

**GRADUATE ENTRY TEACHER EDUCATION  
A CASE FOR TWO YEAR PROGRAMS**

**Professor Brian Caldwell  
Managing Director and Principal Consultant  
Educational Transformations Pty Ltd**

**A report commissioned by the Australian Institute of Teaching and School  
Leadership (AITSL)**

**31 January 2012**

## CONTENTS

List of Tables	ii
Acknowledgements	ii
Executive Summary	iii
National Program Standards	1
Response of the Productivity Commission	2
Underpinning logic	3
Educational outcomes and personal, social and economic wellbeing	4
LSAY Studies by ACER (Australia)	5
Related research at the Australian National University (Leigh and Ryan)	6
McKinsey & Company Study (USA)	7
Hanushek-Woessmann Study (International)	8
Studies of impact on health and crime (USA)	8
International developments and related research	9
The Education Schools Project (USA)	10
The Stanford Studies	12
The National Bureau of Economic Research (NBER) Study (USA)	13
Scotland	14
Practice in selected high-performing countries	15
Relationship between length and level of teacher education and outcomes in schools	15
The Bologna Declaration	16
Finland as an international exemplar	18
Entry requirements	19
Practicum	20
Assessment	21
Literacy and numeracy	22
Special needs	22
Parent and community engagement	23
Indigenous education	23
National Graduate Teaching Standards for Australia (AITSL)	24
Conclusion	26
References	28

## **LIST OF TABLES**

Table 1: Components of teacher education programs for primary school teachers in Finland	20
Table 2: Components of teacher education programs for secondary school teachers in Finland	21
Table 3: National Graduate Teaching Standards: Professional Knowledge Standard 1 – Know students and how they learn	25
Table 4: National Graduate Teaching Standards: Professional Practice Standard 3 – Plan for and implement effective teaching and learning	26

## **ACKNOWLEDGEMENTS**

The assistance of two colleagues at Educational Transformations is acknowledged. Senior Consulting Researcher Dr Tanya Vaughan reviewed policy and practice in Finland and in other high-performing nations. Consulting Researcher Fiona Longmuir reviewed developments in Member States of the European Union following the adoption of the Bologna Declaration.

## EXECUTIVE SUMMARY

### Context

In April 2011, the Ministerial Council for Education, Early Childhood Development and Youth Affairs (MCEECDYA) endorsed a proposal for new nationally consistent arrangements for the accreditation of initial teacher education programs in Australia. The endorsed arrangements are contained in *Accreditation of initial teacher education programs in Australia: Standards and procedures* (AITSL, 2011).

These Standards and Procedures were developed by the Australian Institute for Teaching and School Leadership (AITSL) in consultation with key stakeholders including teacher regulatory authorities, employers of teachers and the Australian Council of Deans of Education. They include new National Program Standards, which are agreed requirements for initial teacher education programs.

Program Standard 1.3 requires that graduate entry programs will be a minimum of a two-year qualification. Until now most jurisdictions have required a minimum of one year for a graduate entry program, although there has been a growing trend among providers to voluntarily replace these with two year programs.

On 17 November 2011 the Productivity Commission released its Schools Workforce draft report (Productivity Commission, 2011). A recommendation of this report is that MCEECDYA direct AITSL to reverse this policy so that the mandated minimum length of graduate entry programs would continue to be one year.

This report contains a review of evidence supporting the MCEEDYA / AITSL position that candidates in graduate entry programs be required to successfully complete a two-year program.

### Findings

A comprehensive study of research, policy and practice around the world was conducted, with particular attention to the findings of reviews of teacher education in the United Kingdom, especially Scotland; the United States; Europe, including the outcomes of efforts to develop a uniform framework among Member States of the European Union following the Bologna Declaration (1999); and approaches in high-performing nations such as Finland, Singapore and South Korea. Research on the relationship between initial teacher education and outcomes for school students was summarised and critically appraised. The views of leading scholars in the field were cited.

The following summarises findings which, taken as a whole, provide the evidence for and logic of a two-year program:

1. While the overall performance of Australian students in international tests is impressive, the gap between high- and low-performing students is relatively high.
2. Low academic performance in primary and secondary schools has deleterious consequences for the individual student in social and economic terms as well as for society in general.
3. While the background of students is an important factor in accounting for low performance, there is unassailable evidence that the quality of teaching can

- make a difference in closing the gap and yielding the individual and social benefits that are presently denied to many students.
4. While the characteristics of teachers who contribute to the desired individual and social benefits are now evident in robust research, many of the strategies that can build the capacity of all teachers, or remove incapable teachers from the scene, are highly contentious and difficult to implement.
  5. A powerful and preferable strategy for building the capacity of all teachers to make a contribution to individual and societal well-being lies in the design and delivery of initial teacher education for students who have the capacity to benefit from such programs.
  6. The knowledge, skills and other attributes of graduates can be specified on the basis of an unprecedentedly robust evidence base, often in the form of professional standards, and the time required to develop them renders obsolete the traditional one-year graduate program that has remained virtually unchanged for more than a half-century.
  7. Some high-performing countries maintain a four-year program or a one-year graduate program but their social circumstances differ in dramatic ways from those that prevail in Australia, especially in respect to a society that lacks the diversity of Australia and a culture that supports the profession and the importance of school.
  8. World-wide trends in professional knowledge point to the need for a two-year graduate program and there are notable international exemplars that suggest that two-year programs are likely to contribute to the achievement of the specified individual and social benefits.
  9. The National Professional Standards developed by AITSL and adopted by MCEECDYA require that at least two-years be devoted to a graduate program of initial teacher education.
  10. A phased implementation of compulsory two-year graduate programs is appropriate under the conditions that prevail in Australia.

## **Conclusion**

1. Independent observers in the wider community would likely find it difficult to believe that one-year graduate programs of more than a half-century standing are still the normal expectation. They suited an earlier era when most who completed them were intending to become secondary teachers in schools where retention rates to upper levels were low and failure rates high.
2. There have been changes within the single year, including the accommodation of longer practicums, but it is apparent that more is being crammed into the traditional academic year.
3. Larger numbers of graduates who seek appointments in primary schools are undertaking the graduate program compared to the dominance in the past of those who wish to teach in secondary schools. This trend fits well with research on rates of return to schooling. Primary students who do not do well are unlikely to do well in secondary schools so the quality of teaching in the early years of primary schools is vital.
4. The trend to graduate programs of longer duration than one year is apparent in countries that are comparable to Australia. There is no evidence of a trend to reduce the length to one year or less.
5. An early adopter of the two-year program dating from 1979 is Finland that has successfully addressed the issues now being faced in Australia, with observers invariably citing the length, quality and standing of its program.

6. The difficulty in implementing structural change of this nature is illustrated by experience in Europe where more than a decade has elapsed since agreement was reached on a 3+2 model under the Bologna Declaration yet, while some progress has been made, few nations have adopted it.
7. AITSL has reached agreement with regulatory authorities as well as the government and non-government education sectors that 2012 will be the last year in which one-year graduate entry programs will be accredited, and that the two-year requirement will apply to any accreditation from 2013. Accreditation is valid for a period of 5 years.

## **GRADUATE ENTRY TEACHER EDUCATION: A CASE FOR TWO YEAR PROGRAMS**

In April 2011, the Ministerial Council for Education, Early Childhood Development and Youth Affairs (MCEECDYA) endorsed a proposal for new nationally consistent arrangements for the accreditation of initial teacher education programs in Australia. The endorsed arrangements are contained in *Accreditation of initial teacher education programs in Australia: Standards and procedures* (AITSL, 2011).

These Standards and Procedures were developed by the Australian Institute for Teaching and School Leadership (AITSL) in consultation with key stakeholders including teacher regulatory authorities, employers of teachers and the Australian Council of Deans of Education. They include new National Program Standards, which are agreed requirements for initial teacher education programs.

Program Standard 1.3 requires that graduate entry programs will be a minimum of a two-year qualification. Until now most jurisdictions have required a minimum of one year for a graduate entry program, although there has been a growing trend among providers to voluntarily replace these with two year programs.

On 17 November 2011 the Productivity Commission released its Schools Workforce draft report (Productivity Commission, 2011). A recommendation of this report is that MCEECDYA direct AITSL to reverse this policy so that the mandated minimum length of graduate entry programs would continue to be one year.

This report contains a review of evidence supporting the MCEEDYA / AITSL position that candidates in graduate entry programs be required to successfully complete a two-year program.

### **National Program Standards**

This report is concerned only with the National Program Standards as they concern graduate entry. It does not address the issue of whether all programs should require the equivalent of five years of initial teacher education. The National Program Standards of AITSL are clear and are correctly stated in the draft report of the Productivity Commission. The relevant excerpts are as follows:

#### *Standard 1: Program Outcomes* *Program Standard 1.3*

'A three-year undergraduate degree providing the required discipline knowledge, plus a two-year graduate entry professional qualification'

#### *Standard 4: Program structure and content* *Program Standard 4.4 Primary programs*

'Graduate entry primary programs must comprise at least two years of full-time equivalent professional studies in education.'

These programs must include at least one year of full-time equivalent study of discipline-specific curriculum and pedagogical studies across the learning areas of the primary school curriculum. Programs must include at least one-quarter of a year of full-time equivalent study of discipline-specific curriculum and pedagogical studies

in each of English / literacy and mathematics / numeracy, and at least one-eighth of a year in full-time equivalent study of discipline-specific curriculum and pedagogical studies in science.

These programs must include up to one-quarter of a year of full-time equivalent study of relevant discipline studies as elective units which could be undertaken by applicants who do not fully meet prerequisite discipline study requirements’.

#### *Program Standard 4.5 Secondary programs*

‘Graduate entry secondary programs must comprise at least two years of full-time equivalent professional studies in education.

Programs must include a minimum of one-quarter of a year of full-time equivalent study of discipline-specific curriculum and pedagogical studies for each teaching area that the graduate intends to teach. The discipline-specific curriculum and pedagogical studies should prepare graduates to teach across the years of secondary education.

These programs may include up to one-quarter of a year of full-time equivalent study of relevant discipline studies as elective units which could be undertaken by applicants who do not fully meet prerequisite discipline study requirements’.

#### *Standard 5: School partnerships* *Program Standard 5.3*

‘The professional experience component of each program must include no fewer than 80 days of well-structured, supervised and assessed teaching practice in schools in undergraduate and double-degree teacher education programs and no fewer than 60 days in graduate entry programs’.

### **Response of the Productivity Commission**

Chapter 5 of the draft report of the Productivity Commission includes a response to the foregoing. While interesting and relevant evidence is presented, its conclusion that a two-year program should be voluntary does not stand up to critical scrutiny.

The draft summarises evidence from three sources that pre-service programs in general are viewed in a poor light (Box 5.2, p. 66), thus establishing a case for important changes that the National Program Standards developed by AITSL from a much larger evidence base are intended to address. The draft also presents a summary of ‘international empirical evidence on the effectiveness of pre-service training’ (Box 5.3, p. 67). This is a wholly inadequate and somewhat outdated account. For example, a 2003 report is cited: ‘Research that compares student outcomes for teachers with traditional [approved university program] and emergency [temporary short-term qualification] certification suggests that students of traditionally-certified teachers perform only marginally better’. Other evidence along similar lines is summarised very briefly and the one authority that offers a counter point of view is not followed up; this is a citation of the conclusion of Darling-Hammond and colleagues which found that ‘traditional certification did improve [school] student outcomes’. The impact of ‘alternative’ certification is also summarised, and this concerned the effects of Teacher for America: ‘this work finds that there is little difference in student outcomes between Teach for America associates and traditionally-trained teachers’. Leaving aside the findings as far as

Teach for America are concerned, it is striking that there is minimal reference to studies after the mid-2000s and that only research in the United States is addressed. Apart from reference to the two-year program at the University of Melbourne, there is no account of two-year programs in other countries. At the very least one would expect there to be an account of pre-service preparation in Finland. This shortcoming is addressed in this report commissioned by AITSL along with evidence from a range of up-to-date studies.

