIR	A+	.50	2.15
WEIGHTED GPA	4.04	3.50	14.15	WEIGHTED GPA	4.14	3.50	14.50
UNWEIGHTED GPA	3.79	17.50	66.35	UNWEIGHTED GPA	3.85	21.00	80.85
12TH GRADE 1ST SEMESTER				12TH GRADE 2ND SEMESTER			
COURSE DESCRIPTION	GRADE	UNITS	POINTS	COURSE DESCRIPTION	GRADE	UNITS	POINTS
AP ENGLISH	A	.50	2.50	AP ENGLISH	A-	.50	2.35
AP SPANISH	A	.50	2.50	AP SPANISH	A-	.50	2.35
AP BIOLOGY	A	.50	2.50	AP BIOLOGY	A	.50	2.50
CHOIR	A	.50	2.00	CHOIR	A	.50	2.00
AP EUROPEAN HISTORY	A	.50	2.50	AP EUROPEAN HISTORY	A	.50	2.50
AP MATH (AB)	A	.50	2.50	AP MATH (AB)	A	.50	2.50
PHOTOGRAPHY	A	.50	2.00	PHOTOGRAPHY	A	.50	2.00
WEIGHTED GPA	4.71	3.50	16.50	WEIGHTED GPA	4.63	3.50	16.20
UNWEIGHTED GPA	3.97	24.50	97.35	UNWEIGHTED GPA	4.06	28.00	113.55

Figure 8: U.S. Grading Scale with Comparative Conversion Scales¹⁹

US Expanded Grading Scale							
A+	4.30	100-97%	Excellent	C	2.00	76-74%	Average
A	4.00	96-94%		C-	1.70	73-70%	
A-	3.70	93-90%		D+	1.30	69-67%	
B+	3.30	89-87%		D	1.00	66-64%	Below Average
B	3.00	86-84%	Good	D-	0.70	63-60%	
B-	2.70	83-80%		F	0.00	59% or <	Failure
C+	2.30	79-77%					

Comparative Grading Systems Conversion Scale							
IB	Australian Schools		Australian University		US Grading Modified Scale		
7	A	Excellent Achievement	High Distinction	1-2%	A+	4.3	100-97%
6	B	High Achievement	Distinction	12%	A	4.0	96-94%
5	C	Substantial Achievement	Credit	30%	B	3.0	88-90%
4	D	Satisfactory Achievement	Pass	32%	C	2.0	79-70%
3/2	E	Elementary Achievement	Provisional Pass	19%	D/D-	1.0	69-60%
1	--	-----	Failure	5%	F	0.0	59% or >

5. CORE KNOWLEDGE: THE ESSENTIALS OF A LIBERAL EDUCATION

If the current generation of Australians are to contribute to national development and ensure the nation's competitive place among the most prosperous and developed nations of the world over the coming decades, then urgent attention is needed to ensure that all students, regardless of socioeconomic background or geographic location have opportunities for sustained exposure over the course of their education (K-12) in core knowledge areas. This will ensure a seamless transition and proper preparation for the attainment of an undergraduate degree and beyond.

Core Knowledge to which Australian students in grades K-12 should have opportunities for sustained exposure at age/grade appropriate levels:

- Western Civilization – philosophy, religion and literature
- World Civilizations – philosophy, religion and literature
 - Ottoman Empire
 - Russian Empire
 - Asia
 - Africa
 - Indigenous Populations in the Western World
- Conventions of Written English
- Foreign Languages
- Australian History
- Australian Politics
- Australian Geography
- Australian Literature
- World History
- World Politics
- World Geography
- British History to 1600
- British History from 1600
- British Literature
- European Literature
- US History to 1865
- US History from 1865
- American Literature
- Anthropology, Psychology and Sociology
- Mathematics (through to advanced levels including calculus & trigonometry)
- Physical Sciences
- Earth Sciences
- Life Sciences
- Medicine & Health
- Technology

