Education in the Asia-Pacific Region:
Issues, Concerns and Prospects 20

Phillip Hughes *Editor*

Achieving Quality Education for All

Perspectives from the Asia-Pacific Region and Beyond

ASIA-PACIFIC EDUCATIONAL
RESEARCH ASSOCIATION

Achieving Quality Education for All

EDUCATION IN THE ASIA-PACIFIC REGION: ISSUES, CONCERNS AND PROSPECTS

Volume 20

For further volumes:
http://www.springer.com/series/5888

Phillip Hughes
Editor

Achieving Quality Education for All

Perspectives from the Asia-Pacific Region and Beyond

Springer

Editor
Phillip Hughes
Australian National University
Canberra, Australia

ISBN 978-94-007-5293-1 ISBN 978-94-007-5294-8 (eBook)
DOI 10.1007/978-94-007-5294-8
Springer Dordrecht Heidelberg New York London

Library of Congress Control Number: 2012951668

Printed on acid-free paper

Springer is part of Springer Science+Business Media (www.springer.com)

Foreword: Let a Hundred Flowers Blossom

The test of the morality of a society is what it does for its children.– Dietrich Bonhoeffer

It is hard to remember a time when education was not really important to me. I have written elsewhere in detail about the three teachers who inspired me and significantly shaped the course of my life. Alison Smith taught me for six years of primary school, in a model small school where she taught 36 pupils – six in each of six years. She knew me intimately; she knew exactly what I was capable of and never accepted anything but my best. Her words to me as a 10-year-old "*Is that your best, Phil*?" still ring in my ears and motivate me.

Doris Brown, my high school English teacher, brought the classics alive for me and related their themes to contemporary life in the lead up to and during the Second World War. Finally, when I went as a Rhodes Scholar to Oxford, CS Lewis was the academic, prolific author and Christian apologist whose classes altered my direction in life. I audited his lectures on Milton, for one term. His capacity to communicate with his listeners and bring major issues to life convinced me that I should become a teacher rather than the nuclear physicist I had intended to be.

I later came to realise that not everyone enjoyed the same opportunities to access quality education that I had. A broadening sequence opened my eyes to the inequities of education provision:

- Being part of a three-government Mission on Higher Education to find ways to provide higher education to 12 island countries of the South Pacific – countries scattered across 33 million square kilometres of ocean, an area more than three times the size of Europe with a total land mass equal to Denmark, no large islands and a total population of 1.3 million varying from Tokelau with 1600 to Fiji with 800,000. Isolation and lack of resources meant that few students were able to progress past secondary school, impacting on the countries' ability to train their own professionals and affecting the capacity of their schools to provide the educated people needed. The final solution was to establish the University of the South Pacific located in Fiji to serve all 12 countries.

- In the early 1970s at the University of Canberra, realising that many mature women of substantial ability lacked the formal entry requirements for our teacher education course. They were in competition with bright young candidates from schools who had high entrance scores but lacked experience. I had to advocate strongly to the Academic Board for a quota of entry for them. Many of them went on to have highly successful careers in education not only as classroom teachers but leaders in the profession.
- During the 1970s, spending time in Papua New Guinea to understand better the needs of the schools and their teachers and education leaders, in preparation for bringing some to train with us in Australia. The issues confronting them were not only the physical problems of a developing society but the myriad language groups.
- Around the same time, preparing teachers for indigenous students in remote communities in the Northern Territory of Australia. The small number of students in isolated locations combined with the indigenous people's itinerant lifestyle and lack of a written form of their language all posed enormous challenges for educators – and still do.
- Befriending refugees from Kosovo and hearing their stories of how civil war disrupted their schooling and how lack of formal qualifications limits their employment opportunities.
- In 2001, working in the Middle East and dealing with the fact that more than half the students' time in school was taken up by Islamic studies and the implications of that for time spent on the rest of the curriculum. The girls, even in relatively enlightened Islamic countries, were taught apart from the boys with an even more reduced curriculum, preparing them to be wives and mothers and little else. Interestingly, the elite in those countries, even the education leaders, often sent their children, including their daughters, abroad to Western countries for a broad, balanced education.
- When the OECD published the results of its first PISA study in 2000, realising that while Australia's best students were performing as well as the best in the world, a long tail of underachieving students indicated that equity was a big issue for Australian educators.
- Reading a report from the Business Council of Australia which said that around 35,000 students leave Australian schools every year without the education foundation for employment, further education or skills and knowledge to fully engage in our society. We know that such students are overrepresented in jail, on the dole and in personal and domestic crises of various kinds.