The recommendation in the draft report of the Productivity Commission that two-year graduate programs should be voluntary seems to be based on the fact that an assessment of the Master of Teaching at the University of Melbourne is incomplete, with the final report by the Australian Council for Educational Research not due until 2013. The draft concludes that 'given the mixed nature of the available evidence, and the size of the investment in pre-service training, building the evidence base in this area by trialling and properly evaluating different ways of delivering pre-service training should be a high priority' (p. 68). Ongoing research is important but, as presented in the pages that follow, to persist with one-year graduate programs that have been in place for more than a half century is unsatisfactory, given educational, social and economic needs in Australia. The University of Melbourne program is not described in the pages that follow; an adequate summary was included in the draft report of the Productivity Commission. The case for two-year programs can be made without reference to this program which is, nevertheless, a counterpart of international exemplars already in place or proposed.

### **Underpinning logic**

The following summarises the logic of the case for a two-year program as presented in the pages that follow:

1. While the overall performance of Australian students in international tests is impressive, the gap between high- and low-performing students is relatively high.
2. Low academic performance in primary and secondary schools has deleterious consequences for the individual student in social and economic terms as well as for society in general.
3. While the background of students is an important factor in accounting for low performance, there is unassailable evidence that the quality of teaching can make a difference in closing the gap and yielding the individual and social benefits that are presently denied to many students.
4. While the characteristics of teachers who contribute to the desired individual and social benefits are now evident in robust research, many of the strategies that can build the capacity of all teachers, or remove incapable teachers from the scene, are highly contentious and difficult to implement.
5. A powerful and preferable strategy for building the capacity of all teachers to make a contribution to individual and societal well-being lies in the design and delivery of initial teacher education for students who have the capacity to benefit from such programs.
6. The knowledge, skills and other attributes of graduates can be specified on the basis of an unprecedentedly robust evidence base, often in the form of professional standards, and the time required to develop them renders obsolete the traditional one-year graduate program that has remained virtually unchanged for more than a half-century.

7. Some high-performing countries maintain a four-year program or a one-year graduate program but their social circumstances differ in dramatic ways from those that prevail in Australia, especially in respect to a society that lacks the diversity of Australia and a culture that supports the profession and the importance of school.
8. World-wide trends in professional knowledge point to the need for a two-year graduate program and there are notable international exemplars that suggest that two-year programs are likely to contribute to the achievement of the specified individual and social benefits.
9. The National Professional Standards developed by AITSL and adopted by MCEECDYA require that at least two-years be devoted to a graduate program of initial teacher education.
10. A phased implementation of compulsory two-year graduate programs is appropriate under the conditions that prevail in Australia.

The organisation of this report reflects the logic summarised above.

### **Educational outcomes and personal, social and economic wellbeing**

The Productivity Commission is 'the Australian Government's independent research and advisory body on a range of economic, social and environmental issues affecting the welfare of Australians', as cited in the draft report, which noted that 'a well-performing school system is a cornerstone of a successful society. It benefits individuals, the functioning and cohesion of society and the performance of the economy more generally' (Productivity Commission, 2011, p. xvii). The role of teachers and others in the workforce is acknowledged: 'in addition to carrying the most direct responsibility of student learning outcomes, the workforce is the largest cost driver within the schooling system' (Productivity Commission, 2011, p. xvii).

The draft report acknowledges that overall Australian students do well in international tests of student achievement and that Australia's best students do particularly well. It acknowledges that the main issue is the low performance of many students, especially those from disadvantaged backgrounds, and that the characteristics and preparation of the workforce are central to addressing the matter. It is therefore important that the Productivity Commission and stakeholders in general acknowledge the scale of the problem and argue the case that the quality of teachers and teaching is an important factor and, by extension, critical for achieving social and economic benefits to the individual and the nation. Successful pre-service programs for teachers are vital. This report argues the case that two-year pre-service graduate programs are necessary.

The first part of the logic takes us into the realm of the costs and benefits to the individual and society of having all students do well in their schooling, and research on rates of return on investments in schooling is relevant. It is the view of the consultant that the frame of thinking and the evidence that populates it are not well understood by those engaged in the design of pre-service programs and across the wider profession. The OECD provides a helpful definition of rate of return:

The social internal rate of return refers to the costs and benefits to society of investment in education, which includes the opportunity cost of people not participating in the production of output and the full cost of the provision of education rather than only the cost borne by the individual. The social benefit includes the increased productivity associated with the investment in

education and the host of possible non-economic benefits, such as lower crime, better health, more social cohesion and more informed and effective citizens. (OECD, 2002)

The following summarise Australian and international studies that highlight the importance of success at each level of schooling. As far as this report is concerned, the critical issue is the extent to which quality of teaching will make a contribution, and then, backcasting, the extent to which a pre-service program in teacher education is a key factor and a graduate program of two year's duration is desirable.

*LSAY Studies by ACER (Australia)*

Especially noteworthy are findings from comprehensive longitudinal studies conducted by the Australian Council for Educational Research (ACER) in association with the Australian Government through its former Department of Education, Training and Youth Affairs (DETYA) known as the *Longitudinal Surveys of Australian Youth (LSAY)*. Commencing in 1995, LSAY drew on more than 20 years of data on Year 9 students as they moved through school and into tertiary education, the labour market and adult life. The following are excerpts from the 2000 report (ACER, 2000).

Earnings at age 19 are related to a range of factors including social background, where young people live, and the schools they attend. Early school achievement is also a strong influence. (p. 1)

Achievement in reading comprehension and numeracy while at school has a moderate, positive impact on earnings as a young adult (up to 10 to 15 years after the tests were taken) regardless of educational qualifications and employment experience. (p. 2)

Young people who have very poor literacy and numeracy skills are more than twice as likely to be out of work at age 19 than those with very good skills. The differences are stronger for boys than for girls. (p. 2)

Early school achievement in literacy and numeracy was the one consistent factor in youth unemployment and unemployment duration. The effect of early school achievement on both the likelihood of becoming unemployed and exiting unemployment remains until at least the age of 30 even when accounting for post-school qualifications and labour market experience. (p. 4)

A more detailed account of the LSAY research is provided by Marks and Ainley (1999). Two set of findings relate to impact of achievement in literacy and numeracy on incidence of unemployment and earnings.

School achievement (in literacy and numeracy) was found to be a consistent factor in unemployment among young adults. Initial analyses revealed a substantial gap in unemployment incidence between those with achievement scores one standard deviation above the mean and those with an achievement score one standard deviation below the mean. The effects of achievement were confirmed in subsequent multivariate analyses showing that its effect was in addition to its effects on qualifications and school completion. The effects of school achievement on the incidence of unemployment remain until at least the age of 30 even when controlling for post-school qualifications. (p. 10)

These analyses show that earlier school achievement in reading comprehension and numeracy has a moderate impact on earnings. This result is not surprising given that other research has found effects of 'ability' on income. Nonetheless, it is significant that students' scores on tests are associated with higher earnings 10 and 15 years after the tests were taken, independent of educational qualifications and employment experience. (p. 14)

As far as social benefits are concerned, the researchers in LSAY raised the following question:

This raises the important question of whether increasing skills in literacy and numeracy among students would substantially lower youth unemployment. The findings from the study suggest that increasing skills could lower unemployment, but the extent of this reduction is difficult to estimate. One argument is that employers have a limited number of vacancies and will select the best available no matter what their absolute level of skills. However, one could also argue that the marginal cost of taking on an additional worker is lower if they have higher skills in literacy and numeracy. (p. 4)

It is striking that the findings make clear that early achievement at the primary level is critically important for outcomes in the secondary years and beyond that in social and economic benefits to the individual. This forms part of the evidence underpinning the case for a two-year graduate program for those who plan to teach in primary schools.

*Related research at the Australian National University (Leigh and Ryan)*

A feature of the studies summarised in the current report is that an unprecedented amount of research in education is being done in places other than faculties of education and that outstanding economists are major contributors. Further comment will be made about this in subsequent pages. Important work is being done in the Social Policy Evaluation, Analysis and Research Centre in the Research School of Social Sciences at Australian National University. Much of this has been led by Professor Andrew Leigh prior to his election to the federal parliament in 2010.

Leigh and Ryan (2008) report a study of the rates of return to education in Australia using three natural experimental methods that examined the impact on subsequent income of an additional year of schooling, the month of birth in relation to age of entry, and of the experiences of twins. The rates of return were 13 percent and 8 percent for an additional year and month of birth, respectively. Combining the results and adjusting for ability bias, the rate of return was 10 percent. Data were drawn from the Household, Income and Labour Dynamics in Australia (HILDA) survey of about 20,000 respondents that commenced in 2001, with the Leigh and Ryan study drawing on data in the 2003 iteration. As far as length of schooling is concerned, the authors conclude that:

[The results] suggest that Australian states that raised the school-leaving age in the 1960s substantially increased the lifetime earnings of individuals of individuals who grew up in states with higher school leaving ages. It also indicates that recently announced increases in the school-leaving age from 15

to 16 in Queensland and South Australia are likely to have a beneficial effect on individuals growing up in those states. (Leigh & Ryan, 2008, p. 159)

These findings and the conclusion are important in the context of the current report. Apart from the impressive rates of return, they highlight the economic benefits to the individual that accrue through an additional year of secondary schooling. The authors refer to the 1960s when the leaving age in most states was 14 or at most 15, when the one-year graduate program was in vogue, and when the normal expectation was that most students would leave school when they reached the compulsory age or, if they proceeded, the failure or drop-out rate was high. It became increasingly important for the one-year program to accommodate the knowledge and skills required of teachers to help boost retention rates for more students at a higher leaving age. As we shall see, it is no longer possible to accomplish this in a one-year program for those who will teach at the secondary level when expectations are even higher.

#### *McKinsey & Company Study (USA)*

Moving to the international domain, one of the most comprehensive studies was undertaken in the United States by McKinsey & Company (2009). The study drew on many sources. The following are key findings:

There is a demonstrable link between early performance in school and subsequent rates of high school graduation, college attendance and completion, and ultimately earnings. While this does not mean that individual students who perform poorly early on cannot improve their performance and subsequent outcomes, the pattern of success leading to success is strong. Tests as early as fourth grade are powerful predictors of future achievement and life outcomes. For example, 87 percent of fourth grade students scoring in the bottom quartile on New York City math achievement tests remained in the bottom half in eighth grade. Students who scored in the top quartile in math in eighth grade had a 40 percent higher median income 12 years later than students who scored in the bottom quartile. In New York City, higher-achieving eighth grade students also have a much higher likelihood of graduating from high school. (p. 19)

These economic stakes come atop other consequences for good or poor educational performance—consequences that have been documented previously but that are often ignored or underestimated. The less educated a person is, the likelier that person is to end up behind bars. A high school dropout is five to eight times more likely to be incarcerated than a college graduate. (p. 19)

There are also health-related costs associated with the educational achievement gap. Lower education is highly correlated with unhealthy lifestyles, including higher incidences of smoking and obesity. (p. 19)

Murnane, Willett, Duhaldeborde and Tyler (Murnane et al., 2000) reported that 'the predicted earnings of a 31-year old male [in the United States] who graduated from high school with strong cognitive skills are 30 percent higher than the predicted earnings of a 31-year old demographically similar male who graduated with weak cognitive skills' (Murnane, 2000, p. 16).