6. HIGHER EDUCATION: HONING THE ART OF APPLICATION

Discussion of honing the art of application in advanced core knowledge so that in later studies and professional life, students have the requisite skills to apply their knowledge across a variety of contexts and disciplines.²⁰

The Intentional Learner	
<i>The Intentional Learner is informed by knowledge...</i>	<ul style="list-style-type: none"> – possess a core of knowledge both broad and deep, derived from many fields – is able to analyse, evaluate, synthesise and apply knowledge across a variety of contexts.
<i>The Intentional Learner has sustained opportunities over the course of their education (K-12) and beyond to learn about...</i>	<ul style="list-style-type: none"> – the human imagination, expression, and the products of many cultures – the interrelations within and among global and cross-cultural communities – means of modelling the natural, social, and technical worlds – the values and histories underlying our democracy.
<i>The intentional learner is empowered...</i>	<ul style="list-style-type: none"> – through intellectual and practical skills and possesses the mastery of a range of abilities and capacities, which empowers him/her as they manoeuvre in and shape a world in flux.
<i>As they progress through grades K-12 and the undergraduate years and at successively more challenging levels, empowered learners excel at...</i>	<ul style="list-style-type: none"> – communicating in diverse settings and groups, using written, oral, and visual means, and in more than one language – understanding and employing both quantitative and qualitative analysis to describe and solve problems – interpreting, evaluating, and using information discerningly from a variety of sources – integrating knowledge of various types and understanding complex systems – resolving difficult issues creatively by employing multiple systems and tools – deriving meaning from experience, as well as gathering information from observation – demonstrating intellectual agility and managing change – transforming information into knowledge and knowledge into judgment and action – demonstrating intellectual agility and managing change – working well in teams, including those of diverse composition, and building consensus.
<i>The informed, empowered intentional learner is responsible for personal actions and civic values...</i>	<ul style="list-style-type: none"> – through discussion, critical analysis, and introspection, they come to understand their roles in society and accept active participation. – open-minded and empathetic, they understand how abstract values relate to decisions in their lives. – they appreciate others, while also assuming accountability for themselves, their complex identities, and their conduct. – by weaving moral reasoning into the social fabric of life and work, they help society shape its ethical values, and then live by those values.

7. GLOBAL DEMAND, FITNESS FOR PURPOSE AND THE CARNEGIE SYSTEM, A CASE STUDY

Global Demand for Mass Education & Student Mobility

Today, universities represent a mass system designed to serve knowledge driven modern society, rather than the elite system which existed in the industrial economy. They are an essential superstructure in civil society in that they foster nation building and sustain economic viability through the continual development of skilled human capital. Moreover, they perform and play an important civil role, i.e., that of mediators between the State and Civil Society, by providing social inclusion for a nation's inhabitants, particularly and the inculcation of values and rules of social and civil behaviour.²¹

The knowledge gap between higher education institutions in developed economies with those in emerging countries has been widening since the 1980s.²² In 1980 there were approximately 51 million students worldwide in higher education. By 1995, there were 82 million, which is an increase of 61% over a fifteen-year period.²³ By 2010, it is estimated that 97 million students will be enrolled in some form of higher education worldwide.²⁴ Recent projections by OECD indicate that by 2025, the higher education sector will grow to 150 million students.²⁵ While the past twenty years has seen an increase in the number of students attending universities worldwide, there has concurrently been a widening gap in the number of tertiary students in emerging countries versus those in developed countries. While there was one doctoral graduate student per 5,000 inhabitants in OECD countries in 1997, there was only one per 70,000 in Brazil, one per 140,000 in Chile and one per 770,000 in Columbia. In a world dominated by new knowledge production, such statistics understandably become a source of concern regarding the possibility of emerging countries to successfully integrate into the new global economy.²⁶ Figure 1 demonstrates the disparity between access to higher education in wealthy nations with that of developing nations.