Over the years, I have done what I could to bring these issues and possible remediation to the attention of anyone who would listen. Now that my time is limited, I want one last shot at pleading the case for all those young people across the world who deserve the chance of a high-quality education that will give them the best chance of reaching their full potential. My voice will soon be silent, but I hope all who read this book will be inspired to take up the challenge of doing whatever they can to make sure every child and young person has the chance to learn and take their

place in civil society. Thank you to all who have contributed to this book – I could never have done this without you. If Michael Jones, at 24 years of age, the youngest contributor to this book, is representative of his generation, I am very hopeful for the future.

21st June 2012 Phillip Hughes

Contents

Introduction: Kelli Hughes

On February 26, 2011, I sent this email to about 50 colleagues with whom my husband, Phillip Hughes, had worked in a whole range of education-related activities during a lifetime in the field of education.

> *On January 28, after a couple of weeks of feeling unwell, my husband, Phil, was diagnosed with cancer of the bile duct. Just 2 weeks later we were told that it was malignant. Phil along with his family has considered the full range of possible interventions and he has decided only to accept palliative care. We are currently in St George Private Hospital, Sydney and Phil wants to publish a book in the months he has left – he is keen to make a final contribution towards what he sees as a major issue in education. I am contacting you as one of a number of people he would like to contribute to that book.*
>
> *This is the idea. As the seventh child of a working class family from a tiny town in Tasmania, Australia, an effective education in Tasmania and later Oxford, provided opportunities for Phil that most children from his background would never dream of. You will know that he has been passionate about an effective education for all, for the whole of his adult life. So Phil is inviting you to write a concise paper, up to around 2,000 words, expressing your own views as to what you think is necessary to provide an effective, relevant, high quality education for all children. What, for example, should be the priorities and best approaches to adopt to achieve such an education. Alternatively, you might want to write about valuable ways that already exist to provide high quality and effective education for all but are not being fully utilised; or else your ideas about future directions and activities to reach that goal.*
>
> *The next step is for you to tell me whether or not you will be able to write a piece along the lines suggested and confirm the date when it would be available.*

Within an hour or two, emails, phone calls and text messages came bouncing back – the first from Paris. Phil was elated. Not only were people responding to his request but they were also reminiscing about their experiences with Phil and encouraging him during a really tough time of life. Here are just a few.

> *Having known what these times are like, my thoughts and best wishes go out to you both. Yes, I would be touched and honoured to make a contribution. Please let Phil know of my admiration for his never failing advocacy for education. He will be living the profession's moral purpose for as long as he draws breath, I know.*
>
> *It goes without saying that I would be honoured and delighted to contribute to Phil's last project. He is an educator and academic I have always admired and a person of great*

goodness and grace. I am not surprised that he and the family have decided to approach his final journey as one of palliative treatment, and I'm not surprised that he wishes to be productive to the end!

I would be very pleased to write something for inclusion in the book. In fact, there's something I've been meaning to write for a while, but haven't had a reason to start. I would also like to do this for Phil whom I admire so very much. Thanks for inviting me to be part of the project and give Phil my best wishes. You are both in my thoughts and prayers.

Phil has been very kind to me and my career was very much shaped by his vision and philosophy when he supervised my doctoral thesis at the University of Tasmania. He always had time for me to guide me in the right direction.

Around 40 colleagues agreed to write a paper for this book, and most of them were able to deliver, often in spite of the heavy workloads they were already carrying.