### *Hanushek-Woessmann Study (International)*

Test scores over a 40-year period (1960 to 2000) provided the basis of findings by two of the world's foremost experts in education production function work (analysis of factors explaining student achievement). The following are drawn from a chapter prepared for the Third Edition of the *International Encyclopaedia of Education* by Eric Hanushek (Hoover Institution at Stanford University) and Ludger Woessmann (Ifo Institute for Economic Research at University of Munich) (Hanushek & Woessmann, 2008). They combined measures of student achievement on a range of tests to conclude as follows, with particular reference in the first finding to what the relationship is for more recent scores in the Program for International Student Assessment (PISA):

After controlling for the initial level of GDP per capita and for years of schooling, the test-score measure features a statistically significant effect on the growth of real GDP per capita in 1960–2000. According to this simple specification, test scores that are larger by one standard deviation (measured at the student level across all OECD countries in PISA) are associated with an average annual growth rate in GDP per capita that is two percentage points higher over the whole 40-year period. (p. 6)

The results are very robust to alternative specifications of the growth relationships. For example, the impact of cognitive skills remains qualitatively the same when measured just by the tests performed at the level of lower secondary education, which seems the most readily comparable level. The results are also robust to performing the analyses in two sub-periods, 1960–80 and 1980–2000, and to dropping East Asian countries (which have both high levels of cognitive skill and rapidly growing economies). All in all, the results do not appear to be an artifact of the specific time period, set of countries, or achievement measurement decisions. (p. 7)

The second finding notes that achievement refers to measures for lower secondary students so the teasing out of implications for achievement at the upper primary level depends on a strong relationship between achievements at the two levels, for which there is general support in other studies.

These findings refer to broader benefits for nations as a whole as far as GDP is concerned. They heighten the importance of adequate preparation for graduate teachers.

The work referred to here illustrates a point made earlier in the current report, namely, that economists are developing particular expertise to undertake large-scale studies in education and perform the complex analyses required to draw meaningful conclusions. The work of Leigh and Ryan was cited for Australia and the study cited in this section draws on the work of Hanushek (USA) and Woessmann (Germany), both economists by background but who are now applying their expertise to education on a global scale.

### *Studies of impact on health and crime (USA)*

The impact of student achievement on health and crime has been quantified in recent studies in the United States brought together in *The Price We Pay: Economic and*

*Social Consequences of Inadequate Education* (Belfield & Levin, 2007a). Belfield and Levin summarised research by Muennig (2007) that quantified the impact on health:

Each additional high school graduate would save the government the present-value equivalent of \$39,000 over his or her lifetime from age 20 (Belfield & Levin 2007b, p. 14).

As far as impact on crime was concerned, Moretti (2007) found that:

[A] one-year increase in average schooling reduces murder and assault by almost 30 percent, motor vehicle theft by 20 percent, arson by 13 percent, and burglary and larceny by about 6 percent. Increasing the high school completion rate by just 1 percent for all men 20-60 would save the United States more than \$1 billion a year in the costs of criminal justice. (As reported by Belfield & Levin, 2007b, p. 14)

### **International developments and related research**

Evidence presented in the previous pages is unassailable in establishing the importance to the individual, society and economy of closing the gap between high- and low-performing students. The next step in the logic is to demonstrate that quality of teaching is an important factor. International developments and related research are reported in this section of the report.

The starting point is the work of Linda Darling-Hammond which was underplayed in the draft report of the Productivity Commission. In introducing her contributions as cited below it is worth noting that she has, by far, the highest 'public presence' of university-based scholars in the field of education in the United States (rating of 213.7), as reported in recent evidence-based rankings (Hess, 2012), followed by Diane Ravitch (rating of 202.2), whose priority for improving teacher preparation is cited later in this section. Education economist Eric Hanushek cited earlier, ranks third (rating of 157.5) in these ratings for 121 scholars (median rating 39.3). These rankings combine articles and academic scholarship, book authorship and current book success, and presence in new and old media.

Darling-Hammond (2010) includes Finland in a group of mostly Scandinavian nations that are doing well in international tests of student achievement, the others being Sweden and Norway. Along with the Netherlands:

. . . all teachers now receive 2 to 3 years of graduate level preparation for teaching, generally at government expense, plus a living stipend. Typically this includes a full year of training in a school connected to the university, like the professional development school partnerships created by some US programs, along with extensive coursework in pedagogy and a thesis researching an educational problem in the schools (Darling Hammond, 2010, p. 44).

To get the best teachers, students from the top third of each graduating high school class are recruited into a fully-paid 4-year teacher education program (or, if they enter later, a 1- to 2-year graduate program) . . . As in other highly ranked countries, novices are not left to sink or swim. Expert teachers are given released time to serve as mentors to help beginners learn their craft. The government pays for 100 hours of professional development each year for all teachers in addition to the 20 hours a week they have to work with

other teachers and visit each others' classrooms to study teaching (Darling-Hammond, 2010, p. 45).

Darling-Hammond describes what has been accomplished in Finland:

Finland has been a poster child for school improvement since it rapidly climbed to the top of the international educational rankings after it emerged from the Soviet Union's shadow. Leaders in Finland attribute these gains to their intensive investment in teacher education. Over 10 years, the country overhauled preparation to focus more on teaching for higher order skills like problem solving and critical thinking. Teachers learn how to create challenging curriculum and how to develop and evaluate local performance assessments that engage students in research and inquiry on a regular basis. Teacher training emphasises learning how to teach students who learn in different ways – including those with special education needs. The egalitarian Finns reasoned that if teachers learn to help students who struggle, they would be able to teach all students more effectively and would indeed leave no child behind. The bet has paid off as educational achievement has soared (Darling-Hammond, 2010, p. 45).

Details of graduate programs in Finland are contained in another section of this report.

#### *The Education Schools Project (USA)*

The Education Schools Project was a four-year study of teacher education in the United States led by Arthur Levine, former President of Teachers College at Columbia University, and now President of the Woodrow Wilson National Fellowship Foundation. The following is a brief account of findings in the second report of the project along with its five recommendations.

The scale of teacher education in the United States is evident in the fact that there are 1,206 faculties or schools of education, with more diplomas or degrees awarded in education than in any other field (Levine, 2006, p. 5). Levine and his team undertook a comprehensive study of these programs and concluded that the best have the following characteristics:

Each is committed to prepare excellent teachers and has clearly defined what an excellent teacher needs to know and be able to do. The field component of the curriculum is sustained, begins early, and provides immediate application of theory to real classroom situations. There is a close connection between the teacher education program and the schools in which students teach, including ongoing collaboration between academic and clinical faculties. All have high graduation standards. (Levine, 2006, p. 81)

Levine's team selected four of many programs that have these characteristics: Alverno College, a Catholic women's college in Milwaukee, and Emporia State University in Kansas, each of which offers a four-year undergraduate program; the University of Virginia which offers a five-year program in its Curry School of Education leading to a bachelor's degree and a master's degree in teaching; and Stanford University in California which offers a master's program on a highly selective basis to fewer than 100 students (Darling-Hammond is a member of the faculty at Stanford). The selection of exemplars that have the characteristics cited above suggests that there is no one best configuration of degrees at either bachelor's

or master's levels. Levine makes five recommendations for enhancing teacher education in the United States:

1. Transform education schools from ivory towers into professional schools focused on classroom practice
2. Focus on student achievement as the primary measure of teacher education program success
3. Rebuild teacher education programs around the skills and knowledge that promote classroom learning; make five-year teacher education programs the norm
4. Establish effective mechanisms for teacher education quality control
5. Close failing teacher education programs, strengthen promising programs and expand excellent programs by creating incentives for outstanding students and career changers to enter teacher education at doctoral universities (Levine, 2006, pp. 103-114)

In explanation of the first recommendation, Levine signals a theme that is at centre stage in current discourse on teacher education in the United States. He noted that 'Medical schools are rooted in hospitals; law schools look to the courts; journalism schools see their home as the media; and business schools focus on corporations. The work of education schools needs to be grounded in P-12 schools' (Levine, 2006, p. 114).

According to Levine, 'the focus of schooling has shifted from process to outcomes; from teaching to learning. The measure of a school's success is the achievement of its students and the gauge of a teacher's effectiveness is the learning of his or her students'. As a result 'the job of a teacher education program is to prepare teachers who can promote student achievement' (Levine, 2006, p. 105). Levine advocated the development of a P-12 longitudinal data base that would track each student's academic progress, with indicators of the value that is added to each child's learning as he or she progresses through school. Levine takes this one step further and suggests that these measures of students' academic progress should be used as a way of assessing the effectiveness of teacher education programs: 'It will also generate a data-base that can be used to assess and improve the performance of education schools by providing information on the performance of the teachers and principals who were prepared at the institution' (Levine, 2006, p. 106).

Levine describes in broad terms the key components in the re-building of teacher education programs proposed in the third recommendation:

The curriculum would consist of three components: a subject matter concentration of a scope and depth that constitutes mastery of a discipline; pedagogical education rooted in the subject area and tied to the skills and knowledge teachers need to promote student learning; and education in child development to teach the most effective ways to apply subject matter and pedagogy to educate particular groups of students (Levine, 2006, p. 107).

Levine makes clear the relationship between coursework and the practicum: 'Student teaching and field work should begin in the first days of teacher preparation and continue to its conclusion' (Levine, 2006, p. 108).

Levine's fifth recommendation is understandable in the light of his fourth. It may be that closing some programs in Australia may be necessary in the years ahead. Levine's commentary relates the need in the United States to the status of teacher education programs in universities:

Because teacher education is a low-status field, the most eminent universities, their education schools, and their faculties have retreated from teacher education in favour of offering programs in more 'academic', higher-status fields. The result is that the lion's share of teacher education is relegated to weaker programs (Levine, 2006, p. 111).

### *The Stanford Studies*

Linda Darling-Hammond is the Charles E. Ducommun Professor of Education at Stanford University. A particular strength of her work is the way she locates developments in the United States in a wider international context as illustrated at the start of this section.

Two themes are drawn from a recent report of her research (Darling-Hammond, 2010). One relates to the ongoing debate about the content of teacher education. She contends that George W. Bush's Secretary of Education Rod Paige regarded much of the coursework in teacher education programs as a bureaucratic hurdle. His 2002 report 'suggested that certification should be redefined to emphasise verbal ability and content knowledge and to deemphasise requirements for education coursework, making student teaching and attendance at schools of education optional' (as described by Darling-Hammond, 2010, p. 36). This view of teacher education is quite the opposite of that formed by Levine in his review cited above. Darling-Hammond is a leader in one of the four exemplar programs (Stanford) described in Levine's report and she is also clearly at odds with the views she ascribed to Paige.

