# Specifying and Assessing Knowledge and Skills for Life

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Professor Geoff Masters has been Chief Executive Officer of the Australian Council for Educational Research (ACER) since 1998. Prior to joining ACER, he was a member of the Faculty of Education at the University of Melbourne.

Prof Masters is also Chair of the Education Network of the Australian National Commission for UNESCO, a member of the International Baccalaureate Research Committee, a Past President of the Australian College of Educators; Founding President of the Asia-Pacific Educational Research Association and a member of the Business Council of Australia Education, Skills and Innovations Taskforce.

He has a PhD in educational measurement from the University of Chicago and has published several books and numerous journal articles in the field of educational assessment.

For more than 20 years, Prof Masters has been an international leader in developing better measures of educational outcomes.

Prof Masters has led work on the practical implementation of modern measurement theory to large-scale testing programs and international achievement surveys.

Prof Masters recently investigated options for an Australian Certificate of Education on behalf of the Australian Government and was the author of a recent paper released by the Business Council of Australia, Restoring our Edge in Education Making Australia's Education System its Next Competitive Advantage (2007).

In my presentation to this year's Research Conference I will be taking as my starting point the proposition that a fundamental purpose of schooling is to provide every student with knowledge and skills to equip them for life beyond school. While acknowledging that schooling has broader purposes, I will argue that there are some fundamental understandings and skills that all students should develop during their school years, and that every student should be expected to demonstrate an acceptable level of these skills and understandings by the time they leave school[1].

During the secondary school years, and particularly in the final years of school, students undertake specialised vocational and academic studies as preparation for higher education, training and/or employment. In this presentation I will argue that, in parallel with specialist and subject-based learning, every effort should be made to ensure that *all* students develop foundational skills and understandings essential to successful functioning as an adult member of Australian society and the workforce.

Currently, no attempt is made to confirm that students meet such minimally acceptable standards by the time they leave school. Several states are introducing requirements that students demonstrate specified standards of literacy and numeracy to be eligible for the award of a senior certificate; however, most students can complete 13 years of school and be awarded a senior certificate without having to demonstrate minimally acceptable levels of proficiency across a range of fundamental domains such as reading, writing, numeracy, science, civics and citizenship, and ICT literacy.

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1 except for a small percentage of students with special needs for whom these expectations would be inappropriate

And certainly, there are no *nationally* developed or agreed statements of what every child should know and be able to do as a result of 13 years at school.

The available evidence suggests that many students leave Australian secondary schools having never achieved minimally acceptable standards in fundamental areas. The OECD Programme for International Student Assessment (PISA) sets a 'baseline' level of proficiency in reading literacy, mathematical literacy and scientific literacy, below which students are considered 'at risk' of not having the basic skills necessary for work and future citizenship. The most recent PISA results (2006) show that 13% of Australian 15-year-olds perform below this baseline. What we do not know is how many of these under-performing students attain baseline proficiency by the end of Year 12 (or equivalent). It seems likely that most do not. And the situation is worse for specific sub-groups of the Australian student population: 40% of Indigenous 15-year-olds, 27% of students living in remote parts of Australia, and 23% of students from the lowest socioeconomic quartile perform below the minimum standard set by the OECD.

In this presentation, I will consider the desirability and possibility of specifying minimally acceptable standards of attainment in fundamental domains of knowledge and skill, and of establishing the extent to which individual students meet these standards by the time they leave school.

## Identifying fundamental domains

My assumption is that it is possible to reach national agreement on a number of areas (or domains) of knowledge and skill that are so essential that every student should be expected to reach some identified minimum level of

attainment in each of these domains. The identification of these domains would require national discussion and debate. It is possible that the set of identified domains might change over time; however, significant changes to the set of domains are unlikely given their fundamental nature.

Obvious candidates for inclusion in the set of domains are the basic and cross-curricular skills of *reading, writing* and *numeracy*. These domains already are assessed for every student at Years 3, 5, 7 and 9. Minimally acceptable standards ('benchmarks') at each of these year levels have been set, but no attempt has been made to specify nationally the minimum standards that all students should be expected to reach in these basic skills as a result of 13 years of school.