Figure 9: Global Access to Higher Education in 2002²⁷

	USA	Latin America	India	China
Population	0.275 billion	0.50 billion	1 billion	1.25 billion
0-14 year olds	21%	36%	32%	26%
18-22 year olds w/higher education access	42%	19%	4%	3%
Public Expenditure on Education (\$B)	\$450	\$93	\$13	\$21

Although wealthy developed countries account for only 15% of the world population, they produce 70% of the world GDP and are responsible for 90% of patents granted worldwide. In developing countries science, technology, research, teaching, learning and innovation infrastructures are low, due to inadequate human resources and equipment, lack of connectivity to the rest of the research world, and generally inadequate public funding.

Global student mobility from emerging economies to highly evolved economies is being propelled by two primary reasons:

- the lack of university seats within the national systems of developing countries
- the demands of the knowledge economy where increasingly economic prosperity is dependent upon both the attraction and management of intellectual capital and the ability to amass, deploy and apply knowledge.

A key driver in demand is the ambition of countries with low participation in post-secondary education to expand access to this sector at a pace that would be difficult to achieve through purely domestic supply. For example Thailand would need to build a new institution serving 10,000 students every year until 2025 in order to satisfy the demand in Thailand.²⁸

The World Bank in 2002 identified a number of challenges facing higher education over the coming decades:²⁹

- The emerging role of knowledge as a major driver of economic development
- The appearance of new providers of tertiary education in a *borderless education environment*.
- The transformation of modes of delivery and organizational patterns in tertiary education as a result of the information and communications revolution.
- The rise of market forces in tertiary education and the emergence of a global market for advanced human capital.
- The increase in requests from World Bank client-countries for financial support for tertiary education reform and development.

The recognition of the need for a balanced and comprehensive view of education as a holistic system that includes not only the human capital contribution of tertiary education but also its critical humanistic and social capital building dimensions and its role as an important and necessary global public good.

Fitness for Purpose: the Carnegie System, a case study

The global economy built around the knowledge economy requires a diverse mass system of higher education which can accommodate the universal attainment of higher education for all. Such a system must have the capacity to serve all of the nation's inhabitants regardless of socioeconomic background or geographic location. Australia's burgeoning higher education industry is diverse and in many respects reflects the growing need of our society to provide for the universal attainment of higher education for all Australians.

Of the nearly 200 higher education institutions delivering courses to Australian students, 150 of these are private higher education institutions, many of which serve the needs of specific constituent groups across our nation, including:

- faith-based institutions
- Visual and performing arts institutions
- Institutions which serve specific professions, e.g. law, nursing, law enforcement, counselling and accounting

The United States also has an extraordinarily diverse higher education industry which is 17 times larger than Australia's, therefore, we might learn something from the way in which their system has evolved to accommodate a mass system of some 17.5 million students enrolled across 4,300 institutions. These institutions range from public and private universities, two-year public and private community colleges, to Bachelor level liberal arts colleges to Master level universities.

In 1973 the Carnegie Foundation for the Advancement of Teaching was founded for the purpose of conducting research on higher education trends. In 1976, it produced its first report on its classification system for accredited degree granting higher education institutions. The classification system has been modified a number of time over the past several decades and in 2005, it was further amended to reflect the increasing diversity of the U.S. higher education industry. The following tables reflect the 2005 Classification system.³⁰