In developing a second theme, Darling-Hammond traces the recent history of teacher education and cites evidence to support the view that short-term programs are relatively ineffective. Like Levine, she compared preparation in teaching with preparation for medical doctors and offers the following devastating observation:

For at least 2 decades, teaching has been poised where medicine was in 1910 before the Flexner report, with some high-quality programs counterbalanced against an array of weak ones. At that time, doctors could be prepared in a 3-week program, featuring memorised lists of symptoms and cures or, at the other extreme, in a graduate program of medicine like that created at Johns Hopkins University, featuring extensive coursework in the sciences of medicine along with clinical training in the newly invented teaching hospital (Darling-Hammond, 2010, p. 38).

Darling-Hammond is critical of 'front-loaded coursework' with a 'dollop' of student teaching at the end:

By contrast, the most powerful programs require students to spend extensive time in the field throughout the entire program, examining and applying the concepts and strategies they are simultaneously learning about in their coursework . . . Such programs typically require at least a full academic year of student teaching under the direct supervision of one or more teachers who model expert practice with students who have a wide range of learning needs (Darling-Hammond, 2010, p. 40).

She concluded that 'learning to practice *in practice*, with expert guidance, is essential to becoming a great teacher of students with a wide range of needs' (Darling-Hammond, 2010, p. 40). She calls for more professional development schools (PDS)

that 'like teaching hospitals, offer yearlong residencies under the guidance of expert teachers'. PDS also become hubs for professional development.

*The National Bureau of Economic Research (NBER) Study (USA)*

An important report of recent research in the United States was published after the Productivity Commission prepared its draft. Entitled 'The long-term impacts of teachers: Teacher value-added and student outcomes in adulthood', the quasi-experimental research was conducted by Chetty, Friedman and Rockoff (2011a) who work at Harvard University (Chetty and Friedman) and Columbia University (Rockoff) and the National Bureau of Economic Research (NBER). Research was supported by the Lab for Economic Applications and Policy at Harvard and the National Science Foundation. The report and responses entered the public domain as the current report was being prepared and the findings are contentious but highly relevant. The focus of the study was on 'teacher "value-added"', defined as follows:

A teacher's 'value-added' is defined as the average test-score gain for his or her students, adjusted for differences across classrooms in student characteristics (such as their previous score). (Chetty, Friedman & Rockoff, 2011b).

The study drew on data from school districts across the United States for 2.5 million students from Grades 3 to 8 enrolled in primary and secondary schools between 1998 and 2009. These data were linked to tax records on parent characteristics and outcomes for these students in adult years. The data set contained 18 million test scores. The study found that teacher value-added measures (teacher VA) had 'substantial impacts on a broad range of outcomes' (p. 3) The headline findings were as follows:

- A 1 SD improvement in teacher VA in a single grade raises the probability of college attendance at age 20 by 0.5 percentage points, relative to a sample mean of 36 percent. Improvements in teacher quality also raise the quality of the colleges that students attend, as measured by the average earnings of previous graduates of that college. Changes in the quality of the teaching staff across cohorts generate impacts on college attendance and quality of a similar magnitude, supporting the view that these estimates reflect the causal impact of teachers. (pp. 3-4)
- Students who get higher VA teachers have steeper earnings trajectories, with significantly higher earnings growth rates in their 20s. (p. 4)
- Improvements in teacher quality significantly reduce the probability of having children while being a teenager, increase the quality of the neighbourhood in which the student lives in adulthood, and raise retirement savings rates. (p. 4)
- The impacts of teacher VA are slightly larger for females than males. (p.4)
- A given increase in test scores due to higher teacher quality is worth more in English than mathematics, but the standard deviation of teacher effects is 50 percent larger in mathematics than English. (p. 4)
- Replacing a teacher whose true VA is in the bottom 5 percent with an average teacher would increase the present value of students' lifetime earnings by \$267,000 per classroom taught. (p. 5)

In a separate summary, the researchers reported that 'when a high value-added (top 5 percent) teacher enters a school, end-of-the-year test scores in the grade he or she teaches in rise immediately' (Chetty, Friedman & Rockoff, 2011b).

While outside the terms of reference to the current report, the following findings are also noteworthy. The first relates to the issue of parental contributions to the cost of teachers, generally a taboo subject in contexts such as Australia whose public (state) education is by law to be 'free, compulsory and secular'. The second relates to the merit of paying bonuses to high-VA teachers.

- The impacts of teacher VA are roughly constant in percentage terms by parent's income. Hence, high income households, whose children have higher earnings on average, should be willing to pay larger absolute amounts for higher teacher VA. For instance, our estimates imply that households with annual incomes of \$100,000 should be willing to pay \$8,000 per year for a teacher whose value-added is 1 SD higher. (p. 4)
- The gains for policies that pay bonuses to high-VA teachers are only modestly larger than their costs. (p. 5)

Responses to the report have been generally negative, focusing on the significance of the findings and the feasibility of implementing the strategies implied in the recommendations rather than the methodology. Amongst these are views that the findings, while significant, are not important or may even be trivial (gains in salary on an individual yearly basis); focus on test scores in literacy and numeracy, meaning that teachers in other subjects who may even constitute a majority are not accommodated in the research and findings; and inability to translate findings into strategies, for example, the difficulty if not impossibility of removing the five percent of teachers with low value-add.

Even if one accepts the findings and their implications, a more feasible approach in the medium to long-term is to prepare teachers who are likely to be high value-add from the outset. This is the view of Diane Ravitch in her blogged response: 'As for me, I prefer deliberate efforts to raise entry standards into teaching, to improve teacher preparation, and to ensure that every school has a significant number of experienced teachers who are masters of their craft. That seems to be what *the high-performing nations do*' (cited in Strauss, 2012).

### *Scotland*

In his review of the Scottish teacher education system Donaldson found that 'one of the greatest difficulties facing teacher educators is meeting the ever wider demands on course time' and this 'problem is at its most acute in the postgraduate route into primary teaching' (Donaldson, 2010, p. 89). He proposed an increase in the amount of time within the current postgraduate diploma from one to two years by combining course and induction elements and the inclusion of more course time, perhaps during the summer break before teaching began (Donaldson, 2010). Extension of the program would facilitate 'more opportunities for students to apply what they have learned, to evaluate theories in practice, and begin to build up a range of specialist knowledge' (Donaldson 2010, p. 41). The proposed changes 'should in themselves bring about significant improvements in quality' (Donaldson, 2010, p. 6). Donaldson summarised the complexities of teacher education in these terms:

One of the greatest areas of difficulty, particularly in postgraduate courses, is striking the right balance between breadth and depth in what is covered in the course...There is clear evidence of courses trying but failing to keep pace with an ever-expanding set of expectations of what should be included, particularly in primary education. Concerns about about

students' depth of understanding of both what they are teaching and about how to employ teaching approaches which meet the needs of their pupils and of the particular subject matter. Resolution of this difficulty requires all available time to be devoted to relevant tasks and study, together with absolute clarity about priorities for the initial and subsequent stages of a teacher's education, and about who does what and when. (Donaldson, 2010, p. 8)

### *Practice in selected high-performing nations*

The duration of the graduate entry programs for teachers from high performing education systems was investigated to determine an evidence base for the optimal length of program, with particular attention to Singapore and South Korea. Developments in Scandinavian countries other than Finland were also reviewed.

The Ministry of Education in Singapore requires the completion of one or two-year diplomas or the three-year Bachelor of Arts (Education) / Bachelor of Science (Education) (Ministry of Education Singapore, 2012; National Institute of Education Singapore, 2011). South Korea (Lee and Park, 2006) does not offer diploma or bachelor graduate entry courses.

An inquiry into teacher education in Sweden proposed the addition of a higher education qualification with a duration of 1.5 years for secondary school teachers of vocational subjects but an equivalent primary graduate entry program was not proposed (Ministry of Education and Research Sweden, 2008). A post-graduate certificate in education can be obtained after one year of study in Norway (Ministry of Education and Research Norway, 2009). In Denmark students can transfer compatible undergraduate credits from another degree to a four-year Bachelor of Education (Eurydice, 2006, p. 110). Denmark does not offer a post-graduate diploma in education for either primary or secondary teaching. Denmark, Norway and Sweden are party to the Bologna Declaration and its framework for implementation described later in this section.

It is noteworthy that in both Singapore and South Korea, initial teacher education attracts outstanding applicants, social capital in support of schools and the profession is very high, and the demands associated with a highly diverse student population are far less than those in Australia

### *Relationship between length and level of teacher education and outcomes in schools*

Setting aside current policy in places like Singapore, South Korea and some parts of Scandinavia, the preponderance of views in reports of inquiries and among experts reported above, suggests the need to enrich and lengthen graduate programs of initial teacher education. However, there is little research to guide policymakers on the relationship between the length and level of teacher education in traditional programs and outcomes in schools. Taking the most recent research by way of illustration, the NBER study of Chetty, Friedman and Rockoff cited above is concerned with the impact of high value-add teachers. No attention was given to how these teachers were prepared; the focus was on the outcomes of their efforts. It is reasonable to assume that most were graduates of traditional programs of which there are thousands across the country.

Findings in recent research in the United States suggest the level of teacher qualifications has mixed but minimal effect on outcomes (Aaronson, Barrow & Sander, 2007; Buddin & Zamarro, 2007; Clotfelter, Ladd & Vigdor, 2007). For

example, a study of student outcomes in Chicago Public High Schools and teacher qualifications which involved over 84,000 students and 589 teachers found that half of the six types of teacher qualifications actually have a negative relationship with student test scores (Aaronson, Barrow & Sander, 2007). The findings suggest a possible relationship between length of time in study and student outcomes for some certificate courses.

There is now a considerable body of evidence in the United States that there is no consistent relationship between qualifications at the master's level and student outcomes. In almost all instances these are graduate (post-graduate) master's degrees completed by teachers who are already in professional practice. A report by Roza and Miller (2009) indicates that, across the country, 48 percent of teachers have a master's degree or above and almost \$9 billion is spent annually on meeting the additional cost of paying the salary increment that accrues when such qualifications are achieved. The issue is an important one at the moment given the financial difficulties being experienced by most school authorities. After reviewing evidence on the matter, the authors conclude that 'on average, master's degrees in education bear no relation to student achievement', the only exception being for those who specialise in mathematics and science. These degrees are described as 'notoriously unfocused and process-dominated' (Roza & Miller, 2009, p. 1).

It is important to state that these kinds of master's degrees differ in almost every respect from those proposed by AITSL and approved by MCEECDYA, and from those considered to be exemplars in the United States such as the graduate programs at Stanford and the University of Virginia and, in Australia, at the University of Melbourne and the University of Western Australia. These exemplars are purposeful, carefully designed pre-service initial teacher education programs that address the same needs as those to which the Australian initiative respond, namely, the level of professional knowledge and skill required in contexts of unprecedented diversity among school students and an expectation that the gap between high- and low-performing students is closed.

### *The Bologna Declaration*

In recent decades European Union (EU) Member States have attempted to increase levels of cooperation with regard to teacher education. Two significant developments occurred in 1999: the European Network on Teacher Education Policies (ENTEP) was established, and the Bologna Declaration was presented by the European Ministers of Education.

ENTEP consists of representatives of the Education Ministers in EU Member States as well as representation from the European Commission (ENTEP, 2012). It 'exists to promote cooperation among European Union Member States regarding their teacher education policies in relation to initial, in-service and continuous professional development programs' (Gassner, Kerger & Schratz, 2010, p.7). The organisation reflects on the policies and practices in teacher education across EU countries through regular meetings, conferences and other forums for sharing information.