Just a couple of weeks after inviting colleagues to contribute to Phil's book, he had his 85th birthday. Not only colleagues but many family members, friends and former students sent him greetings.

Under your leadership of the School of Teacher Education at that dynamic time the course of my professional life was forever changed for which I am most thankful and deeply appreciative. (A student from the University of Canberra in the 1970s while Phil was the head of School of Education)

If there is one impression that stands out in my experience it has been your general acceptance of people irrespective of race, achievement or status. You fostered the development of persons who wanted to serve their community with their particular gifts within a variety of equally important roles. (A staff member from the University of Tasmania where Phil was head of the School of Education during the 1980s)

I love his passion for education. But even more I love the fact that he truly values and respects the experiences of the children being educated. As a child, it is incredibly empowering to have someone truly value your perspective and to view you as the central agent in your own education. It certainly helped me to take control of my education and for that I will always be grateful. (A granddaughter who is about to submit her PhD)

It was typical of Phil that at a time when many others would have coiled up and shut the world out, he was eager to make one final contribution to the passion that absorbed much of the 85 years of his life – making quality education accessible to all. At the core of Phil's passion was the One whom he regarded as the greatest teacher of all, Jesus Christ, whose life and spirit were the example Phil sought to follow and who continued to sustain him during difficult days and nights.

My thanks go to all of those who have contributed to this book, but especially to Phil's colleague of many years and close friend Rupert Maclean who has made the publication of this possible. I must also thank family, friends and the host of doctors and nurses who made Phil's days enjoyable and as comfortable as possible.

Canberra Kelli Hughes
June 2012

Achieving Quality Education for All: Perspectives from the Asia-Pacific Region and Beyond

Phillip Hughes (Editor)

Series Editors Introduction

This is an important book on an important subject. It is edited by one of Australia's most eminent and widely respected and influential educators, Professor Phillip Hughes. In editing this volume, Professor Hughes draws on his extensive experience, both within Australia and worldwide, with government education authorities, particularly in the Australian Capital Territory and in Tasmania, and with education for development agencies such as AusAID, UNESCO and UNICEF. I have written elsewhere in detail about the important contributions of Phil Hughes to education and schooling in Australia and internationally and refer interested readers to a book devoted to celebrating the work of Phil Hughes: Rupert Maclean. (Ed.), (2007), *Learning and Teaching for the Twenty-first Century*, Springer, Netherlands.

In essence, this book addresses the question: what role can education and schooling play in contributing to a more just, equitable and peaceful world, where there is sustainable economic and social development for all and poverty reduction? Although current action to achieve high-quality and relevant education for all, Education for Sustainable Development and the United Nations' Millennium Development Goals provide a useful foundation for action, the authors in this book clearly demonstrate that this is insufficient. They argue that it is also important to pay greater attention to devising concrete, action-orientated ways of promoting social justice and peace building, through means such as lifelong learning, skills development for employability, values/ethics education and high-quality, relevant educational research.

The authors of the chapters present powerful and coherent arguments concerning the importance of strengthening the public sector in education, examine the vexed issue of how to promote quality in teaching and make equity work, scope progress achieved to date in international education movements such as Education for All and Education for Sustainable Development and examine the importance of educational research. In various ways, the contributors refer to the importance of adopting a holistic approach to learning. That is, while formal education, through institutions such as schools and colleges, is an important way in which individuals learn, there is

an increasing need to stress the importance of 'lifelong learning'. Lifelong learning involves three types of learning: *formal learning*, which occurs within a teacher-student relationship, in an academic environment such as a school system*; nonformal* learning, which is organised learning that occurs outside the formal learning system, such as in a training workshop where people can learn by coming together with people of similar interests and exchanging viewpoints; and *informal learning,* which refers to the experience of day-to-day situations, such as learning from everyday life, from friends and from the mass media.