<p>Associate Colleges</p> <p>institutions where all degrees are at the associate's level, or where bachelor's degrees account for less than 10 percent of all undergraduate degrees. Excludes institutions eligible for classification as Tribal Colleges or Special Focus Institutions.</p>	<ul style="list-style-type: none"> – Associate's—Public Rural-serving Small – Associate's—Public Rural-serving Medium – Associate's—Public Rural-serving Large – Associate's—Public Suburban-serving Single Campus – Associate's—Public Suburban-serving Multicampus – Associate's—Public Urban-serving Single Campus – Associate's—Public Urban-serving Multicampus – Associate's—Public Special Use – Associate's—Private Not-for-profit – Associate's—Private For-profit
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	<ul style="list-style-type: none"> – Associate's—Public 2-year Colleges under Universities – Associate's—Public 4-year, Primarily Associate's – Associate's—Private Not-for-profit 4-year, Primarily Associate's – Associate's—Private For-profit 4-year, Primarily Associate's
<p>Baccalaureate Colleges</p> <p>Institutions where baccalaureate degrees represent at least 10 percent of all undergraduate degrees and that award fewer than 50 master's degrees or 20 doctoral degrees per year. (Some institutions above the master's degree threshold are also included. Excludes Special Focus Institutions and Tribal Colleges.</p>	<ul style="list-style-type: none"> – Baccalaureate Colleges—Arts & Sciences – Baccalaureate Colleges—Diverse Fields – Baccalaureate/Associate's Colleges
<p>Master's Colleges and Universities</p> <p>Master's Colleges and Universities – institutions that award at least 50 master's degrees and fewer than 20 doctoral degrees per year. (Some institutions above the master's degree threshold are included among Baccalaureate Colleges, and some below the threshold are included among Master's Colleges and Universities; Excludes Special Focus Institutions and Tribal Colleges.</p>	<ul style="list-style-type: none"> – Master's Colleges and Universities (larger programs) – Master's Colleges and Universities (medium programs) – Master's Colleges and Universities (smaller programs)
<p>Doctorate-granting Universities</p> <p>Institutions that award at least 20 doctoral degrees per year (excluding doctoral-level degrees that qualify recipients for entry into professional practice, such as the JD, MD, PharmD, DPT, etc.). Excludes Special Focus Institutions and Tribal Colleges.</p>	<ul style="list-style-type: none"> – Research Universities (very high research activity) – Research Universities (high research activity) – Doctoral/Research Universities
<p>Special Focus Institutions</p> <p>Includes institutions awarding baccalaureate or higher-level degrees where a high concentration of degrees is in a single field or set of related fields. Excludes Tribal Colleges. Theological seminaries, Bible colleges, and other faith-related institutions</p>	<ul style="list-style-type: none"> – Medical schools and medical centers – Other health profession schools – Schools of engineering – Other technology-related schools – Schools of business and management – Schools of art, music, and design – Schools of law – Other special-focus institutions
<p>Tribal Colleges</p>	<ul style="list-style-type: none"> – Colleges and Universities that are members of the American Indian Higher Education Consortium, as identified in IPEDS Institutional Characteristics.