The European Union structures of influence on education policy in member states are complex. With European parliamentary committees, the European Commission and a variety of declarations, communications and programs, there is a virtual maze of bodies and documents which address educational issues. Of these the Bologna Declaration of 1999 has been of particular significance.

The Bologna Declaration of 19 June 1999, a joint declaration of the European Ministers of Education recognised:

a growing awareness in large parts of the political and academic world and in public opinion of the need to establish a more complete and far-reaching Europe, in particular building upon and strengthening its intellectual, cultural, social and scientific and technological dimensions. (European Union Education Ministers, 1999, p.1).

The Bologna Declaration developed into the Bologna Process which aimed to create a European Higher Education Area by 2010. The three over-arching objectives of the Bologna Process have been the introduction of a three-cycle system (bachelor's / master's / doctorate), quality assurance, and recognition of qualifications and periods of study (European Commission, 2012).

These developments have been recognised as a difficult process of change across a wide variety of national and cultural backgrounds. There are mixed reports of the success of reforms to develop the European Higher Education Area with many celebrations of progress in some of those overarching objectives but also a failure to meet some of the stated targets.

The significance of the Bologna arrangement lies in the recognition of the importance of high quality education and the central role of universities.

A Europe of Knowledge is now widely recognised as an irreplaceable factor for social and human growth and as an indispensable component to consolidate and enrich the European citizenship, capable of giving its citizens the necessary competencies to face the challenges of the new millennium, together with an awareness of shared values and belonging to a common social and cultural space. (European Union Education Ministers, 1999, p.1)

In the interest of developing a greater level of comparability across the university systems of the EU, the Bologna Process identified the need to standardise degree levels through a common and transferable points system that has been regularly converted to a year-length system. The original proposal in 1999 was for a two-level system of which the default was three years of undergraduate and two years of post-graduate study (often referred to as the 3 + 2 model). Flexibility around this general structure is possible but the five year two-level model is necessary for comparability and consistency (Gassner, 2010). The focus of the Bologna Process on a structure based on the differentiated levels (bachelor's / master's / doctorate) 'is considered by most stakeholders as the structural landmark of higher education studies' (Iucu, 2010, p.54)

ENTEP has been active in sharing the Bologna objectives and reviewing the progress of reform in EU member states. Its research has shown that most member states have undertaken some significant reform in teacher education in line with the Bologna agreement. This is a noteworthy achievement given the cultural and historic differences in teacher education processes across the different nations. A survey of pre-primary, primary and subject-specific teacher education found that many countries are trending toward a two-level university program for teacher education. (ENTEP & Dimitropoulos, 2010).

These developments have been commendable even though there is clearly more work to be done. A start has been made:

The European documents have started to explicitly highlight the importance of the role played by the systems of teacher education within educational reforms as it proved to have a major influence on the way future generations are modelled (Iucu, 2010, p. 66).

With continued focus on the goals of the European Higher Education Area and with organisations as such as ENTEP advocating and overseeing progress in member nations, further progress toward highly qualified and professional teachers is expected.

The successful design, implementation and assessment of the programs of studies – according to the Bologna Process principles – lies in the development of specialised programs consisting of differentiated curricular routes for teacher education. In this sense, there is a need to initiate specific projects, for example master programs in teacher education where they do not exist. (Iucu, 2010, p. 62)

It is worth noting that the Melbourne Model for the delivery of programs across the University of Melbourne was inspired to some extent by the Bologna Declaration and its 3+2 model for higher education, which includes teacher education. The Master of Teaching at the University of Melbourne and the phasing out of its Bachelor of Education programs is consistent with this model but was also influenced by developments in other places such as Stanford University and the University of Virginia and the concept of ‘clinical partnerships’.

Overall, it is evident that EU Member States have an agreed 3+2 framework which is consistent with the AITSL / MCEECDYA framework, but that progress is understandably slow in implementing it. One member that stands out is Finland but it implemented the change from 1979, two decades before the Bologna Declaration (1999). Policy and practice in Finland is now described.

### **Finland as an international exemplar**

Apart from its consistency with the Bologna Declaration, it is important to examine practice in Finland more closely for two reasons. First, Finland has successfully addressed the issue that the Productivity Commission highlights as an important need in Australia, namely, closing the gap between high- and low-performing students. This gap is relatively narrow in Finland. Second, specifications for graduate programs in Finland make clear that populating the program with knowledge and skills for closing the gap requires at least two years of professional study and field experience. There is no short cut to achieving this by cramming it all in one year.

Some are uncomfortable that there is so much attention to Finland arguing that, compared to Australia, it is a somewhat mono-cultural nation, and it is relatively easy to ensure that the gap between high- and low-performing students is narrow. Apart from an under-estimation of the degree of multiculturalism in Finland, the counter-argument is that strategies to close the gap are even more important given the demographic makeup of Australia. Others point to the high degree of community support that makes things easier for schools in Finland, an argument that builds the case for stronger efforts to build social capital in support of schools in Australia. The assertion that more money is spent on schools in Finland can be discounted as, adjusting for purchasing power, there is not a great deal of difference between the two countries.

The following is a brief account of some of the major features of graduate teacher education in Finland organised according to issues that are also important in Australia: entry requirements, practicum, assessment, literacy and numeracy, disabilities, parent and community engagement, and Indigenous education. While not strictly providing international benchmarks, these descriptions illustrate the complexity of graduate programs when commitments are made to ensure that all school students do well and the gap between high- and low-performing students is as narrow as possible.

### *Entry requirements*

Teacher education in Finland for primary and secondary schools involves a combination of a three-year bachelor's degree and a two-year master's degree (Niemi & Jakku-Sihvonen, 2009). The master's degree has been required for teachers in Finland since 1979 (Niemi & Jakku-Sihvonen, 2009). The bachelor's degree requires 180 credits in the European Credit Transfer and Accumulation System (ECTS) while the master's calls for 120 ECTS credits (60 ECTS credits are considered equivalent to a full-time year of formal learning) (European Communities, 2009), and one credit is equivalent to about 27 hours of work (Niemi & Jakku-Sihvonen, 2009).

Primary teachers are required to obtain a master's degree in educational studies while secondary teachers obtain a master's in their chosen subject speciality (The Trade Union of Education in Finland, 2010). Kindergarten teachers who work with children aged one to six are required to complete a Bachelor of Education, with a specialisation in early childhood education (The Trade Union of Education in Finland, 2010) (children do not start school until they are seven years of age).

The high application rate of prospective teachers results in the acceptance of only 10 to 15 per cent of applicants to teacher education (Niemi & Jakku-Sihvonen, 2009). The application process to primary teacher education involves a written examination, aptitude test and a personal interview (EURYBASE, 2009; National Board of Education Finland, 2010a; Niemi & Jakku-Sihvonen, 2009).

For some universities an optional skills demonstration is also part of the application process (EURYBASE, 2009). Secondary teacher applicants apply directly to the department responsible for their main subject, and then they separately apply for teacher education (National Board of Education Finland, 2010a; EURYBASE, 2009).

The autonomy of Finland universities in curriculum design in education has enabled the creation of a diversity of curriculums across the different universities (Niemi & Jakku-Sihvonen, 2009). Unifying guidelines are provided by the Ministry of Education and set out in agreements between the Deans of the Faculties of Education and the Directors of the Department of Teacher Education (Niemi & Jakku-Sihvonen, 2009). The generalised structure for primary and secondary teacher education in Finland is contained in Tables 1 and 2, respectively (adapted from Niemi & Jakku-Sihvonen, 2009; Niemi & Jakku-Sihvonen, 2006).

Finland's compulsory basic education system covers Grades 1 to 9 and is taught by primary teachers (Grades 1 to 6) and secondary teachers (Grades 7 to 9) (National Board of Education Finland, 2010b). After the completion of compulsory schooling there is the choice of either matriculation or vocational programs which are taught by secondary and vocational teachers, respectively. Vocational teachers are required to

complete a master's degree at a university or polytechnic institution, or another degree specified by the education provider (Trade Union of Education in Finland, 2008). Teachers in the business, administration, social services and health care sectors require a master's degree. Three years of work experience is required for entry to teacher education for vocational subjects.

Table 1: Components of teacher education programs for primary school teachers in Finland (adapted from Niemi & Jakku-Sihvonen, 2009; Niemi & Jakku-Sihvonen, 2006)

Primary school teacher education program	Percentage of course devoted to subject		
	Bachelor's Degree (3 years)	Master's Degree (2 years)	Total time in study (5 years)
Class teachers' pedagogical studies (as part of a major in education) <ul style="list-style-type: none"> <li>- Basics of teaching methods and evaluation</li> <li>- Support of different kinds of learners</li> <li>- Latest research results and research methods of teaching and learning</li> <li>- Cooperation with different partners and stakeholders</li> </ul>	13.5% (including supervised teaching practice)	30% (including supervised teaching practice minimum of 12.5% - 407 hours)	20%
Other studies in a major in education <ul style="list-style-type: none"> <li>- Research methods</li> <li>- Scientific writing</li> <li>- Optional studies</li> </ul>	20% (BA thesis 3-5%)	37.5% (including MA thesis 17-34%)	26.5%
Subject matter studies for comprehensive school teachers	33%	N/A	20%
Academic studies in a different discipline (a minor)	13.5%	0-30%	8.5-20%
Language and communication studies including ICT Practice in working life Preparation and updating a personal study plan Optional studies	20%	14-33%	13.5-25%

### *Practicum*

A practicum (school experience program) is conducted in every year of study and is supervised by university teachers (first year of study), university trained school teachers (second and third year of study) or local school teachers (fourth and fifth year of study) (Niemi & Jakku-Sihvonen, 2009). The incorporation of the practicum was deliberate: 'the intention (is) to link theory and practice in a sufficiently close relationship that a teacher may be able to resolve everyday teaching problems on the basis of his or her theoretical knowledge' (UNESCO, 2003, p. 89). University training schools (also known as Normal Schools) are state schools although their teachers have a 'different status than teachers in other schools and have dual responsibilities: teaching their pupils and the supervision and mentoring of student teachers' (Niemi & Jakku-Sihvonen, 2009). These teachers are often active in research and development (Niemi & Jakku-Sihvonen, 2009). The practicum progresses from observation, then planning, teaching and assessment of instruction (EURYBASE,

2009) with a specific focus on subject areas for secondary teachers, with the end goal of teachers taking 'holistic responsibility in their teaching' (Niemi & Jakku-Sihvonen, 2009). Trainee teachers also participate in practicum team teaching (EURYBASE, 2009). There is no formalised teacher induction program in Finland (Ladd, 2007).