We believe that this book will reach a wide audience of education policymakers, researchers and practitioners who admire and respect the significant work of Phil Hughes in education. Sadly, Phil passed away towards the end of 2011, before the publication of this interesting and important volume. We would like to thank all of those who have contributed to bringing this project to fruition under what were very difficult circumstances due to the death of Professor Hughes. In particular, we thank Phil's wife, Kelli Hughes, and KWOK Sin Yan (Ada), research assistant in the Centre for Lifelong Learning Research and Development, the Hong Kong Institute of Education, without whose great efforts and care, this project would not have been completed in such a timely way.

Hong Kong
Tokyo
7 June 2012

Rupert Maclean
Ryo Watanabe

Part I
Prelude: The Public Sector in Education

The eight papers in this section present powerful and coherent arguments for the strengthening of the public sector in education. The context of their thinking is the recognition that education for all is not a distant hope but an achievable reality.

Geoff Masters emphasises the dangers of stereotyping, where students are assigned to low-achieving groups and, predictably, typically perform to match the stereotype. He makes an important point: '*there is a question as to whether emphasising group membership is counterproductive. A preoccupation with demographic distinctions may serve only to highlight existing differences and cement future expectations'*.

Denise Bradley points out sharply the inequity which is the basis of many education systems, making a powerful argument for social justice. As she points out, countries with such inequalities are perpetuating harmful and expensive divisions. *'All Australian schools receive some public funds but schools in the poorest and most socially deprived areas of our country, schools which educate the children most in need of a rich and nurturing educational experience, languish*'.

Don Anderson takes these arguments further, stressing the need for a more equitable approach to education. '*I see the divide between public and private schooling as the single greatest structural impediment to advancing the quality of education in Australia'*.

Deborah Meier has been one of the leading figures in the USA seeking major reform in schools. She founded a network of small public schools in East Harlem and later in Boston. The schools she has helped create serve predominantly low-income African-American and Latino students. She is a passionate advocate of an effective education for all, despite their background. *'At the very least, school should be a place where children are not treated as though they are data or numbers in someone else's policy war, or as only "future" members of society.' 'Each school community needs to think through what important achievements look and sound like—set their standards and defend them even as they revise and edit'*.

Michael Fullan, surely the epitome of the universal educator given his wide involvement with so many countries, draws a powerful conclusion. His role in his own country in achieving an effective education for all gives extra weight to his

words. *'In all of this what we are learning is that you have to pay close attention to personalizing education experiences for students, valuing them as individuals, building the instructional capacity of teachers both individually, and especially collectively to enable them to work in professional learning communities, and to building connections with parents, communities and business'*.

Lyndsay Connors, one of Australia's most experienced observers of education, also sees the danger from a possible decline in the quality of public education: '*It would be tragic if the "democratic right to accessible, affordable, quality education" that is embodied in the concept of a socially representative, free and secular public school system were to be lightly brushed aside'*.

Malcolm Skilbeck and Helen Connell turn to the vital question of the content of the necessary education for all. '*A task on which we have barely begun is the extension of personal and citizenship education throughout the lifecycle. If lifelong learning for all is to rise above the level of a slogan, new policies, new structures, new personnel, new content, new approaches to teaching and learning, and new ways of financing the whole educational enterprise are called for'*.

Kerry Kennedy from his vantage point in Hong Kong appeals for education to achieve its potential in transforming life chances: '*But it is education that has the potential to move individuals into a different space from where they can see life in a new way and indeed can create a new life for themselves. Education, unlike other areas of social service, can be transformational; yet it is not so for everyone*'.

Chapter 1
The Power of Belief

Geoff N. Masters

'Nobody rises to low expectations'. Calvin Lloyd

This essay has been written to honour Professor Phillip Hughes, an extraordinary Australian and one of the most outstanding educational thinkers this country has produced. Through his unswerving belief in the capacity of education not only to transform individual lives, but also to create a more just and harmonious society, Phil has challenged all of us to set and pursue higher expectations. These include higher expectations of the school curriculum to develop capacities for reflection, curiosity and creative thinking as well as personal values; higher expectations for the equitable distribution of educational opportunities; and higher expectations of education's contribution to ameliorating global tensions and challenges. One of Phil's early teachers, Alison Smith, encouraged him to set high expectations by asking, 'Is it your best?' Throughout his career Phil has set exceptionally high expectations of himself while promoting self-belief in others. In his own words, 'for all of us as teachers, the final victory is to retain our faith in people, in their capacity to grow' Maclean (2007).