Figure 10: U.S. Student Enrolment by Carnegie (Basic) Classification Category³¹

Category	Institutions	Percent	Total Enrolment	Percent	Average Enrolment
Associate's--Public Rural-serving Small	142	3.20%	133,027	0.80%	937
Associate's--Public Rural-serving Medium	311	7.10%	943,701	5.40%	3,034
Associate's--Public Rural-serving Large	144	3.30%	1,087,790	6.20%	7,554
Associate's--Public Suburban-serving Single Campus	110	2.50%	854,259	4.90%	7,766
Associate's--Public Suburban-serving Multicampus	100	2.30%	1,051,012	6.00%	10,510
Associate's--Public Urban-serving Single Campus	32	0.70%	275,307	1.60%	8,603
Assoc/Pub-U-MC: Associate's--Public Urban-serving Multicampus	152	3.50%	1,743,179	9.90%	11,468
Associate's--Public Special Use	14	0.30%	30,220	0.20%	2,159
Associate's--Private Not-for-profit	114	2.60%	43,961	0.30%	386
Associate's--Private For-profit	531	12.10%	272,833	1.60%	514
Associate's--Public 2-year Colleges under 4-year Universities	55	1.30%	134,222	0.80%	2,440
Associate's--Public 4-year Primarily Associate's	18	0.40%	148,416	0.80%	8,245
Associate's--Private Not-for-profit 4-year Primarily Associate's	20	0.50%	12,052	0.10%	603
Associate's--Private For-profit 4-year Primarily Associate's	71	1.60%	48,272	0.30%	680
Research Universities (very high research activity)	96	2.20%	2,365,228	13.50%	24,638
Research Universities (high research activity)	103	2.30%	1,693,731	9.60%	16,444
Doctoral/Research Universities	83	1.90%	848,316	4.80%	10,221
Master's Colleges and Universities (larger programs)	346	7.90%	2,812,650	16.00%	8,129
Master's Colleges and Universities (medium programs)	190	4.30%	739,648	4.20%	3,893
Master's Colleges and Universities (smaller programs)	128	2.90%	349,859	2.00%	2,733
Baccalaureate Colleges--Arts & Sciences	287	6.50%	527,533	3.00%	1,838
Baccalaureate Colleges--Diverse Fields	360	8.20%	595,754	3.40%	1,655
Baccalaureate/Associate's Colleges	120	2.70%	267,832	1.50%	2,232
Special Focus Institutions--Theological seminaries, Bible colleges, and other faith-related institutions	314	7.20%	101,742	0.60%	324
Special Focus Institutions--Medical schools and medical centers	57	1.30%	90,701	0.50%	1,591
Special Focus Institutions--Other health professions schools	129	2.90%	59,634	0.30%	462
Special Focus Institutions--Schools of engineering	8	0.20%	14,259	0.10%	1,782
Special Focus Institutions--Other technology-related schools	57	1.30%	40,160	0.20%	705
Special Focus Institutions--Schools of business and management	64	1.50%	92,222	0.50%	1,441
Special Focus Institutions--Schools of art, music, and design	106	2.40%	128,273	0.70%	1,210
Special Focus Institutions--Schools of law	32	0.70%	25,683	0.10%	803
Special Focus Institutions--Other special-focus institutions	39	0.90%	17,796	0.10%	456
Tribal Colleges	32	0.70%	17,599	0.10%	550
Not classified	26	0.60%	3,698	0.00%	142
All Institutions	4,391	17,570,569	17,570,569	100.00%	4,001

In addition to its basic classifications noted above, the Carnegie Foundation also classifies institution by enrolment profile:

- Exclusively undergraduate two-year
- Exclusively undergraduate four-year
- Very high undergraduate
- High undergraduate
- Majority undergraduate
- Majority graduate/professional
- Exclusively graduate/professional

Figure 11: Enrolment Distribution of U.S. Institutions by Carnegie Classification Category³²

Category	Institutions	Percent	Total Enrolment	Percent	Average Enrolment
Exclusively Undergraduate Two-Year	1,769	40.30%	6,715,865	38.20%	3,796
Exclusively Undergraduate Four-Year	698	15.90%	868,548	4.90%	1,244
Very High Undergraduate	594	13.50%	2,404,272	13.70%	4,048
High Undergraduate	523	11.90%	4,603,443	26.20%	8,802
Majority Undergraduate	303	6.90%	2,344,435	13.30%	7,737
Majority Graduate/Professional	168	3.80%	499,911	2.80%	2,976
Exclusively Graduate/Professional	287	6.50%	134,095	0.80%	467
Not Classified	49	1.10%	0	0.00%	NA
All Institutions	4,391	100.00%	17,570,569	100.00%	4,001

Figure 12: Carnegie Classification of Higher Education Institutions & Enrolment Patterns³³

Category	Institutions	Percent	Total Enrolment	Percent	Average Enrolment
Exclusively Undergraduate Two-Year	1,769	40.30%	6,715,865	38.20%	3,796
Exclusively Undergraduate Four-Year	698	15.90%	868,548	4.90%	1,244
Very High Undergraduate	594	13.50%	2,404,272	13.70%	4,048
High Undergraduate	523	11.90%	4,603,443	26.20%	8,802
Majority Undergraduate	303	6.90%	2,344,435	13.30%	7,737
Majority Graduate/Professional	168	3.80%	499,911	2.80%	2,976
Exclusively Graduate/Professional	287	6.50%	134,095	0.80%	467
Not classified	49	1.10%	0	0.00%	NA
All Institutions	4,391	100.00%	17,570,569	100.00%	4,001