Table 2: Components of teacher education programs for secondary school teachers in Finland (adapted from Niemi & Jakku-Sihvonen, 2009; Niemi & Jakku-Sihvonen, 2006)

Secondary School teacher education program	Percentage of course devoted to subject		
	Bachelor's Degree (3 years)	Master's Degree (2 years)	Total time in study (5 years)
Class teachers' pedagogical studies (minor) <ul style="list-style-type: none"> <li>- Basics of teaching methods and evaluation</li> <li>- Support of different kinds of learners</li> <li>- Latest research results and research methods of teaching and learning</li> <li>- Cooperation with different partners and stakeholders</li> </ul>	13.5-16.5% (including supervised teaching practice)	30% (including supervised teaching practice - minimum of 12.5% - 407 hours)	20% (supervised teaching practice 4-8% or 327-648hrs)
Academic studies in different disciplines (a major)	33% (BA thesis 3-5%)	(including MA thesis 17-34%)	40-50%
Academic studies in a different discipline (1-2 minors)	13.5-33.5%	0-25%	8.5-30%
Language and communication studies including ICT Practice in working life Preparation and updating a personal study plan Optional studies	20-22%	0-25%	11.5-23.5%

One of the aims of the practicum is 'for students to find their own ways of functioning as class teachers and to become capable of developing their instruction and of taking independent, creative and justified solutions to problems' (EURYBASE, 2009, p. 155). The teacher trainees' individual identity as a teacher is strengthened through group counselling which includes 'discussion, planning and assessment meetings between instructors and teacher trainees' (EURYBASE, 2009, p. 157).

#### *Assessment*

All teachers are responsible for the design and delivery of suitable assessments. External assessment occurs only during the final matriculation year (EURYBASE, 2009). The group counselling involved in the practicum includes a focus on assessment (EURYBASE, 2009). Research-based teacher education has produced a generation of teachers that can 'take an analytical and open-minded approach to their work' in which they 'draw conclusions based on their observations, and experiences and they develop their teaching and learning environments in a

systematic way' (Niemi & Jakku-Sihvonen, 2009). The focus of teacher education on the assessment of students was described in these terms:

Even though teachers need many specific skills, they also need to understand the complexity of educational processes and face evidence that is coming from different sources. They need research-based and research-informed knowledge, but they also need to be open to acquiring and assessing local evidence. (Niemi & Jakku-Sihvonen, 2009)

Teachers' competence must include a readiness to analyse the situation like a researcher and to make conclusions and decisions to act or to change something in a given situation (Niemi & Jakku-Sihvonen, 2009).

### *Literacy and numeracy*

Finland's education system calls for national periodical assessments for mathematics and national language at the lower secondary level, although the results are not publicly available (OECD, 2008). The implementation of the LUMA program in 1996, whose aim is to increase the level of knowledge in mathematics and natural sciences among youth, has the following features:

- Increased weight is given to the candidates' mathematics and natural sciences matriculation scores for entry into teacher education
- The measurement of mathematics and / or natural sciences thinking was included in the aptitude tests for entry into teacher education at various universities
- Increase in the proportion of mathematics and the natural sciences in primary class teaching training
- Universities were to form minor subject modules in mathematics and natural sciences for teacher training (Ministry of Education Finland, 2002)

The implementation of LUMA resulted in increased achievement of Finland in PISA and TIMSS (interestingly the results of the national assessments showed less positive results), increased numbers of students enrolled in science and technology degrees and increased number of master's degrees with subject teacher qualification in mathematics and / or science (Arajarvi, 2003).

### *Special needs*

A key component of pedagogical studies for both primary and secondary teacher education is concerned with how to teach school subjects to 'different learners' with a special focus on their distinct 'learning capacity' (Niemi & Jakku-Sihvonen, 2009). Practical studies are designed to enable students to 'meet pupils and students from various social backgrounds and psychological orientations and have opportunities to teach them according to the curriculum' (Niemi & Jakku-Sihvonen, 2009). The inclusive nature of teacher education in the Finnish system was described by the OECD in the following terms:

Instruction and pedagogy at Finnish schools have accordingly been structured so as to fit heterogeneous student groups. Finnish teachers know, for example, that no student can be excluded and sent to another school. In line with this principle, the students' own interests and choices are taken into account at schools when planning the curriculum and selecting contents,

textbooks, learning strategies, methods and assessment devices. (OECD, 2005, p. 59)

A major in special education is available within teacher education for vocational, matriculation (secondary), or primary teachers. It results in a master's degree specialising in special education (Trade Union of Education in Finland, 2008). Alternative pathways exist to become a special education teacher after a master's or a Bachelor of Primary Education (Trade Union of Education in Finland, 2008). Special needs trainee teachers include related pedagogy as the main component of their studies, which constitute a minimum of a full year of study (60-75 ECTS) (EURYBASE, 2009; OECD, 2005a). The training of special needs teachers has the aim of training 'experts who, in addition to their own educational work, can supervise the special pedagogical work of other teachers and the institution as a whole' (Kyro, 2006, p. 41).

### *Parent and community engagement*

Pedagogical studies include 'how to cooperate with other teachers, parents and other stakeholders' (Niemi & Jakku-Sihvonen, 2009) and the 'ability of teachers to communicate with . . . families and other stakeholders has been seen as an essential part of teacher competence' (Niemi & Jakku-Sihvonen, 2006, p.57). Parents have the opportunity to be involved in every aspect of their child's education including 'local curriculum design and planning their children's learning' at both the primary and secondary levels (OECD, 2005a, p. 18). Niemi and Jakku-Sihvonen (2006; 2009) described the complexities in teachers' communication with parents and the community:

They also need to implement their expertise in such a way that their customers, stakeholders and colleagues trust them. In the teaching profession this means that students and parents and even society can trust teachers' expertise (Niemi & Jakku-Sihvonen, 2009).

They have to be aware of opportunities and ways to work together with other partners and stakeholders in formal and non-formal educational contexts in order to provide learning opportunities to learners at various age levels. They also need to be aware of value contradictions in society and educational institutions and they should be prepared to deal with moral and value-based issues. (Niemi & Jakku-Sihvonen, 2006, p.64)

### *Indigenous education*

The Saami (also referred to as Sami) (Lapp) are the indigenous people of Finland. Saami (Lappish) language involves three dialects and is spoken by 0.03 percent of the population (OECD, 2003). In 1999, Saami children gained the right to receive native-language instruction in their comprehensive schooling from Grades 1 to 9 (Keil, 2001). The incorporation of native language instruction meets the first recommendation of Skutnabb-Kangas and Dunbar (2010) in their extensive review of Indigenous children's education that 'the mother tongue should be the main teaching language for the first eight years' (Skutnabb-Kangas & Dunbar, 2010, p.101).

A separate curriculum is employed for the Saami languages which is different from the Finnish and Swedish languages curriculum (OECD, 2003). The Saami Education Institute provides education in Saami language and culture (Ministry of Education,

2009). The institute was designed to act as the national provider of resources in Saami language and culture (Ministry of Education Finland, 2009). Instruction in the Saami language and culture included Saami handicraft, art, literary arts and music (Ministry of Education Finland, 2009). The national government provides the funds that enable the production of teaching materials in Saami in addition to the training of Saami teachers (Keil, 2001).

The promotion of intercultural understanding through the development of teachers' knowledge of history and cultural backgrounds is a key focus in pedagogical studies, as described by Niemi & Jakku-Sihvonen, (2006):

Teachers' work has more generic aims. They open doors and windows to cultural enrichment and help people to understand other human beings and their cultural contexts (Niemi & Jakku-Sihvonen, 2006, p.63).

Teachers need in their profession a concept of culture which includes cultural knowledge and intercultural understanding. They also need to understand the factors that create social cohesion and exclusion in a society and how the teaching profession plays an integral part in these processes (Niemi & Jakku-Sihvonen, 2006, p.64).

### **National Graduate Teaching Standards for Australia (AITSL)**

Requirements for a graduate program in Australia are at least as complex as those in Finland. This is best illustrated by examining the National Graduate Teaching Standards established by AITSL and approved by MCEECDYA. Two sets are considered here. First, those related to Professional Knowledge Standard 1 – Know students and how they learn as listed in Table 3 (AITSL, 2011, p. 5). Second, those related to Professional Practice Standard 3 -- Plan for and implement effective teaching and learning, as listed in Table 4 (AITSL, 2011, p. 7).

The knowledge and skill required of graduates for Professional Knowledge Standard 1 (Table 3) is complex and comprehensive, drawing on a richer research base than ever before, requiring at least the amount of time for discipline-specific curriculum and pedagogical studies set out elsewhere in the report on Standards and Procedures (AITSL, 2011). It may be that the equivalent of at least one week and possibly two of lectures, tutorials / seminars and demonstrations of each of the six areas will be required. The time has long passed when a single guest lecture or model class will suffice as these were presented when one-year programs were devised.

There will be a high level of professional judgement in how a particular university will deliver related studies. The issue is how the various elements should be embedded in detailed specifications or in program, course and subject outlines, with outcomes the subject of quality assurance by expert panels. The issue is far from settled if international practice is considered, as evident in a nine-country study commissioned by the Teaching Council in Ireland that reviewed developments in Ireland, Northern Ireland, Scotland, England, Finland, United States, Poland, Singapore and New Zealand (reported in Conway et al., 2009). All countries address the matter of what student teachers and teachers need to be able to do to be considered competent professionals but not all 'specify in precise detail, and in terms of competences and standards, what teachers need to be know and be able to do'. Finland provides a 'light touch' and does not provide detailed specifications whereas England is relatively prescriptive (Conway et al., 2009, xxiv).

Table 3: National Graduate Teaching Standards: Professional Knowledge Standard 1 – Know students and how they learn (AITSL, 2011, p. 5)

Focus area	Graduate
1.1 Physical, social and intellectual development and characteristics of students	Demonstrate knowledge and understanding of physical, social and intellectual development and characteristics of students and how these may affect learning
1.2 Understand how students learn	Demonstrate knowledge and understanding of research into how students learn and the implications for teaching
1.3 Students with diverse linguistic, cultural, religious and socioeconomic backgrounds	Demonstrate knowledge of teaching strategies that are responsive to the learning strengths and needs of students from diverse linguistic, cultural, religious and socioeconomic backgrounds
1.4 Strategies for teaching Aboriginal and Torres Strait Islander students	Demonstrate broad knowledge and understanding of the impact of culture, cultural identity and linguistic background on the education of students from Aboriginal and Torres Strait Islander backgrounds
1.5 Differentiate teaching to meet the specific learning needs of students across the full range of abilities	Demonstrate knowledge and understanding of strategies for differentiating teaching to meet the specific learning needs of students across the full range of abilities
1.6 Strategies to support full participation of students with disability	Demonstrate broad knowledge and understanding of legislative requirements and teaching strategies that support participation and learning of students with disability

An important issue is how the graduate will ‘demonstrate’ the various capacities listed in Table 3. Table 4 provides the key since related capacities must be addressed in meeting Standard 3: Professional Practice. Each must be displayed in real world situations when the graduate participates in a practicum (school experience). If taken at face value, it means that one or more teachers at the school, in association with a person from a university, must sign off on achievement. It is also apparent that the graduate must be engaged in a range of settings within and across the several school experiences if each is to be addressed effectively.

There is an assumption here of the closest possible partnerships between universities and schools and between what is provided during school experience and what is learned at university. This assumption underpins the concept of ‘clinical partnerships’ that has been taken up at the University of Melbourne and in a range of exemplars in other countries, notably, some parts of the United States, as described earlier, and as advocated by Darling Hammond.

The challenges facing universities are considerable given evidence that some are finding it very difficult to locate schools that will participate. This is understandable given the increasing demands on schools where expectations are so high and pressures so strong, with high-stakes testing such as NAPLAN. Anecdotal evidence shared during a recent review of teacher education and school induction in

Queensland, for example, indicated that many schools are reluctant to have student teachers in the weeks leading up to the NAPLAN tests. In general, the capacities described in Tables 3 and 4 demand a rigorous extended pre-service program consistent with two years of study.