Success in most fields of endeavour depends on an ability to visualise success. It has long been known that elite athletes mentally rehearse each performance prior to its execution. Advances in neuroscience show why this may be so important: the neurological processes involved in visualising a performance are almost identical to those involved in the performance itself. Indeed, simply watching somebody else perform activates 'mirror' neurons in the observer paralleling neuronal activity in the performer Rizzolatti and Fabbri-Destro (2010). The ability to visualise success and an accompanying belief that success is possible appear to be prerequisites for most forms of human achievement.

G.N. Masters (✉)
Australian Council for Educational Research,
19 Prospect Hill Rd, Camberwell, VIC 3124, Australia
e-mail: ceo@acer.edu.au

P. Hughes (ed.), *Achieving Quality Education for All*, Education in the Asia-Pacific Region: Issues, Concerns and Prospects 20, DOI 10.1007/978-94-007-5294-8_1,

It also is clear that the development of self-efficacy is strongly influenced by the attitudes and beliefs of others. In schools, high achievement tends to be correlated with high parental and cultural expectations. Parents, in particular, are powerful inculcators of values and aspirations. Highly influential teachers also are commonly described as individuals who communicate a 'belief' in their students and who build self-confidence through high expectations. However, just as some students live up to high expectations, so others live down to the low expectations held for them. In education, low expectations are the equivalent of bone pointing; all too often they become self-fulfilling prophecies.

Not surprisingly, students develop differing beliefs about their own abilities to learn. Some students appear to view ability as 'fixed' and something over which they have little control. Students who believe they have low fixed abilities tend to believe that effort will make no difference. Those who believe they have high abilities often underestimate the importance of effort. On the other hand, students with an 'incremental' view of ability have a deep belief that success is related to effort. Rather than interpreting past failures as indicators of a lack of ability, these students are more likely to explain failure in terms of a lack of effort Dweck (2000). Interestingly, research has identified cultural differences in these beliefs. East Asian students tend to have more incremental views of their abilities than students of European origin.

Given its importance to ongoing learning and achievement, few outcomes of schooling are more important than the development of a belief in one's own capacity to learn. Because teachers and schools are in powerful positions to shape this belief – both positively and negatively – vigilance is required to ensure that educational practices do not unintentionally communicate and institutionalise low expectations of some learners.

One way in which educational practices can institutionalise low expectations is by *treating excellence as a limited resource*. There is general acceptance in society that not everybody can excel. Not everybody can be an Olympic athlete, just as not everybody can be tall. Indeed, if to 'excel' means to stand out from the crowd, then by definition, only some can excel. By analogy, it is argued, not everybody can (or even should) achieve excellence in the learning of mathematics or languages or science. Excellence in school achievement is a scarce resource available to only a few.

It seems likely that this deeply seated belief is driven in part by notions of intelligence. Beginning with Francis Galton in the mid-nineteenth century, it became common to identify and label varying levels of human intelligence, with each level representing an IQ range and a percentage of the population under the normal (bell) curve. A small percentage of 'geniuses' were at one extreme, and small percentages of 'imbeciles' and 'idiots' were at the other. It was a small step from concluding that high intelligence was scarce to expecting excellence in school achievement also to be scarce.

One of the clearest illustrations of the rationing of excellence is the process known as 'grading on the curve'. Under this approach, the percentage of students achieving each available performance grade is predetermined. For example, a decision might be made ahead of time to award the top ten per cent of students an 'A' and the next 15 per

cent of students a 'B', regardless of their absolute levels of achievement. This practice, common in some higher education institutions, is intended to counter the possibility of 'grade inflation' (i.e. an increasing percentage of students being awarded high grades with no accompanying increase in absolute levels of achievement). The rationing of top grades to fixed percentages of students sends a clear message that excellence in educational achievement is expected of only a few. There are many other, more subtle, ways in which educational institutions communicate the same message.