Figure 13: U.S. Student Enrolment Profile by Carnegie Classification Categories³⁴

Category	Public	Private, not-for-profit	Private, for-profit
Exclusively Undergraduate Two-Year	6,362,567	48,392	304,906
Exclusively Undergraduate Four-year	295,207	422,384	150,957
Very High Undergraduate	1,636,263	711,617	56,392
High Undergraduate	3,710,115	768,456	124,872
Majority Undergraduate	991,464	1,137,257	215,714
Majority Graduate/Professional	69,262	389,827	40,822
Exclusively Graduate/Professional	16,341	111,980	5,774
All Institutions	13,081,219	3,589,913	899,437

8. BRIDGING THE GREAT DIVIDE: A NATIONAL SYSTEM OF ACCOUNTABILITY

Chapter 6 identifies the current construct of the Australian education system and identifies its weaknesses and vulnerabilities and how the system can be re-designed to accommodate a knowledge-based economy, underpinned by excellence, accountability and transparency and which supports the universal attainment of higher education for all Australian citizens.

Summary

There must be a national cross sectoral approach to our national system of education, so that all students regardless of socioeconomic background or geographic location have universal and equal access to education which is marked by excellence, underpinned by integrity and provides the sustained exposure to a liberal education from Kindergarten through year 12, and which ensure that all Australians have the requisite preparation for the universal attainment of an undergraduate degree and beyond.

Such a system must serve all sectors of education from schools, to vocational education and training to undergraduate liberal arts, professional or graduate education. While it must be accountable to Government, which serves as the behest and invitation of the people who elect them, it has no place under the administration of bureaucrats and career civil servants, but rather is best placed under the supervision of a ***College or Commission Australian Scholars*** – Australia's most gifted scholars and educational thinkers. For it is their steady hand and wisdom that we need to design and develop a new national system of education which will serve the Nation, its people and its interests over the course of the next century, to ensure that we as a people are able to remain our competitive place among the most prosperous nations of the world. If the World Bank and UNESCO Taskforce on Higher Education and Society are correct in their assessment that 'Higher Education is to a knowledge economy as primary education is to an agrarian economy and secondary education is to an industrial economy'³⁵ then the education Australia provides today's generation will determine whether the next generation of Australians are equipped with the skills fit for an agrarian, industrial or knowledge economy.³⁶

7. CONCLUSION: ADVANCING AUSTRALIA TO A PROSPEROUS FUTURE

In order to achieve universal attainment of higher education for all Australians, regardless of the socioeconomic background, ethnicity, gender, race or geographic background we need to start anew and design a system that equips students with the knowledge and skills so that they in turn can lead rewarding and productive personal lives and contribute to the economic well being of our nation. In short we need an educational system constructed to accommodate the needs of a knowledge-based economy which serves the nation, its people and the national interest.

The 21 st Century Academy that Serves the Australian National Interest ³⁷	
<p><i>Australian needs a rigorous, practical liberal education for all students built on...</i></p>	<ul style="list-style-type: none"> – the belief that all students are capable of high level learning – a commitment to inclusiveness and equal access to high quality college education for all individuals and groups – clear and coherent expectations of achievement, aligned throughout educational levels – solid preparation for challenging college work achieved through excellent K-12 teaching and curricula – a focus on learning and the quality of student accomplishment – a culture of intentionality at all educational levels: explicit goals achieved through appropriate practices and strategic allocation of resources – a culture of evidence based on assessment and accountability – public support for universal higher achievement – joint responsibility and concerted action by all stakeholders.
<p><i>Australian needs a rigorous, practical liberal education system that...</i></p>	<ul style="list-style-type: none"> – coordinates expectations for learning vertically through the years and horizontally across subjects and institutions – progressively develops intellectual capacities, knowledge in essential areas, and ethical and civic responsibility – serves a diversity of learning styles, life experiences, and enrolment patterns – meets students at their ability levels and moves them all toward greater achievement – clearly communicates goals and achievements to the public – recognizes the need of society for skilled, knowledgeable graduates prepared for work, citizenship, and a rewarding life in the twenty-first century.