Table 4: National Graduate Teaching Standards: Professional Practice Standard 3 – Plan for and implement effective teaching and learning (AITSL, 2011, p. 7)

Focus area	Graduate
3.1 Establish challenging learning goals	Set learning goals that provide achievable challenges for students of varying abilities and characteristics
3.2 Plan, structure and sequence learning programs	Plan lesson sequences using knowledge of student learning, content and effective teaching strategies
3.3 Use teaching strategies	Include a range of teaching strategies
3.4 Select and use resources	Demonstrate knowledge of a range of resources, including ICT, that engage students in their learning
3.5 Use effective classroom communication	Demonstrate a range of verbal and non-verbal communication strategies to support student engagement
3.6 Evaluate and improve teaching programs	Demonstrate broad knowledge and strategies that can be used to evaluate teaching programs to improve student learning
3.7 Engage parents / carers in the educative process	Describe a broad range of strategies for involving parents / carers in the educative process

## Conclusion

Independent observers in the wider community would likely find it difficult to believe that one-year graduate programs of more than a half-century standing are still the normal expectation, given current expectations for schools and the needs outlined at the start of this report. They suited an earlier era when most who completed them were intending to become secondary teachers in schools where retention rates to upper levels were low and failure rates high. These conditions were accepted at the time. There have been changes within the single year, to be sure, including the accommodation of longer practicums, but it is apparent that more and more is being crammed into an academic year and the close relationship between providers (not necessarily universities at the time) and schools were arguably stronger than at present. This ‘cramming’ has been noted in review after review, notably in Scotland (Donaldson, 2010). An early adopter of the two-year program dating from 1979 is Finland that has successfully addressed the issues now being faced in Australia, with observers invariably citing the length, quality and standing of its program, as described in a previous section of this report.

Larger numbers of graduates who seek appointments in primary schools are undertaking the graduate program compared to the dominance in the past of those who wish to teach in secondary schools. This trend fits well with research on rates of return to schooling summarised earlier in the report. Primary students who do not do well are unlikely to do well in secondary schools so the quality of teaching in the early

years of primary schools is vital. Rates of return studies were included in this report for another reason, namely, to raise the stakes as far as the importance of quality teaching at all levels are concerned. Relatively few scholars in faculties of education are acquainted with this research. Leaders in these faculties and their colleagues should keep abreast of this work to reinforce the urgency of change.

The trend to graduate programs of longer duration than one year is apparent in countries that are comparable to Australia. There is no evidence of a trend to reduce the length to one year or less (setting aside niche programs like Teach for America or its Teach for Australia counterpart). These trends are supported by the weight of evidence on teaching capacity and student outcomes, even though most graduate programs are still one-year programs; for example, the thousands of bachelor's programs in the United States and the United Kingdom. This may be a reflection of how hard it is to change, especially when teacher education programs are valued as sources of funding in universities, and efforts are aimed at maximising enrolments in teacher education, regardless of entry level attributes or current demand. While there are important exceptions in these and other countries as well as Australia, there is a case to be made for inertia in universities.

The degree of difficulty in implementing structural change of this nature is illustrated by experience in Europe where more than a decade has elapsed since agreement was reached on a 3+2 model under the Bologna Declaration yet, while progress has been made, few nations have adopted it (Finland's experience pre-dates the Bologna Declaration). In this regard it is fair to acknowledge the achievement of AITSL in securing endorsement from MCEECDYA for a two-year program. The challenge now is to demonstrate political and professional will to implement it. It would be unfortunate if Australia was a late adopter if not a laggard when the need for uniformly high quality teaching in every school has been reinforced by recent analyses of NAPLAN and PISA results that reveal that the overall performance of students in Australia has flat-lined or declined and the gap between high- and low-performing students is apparently as wide as ever.

AITSL has reached agreement with regulatory authorities as well as the government and non-government education sectors that 2012 will be the last year in which one-year graduate entry programs will be accredited, and that the two-year requirement will apply to any accreditation from 2013. Accreditation is valid for a period of 5 years.

## References

- Aaronson, D., Barrow, L. & Sander, W. (2007). 'Teachers and Student Achievement in the Chicago Public High Schools'. *Journal of Labor Economics*, 25: 95-135. Online. Available HTTP: <<http://fac.comtech.depaul.edu/wsander/250104.web.pdf>> (accessed 20 January 2012).
- Arajarvi, M. (2003). Enhancing public understanding and attractiveness of science among youth: Lessons from the LUMA Programme in Finland. Rome Workshop on fostering the development of human resources for science and technology. Rome, 5-6, June, 2003. Online. Available HTTP:< <http://www.oecd.org/dataoecd/12/3/2789449.pdf> > (accessed 11 May 2010).
- Australian Council for Educational Research (ACER) (2000). Labour market experiences of Australian youth. (2000). *LSAY Briefing Reports*. (LSAY Briefing; No.1). Online. Available HTTP :< [http://research.acer.edu.au/lsay\\_briefs/2](http://research.acer.edu.au/lsay_briefs/2)> (accessed 18 January 2012).
- Australian Institute for Teaching and School Leadership (AITSL) (2011). *Accreditation of Initial Teacher Education Programs in Australia*. Melbourne: AITSL.
- Belfield, C.R. & Levin, H.M. (Eds) (2007a). *The Price We Pay: Economic and Social Consequences of Inadequate Education*. Washington DC: The Brookings Institution.
- Belfield, C.R. & Levin, H.M. (2007b). 'The Education Attainment Gap: Who's Affected, How Much, and Why it Matters'. Chapter 1 in Belfield, C.R. & Levin, H.M. (Eds) *The Price We Pay: Economic and Social Consequences of Inadequate Education*. Chapter 1, pp. 1-17. Washington DC: The Brookings Institution.
- Buddin, R. & Zamarro, G. (2007). 'Teacher Qualifications and Student Achievement in Urban Elementary Schools'. Online. Available HTTP: <[http://www.rand.org/pubs/reprints/2010/RAND\\_RP1410.pdf](http://www.rand.org/pubs/reprints/2010/RAND_RP1410.pdf)> (accessed 20 January 2012).
- Chetty, R., Friedman, J.N. & Rockoff, J.E. (2011a). The Long-term Impacts of Teacher Value-Added and Student Outcomes in Adulthood. *NBER Working Paper No. 17699*. Online. Available HTTP:< [http://obs.rc.fas.harvard.edu/chetty/value\\_added.pdf](http://obs.rc.fas.harvard.edu/chetty/value_added.pdf)> (accessed 20 January 2012).
- Chetty, R., Friedman, J.N. & Rockoff, J.E. (2011b). The Long-term Impacts of Teacher Value-Added and Student Outcomes in Adulthood. Online. Available HTTP:< [http://obs.rc.fas.harvard.edu/chetty/value\\_added.html](http://obs.rc.fas.harvard.edu/chetty/value_added.html) (accessed 20 January 2012).
- Clotfelter, C.T., Ladd, H.F. & Vigdor, J.L. (2007). 'How and why do teacher credentials matter for student achievement?'. *NBER Working Paper No. 12828*, Online. Available HTTP: <[http://www.nber.org/papers/w12828.pdf?new\\_window=1](http://www.nber.org/papers/w12828.pdf?new_window=1)> (accessed 20 January 2012).
- Conway, P.F., Murphy, R., Rath, A., & Hall, K. (2009). *Learning to Teach and its Implications for the Continuum of Teacher Education: A Nine-country Cross-National Study*. Report commissioned by the Teaching Council (Ireland). Ireland: University College Cork.

Darling-Hammond, L. (2010). Teacher Education and the American Future. *Journal of Teacher Education*. 61(1-2), pp. 35-47.

Donaldson, G. (2010). *Teaching Scotland's Future: Report of a review of teacher education in Scotland*. Edinburgh: The Scottish Government. Online. Available HTTP: <<http://www.scotland.gov.uk/Resource/Doc/337626/0110852.pdf>> (accessed 19 January 2011).

ENTEP & Dimitropoulos, A. (2010). The Bologna process and teacher education structures in Europe: Creating a European Teacher Education Area, in Gassner, O., Kerger, L. & Schratz, M. (Eds) (2010). *ENTEP – The first ten years after Bologna*. Bucharest, Ro: Editura universitatii din bucaresi. Online. Available HTTP:< [www.uni-kassel.de/einrichtungen/filadmin/datas/einrichurgen/zib/Akt - ENTEP Book.pdf](http://www.uni-kassel.de/einrichtungen/filadmin/datas/einrichurgen/zib/Akt_-_ENTEP_Book.pdf)> (accessed 24 January 2012)

European Union Education Ministers. (1999). *The Bologna Declaration*. Online. Available HTTP:<[http://www.bologna-bergen2005.no/Docs/00 Main\\_doc/990719BOLOGNA\\_DECLARATION.PDF](http://www.bologna-bergen2005.no/Docs/00_Main_doc/990719BOLOGNA_DECLARATION.PDF)> (accessed 24 January 2012).

European Network on Teacher Education Policies (ENTEP). (2012). *General Framework of the European Network on Teacher Education Policies*. Online, Available HTTP:< <http://entep.unibuc.eu/> > (accessed 24 January 2012).

European Commission. (2012). *The Bologna Process – Toward the European Higher Education Area*. Online. Available HTTP: < [http://ec.europa.eu/education/higher-education/doc1290\\_en.htm](http://ec.europa.eu/education/higher-education/doc1290_en.htm)> (accessed 24 January 2012)

EURYBASE (2009). Organisation of the education system in Finland. Online. Available HTTP:< [http://eacea.ec.europa.eu/education/eurydice/documents/eurybase/eurybase\\_full\\_reports/FI\\_EN.pdf](http://eacea.ec.europa.eu/education/eurydice/documents/eurybase/eurybase_full_reports/FI_EN.pdf) > (accessed 11 May 2010).

Eurydice (2006). *The Education System in Denmark*. Brussels: Eurydice. Online. Available HTTP: <[http://www.eng.uvm.dk/Education/~media/UVM/Filer/English/PDF/081110\\_the\\_danish\\_education\\_system.ashx](http://www.eng.uvm.dk/Education/~media/UVM/Filer/English/PDF/081110_the_danish_education_system.ashx)> (accessed 19 January 2012).

Gassner, O., Kerger, L. & Schratz, M. (Eds) (2010). *ENTEP – The first ten years after Bologna*. Bucharest, Ro: Editura universitatii din bucaresi. Online. Available HTTP:< [www.uni-kassel.de/einrichtungen/filadmin/datas/einrichurgen/zib/Akt - ENTEP Book.pdf](http://www.uni-kassel.de/einrichtungen/filadmin/datas/einrichurgen/zib/Akt_-_ENTEP_Book.pdf)> (accessed 24 January 2012)

Gassner, O. (2010). 'ENTEP and European teacher education: Policy issues since 2000' in Gassner, O., Kerger, L. & Schratz, M. (Eds) (2009). *ENTEP – The first ten years after Bologna*. Bucharest, Ro: Editura universitatii din bucaresi. Online. Available HTTP:< [www.uni-kassel.de/einrichtungen/filadmin/datas/einrichurgen/zib/Akt - ENTEP Book.pdf](http://www.uni-kassel.de/einrichtungen/filadmin/datas/einrichurgen/zib/Akt_-_ENTEP_Book.pdf)> (accessed 24 January 2012)

Hanushek, E. & Woessmann, L. (2008). 'Education and Economic Growth'. Chapter prepared for the Third Edition of the International Encyclopaedia of Education. Online. Available HTTP:<[http://edpro.stanford.edu/hanushek/admin/pages/files/uploads/hanushek\\_wo](http://edpro.stanford.edu/hanushek/admin/pages/files/uploads/hanushek_wo)

[essmann%20%2020010%international%20encyclopedia.pdf](#)> (accessed 18 January 2012).