However, educational achievement is not predetermined in the way that attributes such as height are predetermined. Achievement is strongly influenced by the quality of teaching, parental support and expectations and student effort. Educational achievement also is not a competition with limited spoils for the winners. Just as levels of health, wealth and educational participation have increased in the general population over time, there is no reason why the percentage of students achieving excellence also should not increase. In reality, there appears to have been a decline in absolute levels of performance in subjects such as mathematics and science in Australia over the past two decades Brown (2009).

The possibility of significantly larger numbers of students achieving excellence is made clear in international studies such as the International Evaluation of Achievement's Trends in International Mathematics and Science Study (TIMSS) and the Organisation for Economic Cooperation and Development's Programme for International Student Assessment (PISA). In reading, mathematics and science, between 10 and 15% of Australian students perform at 'advanced' international levels. Under the belief that excellence is a scarce resource, this percentage of advanced performers may seem about right. However, in East Asian countries between 35 and 50% of students perform at the same 'advanced' levels.

A second way in which low expectations can be institutionalised in educational practice is by *placing ceilings on learning*. It is well known that students are more likely to learn successfully when engaged and motivated and when provided with learning opportunities appropriate to their current levels of achievement and learning needs. Students are less likely to learn when given work that is much too easy or much too difficult for them, meaning that 'differentiated' teaching is important when students are at widely varying levels of achievement. However, expectations are lowered for students when they are assigned to classes or streams that place a ceiling on what they are able to learn or how far they are able to progress. In an effort to provide 'relevant' learning experiences appropriate to students' abilities and interests, educational courses often protect participants from intellectual rigour and limit what they are able to learn.

For example, in mathematics – which often labours under the belief that it is inherently difficult, obscure and of limited relevance for many students – it is common to create easier streams for less able students. But these easier streams, with their focus on low-level, applied learning, often have low expectations of the quality and quantity of mathematics learning and deny students access to the essence and beauty of this subject. Recent growth in secondary school completion rates in Australia has been accompanied by increases in the numbers of students taking lower-level courses of this kind. Since the mid-1990s, the percentage of

year 12 students taking elementary mathematics has grown by 30 per cent, while the percentages taking intermediate and advanced mathematics have declined by 22 and 27%, respectively Rubinstein (2009).

A third way in which low expectations can be institutionalised is through the *prejudging of students' capabilities based on their group membership*. When students are grouped according to demographic characteristics, it is clear that some student groups have higher average levels of achievement than others. For example, students living in rural and remote areas tend to have lower average achievement levels than students living in urban areas. Girls tend to outperform boys, particularly in language-rich subjects. Non-indigenous students outperform indigenous students, and students from high socioeconomic backgrounds outperform students from low socioeconomic backgrounds. In some cases, these gaps are the equivalent of two or more years of school. The problem arises when expectations of individuals are then lowered on the basis of the group/s to which they belong.

In educational practice, there is often a small step from observing a correlation – for example, between socioeconomic background and achievement – to treating this observation as an 'explanation'. Low socioeconomic status is regularly invoked as an explanation for low achievement, despite the fact that some students from low socioeconomic backgrounds can be found among the highest achievers in our schools and universities, and some students from high socioeconomic backgrounds can be found among our lowest achievers. And from 'explanation', it is another small step to 'expectation' and beyond that to 'excuse'. School principals who have led significant improvements in low socioeconomic areas often report that their first challenge was to confront low staff expectations. In these schools, teachers had come to expect low achievement on the basis of students' backgrounds.