The 21 st Century Academy that Serves the Australian National Interest	
<p><i>Australian needs education institutions, regardless of their sector, classification, size or geographic location that...</i></p>	<ul style="list-style-type: none"> – value themselves as learning communities whose mission is to improve student achievement – respond to the students they serve: their diversity, enrolment patterns, preparation, aspirations – assign resources to support increased faculty attention to student learning – accept responsibility for improved teacher education – promote collaborative leadership among the faculty, administrators, and other key stakeholders – join with state and business leaders to align with society's needs – as a group, offer multiple educational models.
<p><i>Australian needs school and higher education faculty members who...</i></p>	<ul style="list-style-type: none"> – hold themselves to high standards of teaching – hold their students to high standards of intellectual work that require strong commitments of time and attention – set clear, interrelated goals for their courses, academic programs, and student learning – accept responsibility for, and teach to achieve, the goals – design coherent curricula and employ teaching practices to help all students achieve the goals – regularly assess their own and student success, and use the results to improve learning – individually and collectively assume responsibility for the entire curriculum – embody life-long learning by engaging in professional development to improve teaching.
<p><i>Australian needs a national approach to curriculum that...</i></p>	<ul style="list-style-type: none"> – prepares all students for successful careers, enriched lives, and engaged Australian and global citizenship – develops self-directed, integrative, intentional learners who are empowered, informed, responsible, and thoughtfully reflective about their education – is based on a practical liberal education in which students learn and apply their learning in multiple ways to complex problems – is characterized by a diversity of perspectives – is informed by technology and develops information literacy – sets high standards of performance, but without prescribing a standardized path.
<p><i>Australian needs classrooms that...</i></p>	<ul style="list-style-type: none"> – while teaching knowledge, also ask students to apply it – stress inquiry and engagement with unscripted and contested problems, including those drawn from real life – in an intentional way, employ the diversity of the student body as a learning tool – develop and value collaborative as well as individual achievement.

APPENDICES

Appendix A – Top 15 Nations by GDP 2008

Appendix B – Shanghai Jiao Tong International Rankings 2007 – Top 100

Appendix C – Times Higher Education International Rankings 2007 – Top 100

Appendix D – Newsweek International Rankings 2007 – Top 100

Appendix E – US News & World Report National US Rankings 2008 – Top 25 & By Discipline

Appendix F – Institutional Profiles, Harvard, Yale & Princeton 2008

Appendix G – Educational Attainments Rates of Top 15 GDP Producing Nations

Appendix H – Australian Higher Education Participation Rates 2006

Appendix I – Australian Educational Attainment Rates 2006

Appendix J – Australian Year 12 Science & Math Enrolment 2006

Appendix K – Australian Year 12 Social Sciences & Humanities 2006

Appendix L – Australian Year 12 Foreign Language 2006

Appendix M – Australian Year 12 English Composition 2006

Appendix O – US Higher Education Participation Rates 2006-2007

Appendix P – US Educational Attainment Rates 2006-2007

Appendix Q – US Year 12 Science & Math Enrolment, 1982-2004

Appendix R – Singapore Year 12 Education Attainment Rates

NOTES

¹ The Australian economy needs an education revolution, Australian Labour Party, January 2007.

² Australian Productivity Commission, 2006 statistics.

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⁴ Bloom, Dr. Bloom, David E., Clarence J. Gamble Professor of Economics and Demography, Harvard University, "Mastering Globalisation: From Ideas to Action on Higher Education Reform, presented at the conference: "Globalisation: What Issues are at State for Universities," Université Laval, Quebec, September 2002.