Hess, R. (2012). The 2012 RHSU Edu-Scholar Public Presence Rankings. *Education Week*. Rick Hess Straight Up Blog. Online. Available HTTP:<  
[http://blogs.edweek.org/edweek/rick\\_hess\\_straight\\_up/2012/01/the\\_2012\\_rhsu\\_edu-scholar\\_public\\_presence\\_rankings.html?qs=rhsyu](http://blogs.edweek.org/edweek/rick_hess_straight_up/2012/01/the_2012_rhsu_edu-scholar_public_presence_rankings.html?qs=rhsyu)> (accessed 23 January 2012)

Lucu, R. (2010). 'Ten years after Bologna: On the way toward a European teacher education area'. In Gassner, O., Kerger, L. & Schratz, M. (Eds) (2010). *ENTEP – The first ten years after Bologna*. Bucharest, Ro: Editura universitatii din bucaresi. Online. Available HTTP:< [www.uni-kassel.de/einrichtungen/filadmin/datas/einrichurgen/zib/Akt - ENTEP Book.pdf](http://www.uni-kassel.de/einrichtungen/filadmin/datas/einrichurgen/zib/Akt_-_ENTEP_Book.pdf)> (accessed 24 January 2012)

Keil, B. (2001). A Summary of the Saami (Lapp) Situation in Finland. Online. Available HTTP:< [http://bkeil.bol.ucla.edu/LING\\_L520\\_Saami-Situation.pdf](http://bkeil.bol.ucla.edu/LING_L520_Saami-Situation.pdf)> (accessed 11 May 2010).

Kyro, M. (2006). Vocational Education and Training in Finland. Online. Available HTTP:< [http://www2.trainingvillage.gr/etv/publication/download/panorama/5171\\_en.pdf](http://www2.trainingvillage.gr/etv/publication/download/panorama/5171_en.pdf)> (accessed 11 May 2010).

Ladd, H.F. (2007). Teacher Labor Markets in Developed Countries. *The Future of Children*. 17(1), p. 201-217.

Lee, B. & Park, S.J. (2006). *Republic of Korea (South Korea)*, A Global Guide to Management Education 2006, Canada: Global Foundation for Management Education. Online. Available HTTP: <[http://www.gfme.org/global\\_guide/pdf/201-206%20Korea.pdf](http://www.gfme.org/global_guide/pdf/201-206%20Korea.pdf)> (accessed 19 January 2012).

Leigh, A. & Ryan, C. (2008). Estimating returns to education using different natural experiment techniques. *Economics of Education Review*. No. 27, pp. 149-160.

Levine, A. (2006). *Educating School Teachers*. Report of The Education Schools Project. Online. Available HTTP:< [www.edschools.org/teacher\\_report.htm](http://www.edschools.org/teacher_report.htm)> (accessed 25 May 2010).

McKinsey & Company (2009). Detailed findings on the economic impact of the achievement gap in America's schools. London: McKinsey & Company. Online. Available HTTP:< [http://www.mckinsey.com/app\\_media/images/page\\_images/offices/socialsector/pdf/achievement\\_gap\\_report.pdf](http://www.mckinsey.com/app_media/images/page_images/offices/socialsector/pdf/achievement_gap_report.pdf)> (accessed 18 January 2012).

Marks, G. & Ainley, J. (1999). 'School achievement and labour market outcomes'. Discussion Paper No. 408. Paper presented to the Centre for Economic Policy Research, ANU Conference on Labour Market Trends and Family Policies: Implications for Children, 14-15 July, 1999. Online. Available HTTP:< <http://spear.anu.edu.au/pdf/DP408.pdf>> (accessed 18 January 2012).

Ministry of Education Finland (2002). Finnish Knowledge in Mathematics and Sciences in 2002: Final Report of LUMA Programme. Online. Available HTTP<

[http://www.oph.fi/instancedata/prime\\_product\\_julkaisu/oph/embeds/48078\\_Luma\\_fin\\_al\\_report.pdf](http://www.oph.fi/instancedata/prime_product_julkaisu/oph/embeds/48078_Luma_fin_al_report.pdf)> (accessed 11 May 2010).

Ministry of Education Finland (2009). The role, status and legislation of the Saami Education Institute. Online. Available HTTP:<  
[http://www.minedu.fi/OPM/Julkaisut/2009/Saamelaisalueen\\_koulutuskeskus.html?lang=enitle](http://www.minedu.fi/OPM/Julkaisut/2009/Saamelaisalueen_koulutuskeskus.html?lang=enitle)> (accessed 11 May 2010).

Ministry of Education and Research Norway (2009). 'White Paper on Teacher Education "The teacher - and the role and the education"'. Online. Available HTTP:<  
[http://www.regjeringen.no/upload/KD/Vedlegg/stortingsmeldinger/Teacher\\_Education\\_Factsheet.pdf](http://www.regjeringen.no/upload/KD/Vedlegg/stortingsmeldinger/Teacher_Education_Factsheet.pdf)> (accessed 19 January 2012).

Ministry of Education Singapore (2012). 'Teacher Training'. Online. Available HTTP:<  
<http://www.moe.gov.sg/careers/teach/career-info/training/>> (accessed 19 January 2012).

Ministry of Education and Research (Sweden) (2008). 'Sustainable teacher education'. Online. Available HTTP:<  
<http://www.sweden.gov.se/sb/d/10086/a/117518>> (accessed 19 January 2012).

Moretti, E. (2007). 'Crime and the Costs of Criminal Justice'. In Belfield, C.R. & Levin, H.M. (Eds) *The Price We Pay: Economic and Social Consequences of Inadequate Education*. Chapter 7, pp. 142-159. Washington DC: The Brookings Institution.

Muennig, P. (2007). 'Consequences on Health Status and Costs'. In Bellfield, C.R. and Levin, H.M. (Eds) *The Price we Pay: Economic and Social Consequences of Inadequate Education*. Chapter 6, pp. 135-141. Washington DC: The Brookings Institution.

National Board of Education Finland (2010a). Teacher Training. Online. Available HTTP:<  
<http://www.oph.fi/english/education/teachers>> (accessed 11 May 2010).

National Board of Education Finland (2010b). Description of Education System: Finland. Online. Accessed HTTP:<  
[http://www.oai.fi/pls/portal/docs/page/oai\\_internet/01fi/05tiedotteet/03julkaisut/opekoulutuseng.pdf](http://www.oai.fi/pls/portal/docs/page/oai_internet/01fi/05tiedotteet/03julkaisut/opekoulutuseng.pdf)> (accessed 11 May 2010).

National Institute of Education Singapore (2011). 'Postgraduate Diploma in Education Programmes'. Online. Available HTTP:<  
<http://www.nie.edu.sg/studynie/admissions/teacher-education-undergraduate-studies/post-graduate-diploma-education-programmes>> (accessed 19 January 2011).

Niemi, H. & Jakku-Sihvonen, R. (2006). In the front of the Bologna process: thirty years of research-based teacher education in Finland. In Jakku-Sihvonen, R. & Niemi, H. (Eds.) *Posodobitev pedagoških študijskih programovv mednarodnem kontekstu : Modernization of study programmes in teachers' education in an international context*. Ljubljana : Univerza v Ljubljani, Pedagoška fakulteta 2006, 50–69. Online. Available HTTP:<  
[http://www.seeeducoop.net/education\\_in/pdf/workshop/tesee/dokumenti/monografija/Finland.pdf](http://www.seeeducoop.net/education_in/pdf/workshop/tesee/dokumenti/monografija/Finland.pdf)> (accessed 11 May 2010).

Niemi, H. & Jakku-Sihvonen, R. (2009). Teacher Education Curriculum of Secondary School Teachers. Online. Available HTTP:< [http://www.revistaeducacion.mec.es/re350/re350\\_08ing.pdf](http://www.revistaeducacion.mec.es/re350/re350_08ing.pdf)> (accessed 11 May 2010).

OECD (2002). *Education at a Glance*. Paris: OECD. Online. Available HTTP:< <http://stats.oecd.org/glossary/detail.asp?ID=5426>> (accessed 18 January 2012).

OECD (2003). Attracting, developing and retaining effective teachers. Online. Available HTTP:< <http://www.oecd.org/dataoecd/43/15/5328720.pdf>> (accessed 11 May 2010).

OECD (2005). Equity in Education Thematic Review: Country analytical report – Finland. Online. Available HTTP:< <http://www.oecd.org/dataoecd/49/40/36376641.pdf>> (accessed 11 May 2010).

OECD (2008). Education at a Glance 2008: OECD Briefing Note for Finland. Online. Available HTTP:< <http://www.oecd.org/dataoecd/31/46/41277828.pdf>> (accessed 11 May 2010).

Productivity Commission (2011). *Schools Workforce*. Draft Research Report. November. Online. Available HTTP:< <http://www.pc.gov.au/projects/study/education-workforce/schools/draft>> (accessed 9 January 2012).

Roza, M. & Miller, R. (2009). *Separation by Degrees: State-by-State Analysis of Teacher Compensation for Master's Degrees*. A report of the Centre on Reinventing Public Education, Centre for American Progress. Online. Available HTTP: [http://www.americanprogress.org/issues/2009/07/separation\\_of\\_degrees.html](http://www.americanprogress.org/issues/2009/07/separation_of_degrees.html) (accessed 23 January 2012)

Skutnabb-Kangas, T. & Dunbar, R. (2010). Indigenous Children's Education as Linguistic Genocide and a Crime against Humanity? A Global View. *Journal of Indigenous Peoples Rights*. (1), pp. 1-126. Online. Available HTTP:< <http://www.e-pages.dk/grusweb/55/fullpdf/full4bf8f9c5dfe42.pdf>> (accessed 11 May 2010).

Strauss, V. (2012). Ravitch: Problems with the big teacher evaluation study. *The Answer Sheet*. Online. Available HTTP:< [http://www.washingtonpost.com/blogs/answer\\_sheet/post/ravitch-problems-with-the-big-teacher-evaluation-study/2012/01/17/gIQAjGPI5P\\_blog.html](http://www.washingtonpost.com/blogs/answer_sheet/post/ravitch-problems-with-the-big-teacher-evaluation-study/2012/01/17/gIQAjGPI5P_blog.html)> (accessed 20 January 2012).

The Trade Union of Education in Finland (2010). Teacher Education in Finland. Online. Available HTTP:< [http://www.oaj.fi/pls/portal/docs/page/oaj\\_internet/01fi/05tiedotteet/03julkaisut/opekoulutuseng.pdf](http://www.oaj.fi/pls/portal/docs/page/oaj_internet/01fi/05tiedotteet/03julkaisut/opekoulutuseng.pdf)> (accessed 11 May 2010).

UNESCO (2003). *Institutional Approaches to Teacher Education within Higher Education in Europe: Current Models and New Developments*. Online. Available HTTP< <http://www.cepes.ro/publications/pdf/teacher.pdf> > (accessed 11 May 2010)