And there are other, more subtle, ways in which observed correlations can lead to lowered expectations. For example, it is a small step from comparing schools with similar student intakes to concluding that students in a particular school are performing well 'given their socioeconomic backgrounds' or 'given the proportion of indigenous students in the school'. Conclusions of this kind border on what is sometimes referred to as the 'soft bigotry' of low expectations. Prejudging and 'prejudice' have identical etymological origins: both can be the result of ignoring individuality and assigning individuals the presumed characteristics of a group.

There is a long history in school education of observing differences in average group performances and then designing programmes and initiatives to address the needs of specific student groups (e.g. the needs of boys, indigenous students or students from low socioeconomic backgrounds). However, there is little evidence that the achievement gaps such programmes and initiatives were designed to address have closed significantly in recent decades. More generally, there is a question as to whether emphasising group membership is counterproductive. A preoccupation with demographic distinctions may serve only to highlight existing differences and cement future expectations.

A fourth way in which low expectations can be institutionalised is by *prejudging students' capabilities on the basis of their age or grade*. Schools continue to be organised on traditional lines with students grouped and taught in grades based on

age. Under this 'assembly-line' model, students move in a lockstep fashion from 1 year to the next, with teachers at each stage delivering the curriculum for that grade Darling-Hammond (2004). This model has been strengthened in recent years with the development of explicit grade-based curricula with accompanying assessments to establish how much of the curriculum for their grade students have mastered. This practice is another example of the use of group membership to set expectations for student learning.

The reality in learning areas such as mathematics and reading is that, despite this lockstep model, students in the same grade currently vary in their achievement levels by as much as 5 or 6 years of school. As Dylan Wiliam has observed, in practice there is only a loose relationship between educational achievement and age Wiliam (2007). If teachers treat all students of the same age as equally ready for the same grade-based curriculum and teach to the middle of the grade, then some lower-achieving students are likely to be left behind. There is evidence that many lower-achieving students fall further behind with each year of school. At the same time, expectations are lowered for higher-achieving students when learning is limited to the completion of classwork targeted at the middle of the grade. It is not uncommon to hear of classes in which more able students, rather than being challenged and extended, are given 'free time' once they have completed set classwork.

In spite of limiting beliefs and practices of this kind, many teachers, school leaders and parents share powerful alternative beliefs about student learning. These include beliefs that every individual is capable of learning, with no natural limits on what most individuals can learn; that at any given time, students are at different points in their learning and may be progressing at different rates, but that all are capable of further progress if motivated and if provided with learning opportunities appropriate to their readiness and needs; that individual differences in ability to learn are readily compensated for by effective teaching; that starting points for teaching are best established individually rather than inferred from group membership; and that excellent, ongoing progress is a more appropriate expectation of every learner than the expectation that all students of the same age/grade will be at the same point in their learning at the same time. In situations where teachers, school leaders and parents share beliefs of this kind, expectations are raised and students perform beyond the limits imposed by the rationing of excellence, low-level courses that deny access to high achievement, reduced expectations of particular demographic groups and grade-based assembly lines.

References

Brown, G. (2009). *Review of education in mathematics, data science and quantitative disciplines.* Report to the Group of Eight Universities, Canberra, Australia.

Darling-Hammond, L. (2004). Standards, accountability, and school reform. *Teachers College Record, 106*(6), 1047–1085.

Dweck, C. S. (2000). *Self-theories: Their role in motivation, personality and development.* Philadelphia: Psychology Press.

Maclean, R. (2007). *Learning and teaching for the twenty-first century: Festschrift for Professor Phillip Hughes*. Bonn: Springer.

Rizzolatti, G., & Fabbri-Destro, M. (2010). Mirror neurons: From discovery to autism. *Experimental Brain Research, 200(*(3–4), 223–237.

Rubinstein, H. (2009). *A National Strategy for Mathematical Sciences in Australia*. Report prepared in consultation with the Australian Council of Heads of Mathematical Sciences, Melbourne, Australia.

Wiliam, D. (2007). Once you know what they've learned, what do you do next? Designing curriculum and assessment for growth. In R. Lissitz (Ed.), *Assessing and modeling cognitive development in school*. Maple Grove, MN: JAM Press.