Other domains are suggested by current national and international sample surveys. The OECD's Programme for International Student Assessment (PISA) includes regular assessments of *scientific literacy* at 15 years of age. Scientific literacy is distinguished from the school subject Science by its emphasis on students' understandings of scientific concepts and principles and their ability to apply these understandings to everyday problems. In contrast, assessments of achievement in the school subject Science are more likely to address mastery of broad curriculum content, with an emphasis on factual and procedural knowledge.

Australia's national surveys of student achievement include assessments in the domains of *ICT literacy* and *civics and citizenship*. PISA has also included an assessment of *problem solving* on the grounds that this is a basic skill for future work and citizenship.

A broader set of possibilities is suggested by recent work of the Australian Chamber of Commerce and Industry and the Business

Council of Australia to identify a set of 'employability' skills required for effective participation in the workforce. These include skills in *planning and organising, teamwork, initiative and enterprise, self-management* and *learning*. Whether skills of this kind can or should be defined and assessed in a nationally consistent way, and whether minimally acceptable standards can be set for these skills, remain the subject of debate.

In my presentation I will briefly review international efforts to identify and define areas of fundamental knowledge and skill within which every student might be expected to attain at least a minimal standard of performance.

## Setting achievement standards

Having identified a set of essential domains, the next task would be to identify minimally acceptable standards of performance in each of these domains. For example, what level of reading proficiency should *every* student be expected to achieve by the time they leave school? What are the essential understandings and skills that *all* students should be expected to develop in the area of civics and citizenship? What scientific understandings should *all* school leavers have? These 'minimally acceptable standards' would not be tied to any particular year of school, but would be standards that every student would be expected to reach at some point in their schooling, and all students should reach by the time they leave school.

The identification of minimally acceptable standards is always a matter of judgement and ideally would be the subject of national discussion and debate, not only within the education community, but also within the broader community. Standards would be set through a standard setting exercise in which stakeholders judged what they

considered to be minimally acceptable levels of knowledge and skill in particular domains.

The standard setting process could be informed by international comparisons. For example, if a minimum standard were set nationally for reading proficiency, then this standard could be compared with the OECD's baseline for reading literacy at 15 years of age and/or with minimum standards set in other countries.

To minimise the possibility of students and schools focusing their efforts only on achieving minimum standards, assessments should be designed to recognise and reward levels of attainment well beyond the minimum.

Achievement standards, like the domains themselves, may be redefined over time. Standards that may have been acceptable in the past may no longer be acceptable in the future.

In my presentation I will outline some considerations in setting proficiency standards, making reference to recent experience in setting standards for PISA, national sample surveys, and system-wide literacy and numeracy tests.

## Assessing levels of student attainment

When it comes to establishing whether or not individual students have achieved at least minimally acceptable standards in areas such as reading, writing, numeracy and scientific literacy, there may be value in developing assessment materials nationally. Certainly, the domains themselves and minimally acceptable standards of attainment would best be defined nationally. An argument also could be made for the national development of objective assessments that could be implemented locally.

It is clear that many students would achieve expected standards in the identified domains well before Year 12. These students should be given an opportunity to demonstrate that they have met the standards when they are able to do this (in Year 10 or earlier, in Year 11, or Year 12). Ideally, assessments at various stages of schooling would allow teachers and parents to track progress across the years of school and to identify individuals who are not on track to achieving minimally acceptable standards by the time they leave school.

An important question would be how assessments of this kind might relate to existing assessment processes in Australian secondary schools. For example, should the award of a senior certificate be dependent on first demonstrating at least minimum proficiency in some or all of these domains? Could national assessments of reading, writing, numeracy and ICT literacy be used directly in existing senior certificates?

In this presentation I will canvass some options for the national assessment of student attainment in fundamental areas of knowledge and skill.

I will not be addressing the more difficult question of the kinds of programs and interventions required to ensure that all students achieve acceptable levels of knowledge and skill in these essential areas. The first step is to clarify what we want every student to know and be able to do as a result of 13 years of school and to put in place processes for establishing the extent to which individuals are meeting these expectations.

## References

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