⁵ Reich, Robert, *The Work of Nations*, Random House, New York 1991 and Breton, Gilles, "Higher Education: From Internationalisation to Globalisation, presented at the conference: "Globalisation: What Issues are at State for Universities," Université Laval, Quebec, September 2002.

⁶ Wriston, Walter, *Journal of Foreign Affairs*, September 1997, quoted by Friedman, Thomas L, *The Lexus and the Olive Tree*, 1999, p175.

⁷ Boom, David E., Clarence J. Gamble Professor of Economics and Demography, Harvard University, "Mastering Globalisation: From Ideas to Action on Higher Education Reform, presented at the conference: "Globalisation: What Issues are at State for Universities," Université Laval, Quebec, September 2002.

⁸ Reich, Robert, *The Work of Nations*, New York 1991, pp. 171-184.

⁹ Ibid.

¹⁰ Bloom, Dr. Bloom, David E., Clarence J. Gamble Professor of Economics and Demography, Harvard University, paper presented "Mastering Globalisation: From Ideas to Action on Higher Education Reform, presented at the conference: "Globalisation: What Issues are at State for Universities," Université Laval, Quebec, September 2002.

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¹⁵ *World University Rankings (2007)*, Times Higher Education Supplement.

¹⁶ *The Top Global Universities (2006)*, Newsweek International.

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²¹ Brooks, Chris, W., Director, Public Affairs and Communication, OECD, paper presentation: Globalization – A Political Perspective, presented at "Globalisation: What issues are at Stake for Universities," Université Laval, Quebec, Canada, September 2002.

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²³ Sadlak, J, "Globalisation and concurrent challenges for higher education," in Scott, P. (Editor), *The globalisation of higher education*, London, Open University Press, 1998, pp. 100-129.

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²⁷ World Bank and UNESCO statistics – 2002. Note: Latin America includes Mexico, Central America and South America.

²⁸ Report by Donald Hirsch, Rapporteur, OECD/US Forum on Trade in Educational Services, May 2002, Washington, D.C.

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³¹ Ibid.

³² Ibid and 2005 Carnegie Classification; National Center for Educations Statistics, IPEDS Fall Enrolment (2004). NOTES: 1.) Branch campuses are counted separately if reported separately in IPEDS; 2.) Fall enrolment does not necessarily reflect the total number of students served over the course of a year; and 3.) Percentage details may not sum to 100 due to rounding.

³³ 2005 Carnegie Classification of Higher Education Institutions, U.S. National Center for Educational Statistics, IPEDS Institutional Characteristics and Fall Enrolment (2004). NOTES: 1.) Branch campuses are counted separately if reported separately in IPEDS; 2.) Fall enrolment does not necessarily reflect the total number of students served over the course of a year and, 3.) Percentage details may not sum to 100 due to rounding.

³⁴ Ibid, NOTES: 1.) Branch campuses are counted separately if reported separately in IPEDS; 2.) Fall enrolment does not necessarily reflect the total number of students served over the course of a year; and, 3.) 'Public' includes tribally-controlled institutions."

³⁵ Boom, David E., Clarence J. Gamble Professor of Economics and Demography, Harvard University, "Mastering Globalisation: From Ideas to Action on Higher Education Reform, presented at the conference: "Globalisation: What Issues are at State for Universities," Université Laval, Quebec, September 2002.

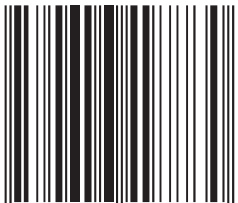
³⁶ Tennant, Susan Carole Egloff, Founding Member & Public Officer, Citizens for Academic Excellence & Integrity, Adopted as an organisation pretext and preamble for the organisation by the Executive Committee, July 2008.

³⁷ The attributes for the Australian Academy of the 21st Century were borrowed from the National Panel Report of the American Association of Colleges and Universities, *Greater Expectations: A New Vision for Learning as a Nation Goes to College*, 2002.



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