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STANDING COMMITTEE ON EMPLOYMENT, WORKPLACE RELATIONS AND EDUCATION

Reference: Academic standards of school education

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SENATE STANDING COMMITTEE ON

EMPLOYMENT, WORKPLACE RELATIONS AND EDUCATION

Wednesday, 11 July 2007

Members: Senator Troeth (Chair), Senator Marshall (Deputy Chair), Senators Barnett, George Campbell, Fisher, Lightfoot, McEwen and Stott Despoja

Substitute members: Senator Crossin to replace Senator George Campbell

Participating members: Senators Allison, Bartlett, Bernardi, Birmingham, Boswell, Boyce, Bob Brown, Carr, Chapman, Cormann, Crossin, Eggleston, Chris Evans, Faulkner, Ferguson, Fielding, Fifield, Forshaw, Hogg, Humphries, Hutchins, Joyce, Kemp, Ludwig, Lundy, McLucas, Ian Macdonald, McGauran, Milne, Moore, Murray, Nash, Nettle, O'Brien, Parry, Patterson, Payne, Polley, Robert Ray, Sherry, Siewert, Stephens, Sterle, Trood, Watson, Webber, Wong and Wortley

Senators in attendance: Senators Allison, Birmingham, Fisher, Lightfoot, Marshall, Nettle and Troeth

Terms of reference for the inquiry:

To inquire into and report on:

The current level of academic standards of school education, with particular reference to:

1. Whether school education prepares students adequately for further education, training and employment, including, but not limited to:
    a. the extent to which each stage of schooling (early primary; middle schooling; senior secondary) equips students with the required knowledge and skills to progress successfully through to the next stage; and
    b. the extent to which schools provide students with the core knowledge and skills they need to participate in further education and training, and as members of the community.
2. The standards of academic achievement expected of students qualifying for the senior secondary school certificate in each state and territory.
3. How such academic standards compare between states and territories and with those of other countries.

WITNESSES

Committee met at 10.32 am

CHAIR (Senator Troeth)—Welcome. This is the fifth public hearing of the Senate Standing Committee on Employment, Workplace Relations and Education inquiry into academic standards of school education. The purpose of the inquiry is to inform the Senate about current standards and achievement levels in schools and to examine whether schools are preparing students adequately for the immediate workforce and for higher education. We will consider such issues as whether basic skills are being adequately imparted and whether the academic curriculum is sufficiently rigorous to meet the requirements of university study.

I remind all witnesses that, in giving evidence to the committee, they are protected by parliamentary privilege. It is unlawful for anyone to threaten or disadvantage a witness on account of evidence given to a committee and such action may be treated by the Senate as a contempt. I also remind witnesses that giving false or misleading evidence to the committee may constitute a contempt of the Senate. Witnesses may request that part or all of their evidence is heard in private. I welcome any observers to this public hearing.

[10.33 am]

HARVEY, Mr Ian Malcolm, Executive Officer, Australian Music Association

LETTS, Dr Richard Albert, Executive Director, Music Council of Australia, in partnership with the Australian Music Association

STEVENS, Associate Professor Robin Sydney, Immediate Past President, Australian Association of Research in Music Education, Australian Music Association Inc.

CHAIR—Thank you for your submission. Do you wish to make any alternations to it?

Mr Harvey—No.

CHAIR—In that case, I invite you to make a brief opening statement and then we will proceed to questions.

Mr Harvey—Thank you for this opportunity. Research has long shown the importance of school music to broader educational outcomes, including children's development of literacy and numeracy. Each of us strongly believes that music is a valuable and pleasurable skill in its own right. However, this is not what we seek to focus on here today. Learning music helps children develop the broader skills base of any subject. It has artistic, cultural, physical, social, verbal and intellectual components, each of which helps children develop.

The integration and development of these subject-specific skills with general intellectual skills and the cultivation of verbal and musical forms of communication is central to both our submission and our testimony today. The recognition of these important benefits is not confined to us here in Australia. Central to the Blair government's reform of their education system is the music manifesto, which seeks to provide every young person with first access to a range of musical experiences. Similarly, in the United States, President Bush's No Child Left Behind Education Bill specifically includes music education as an area eligible for federal funding, targeted at lifting national education standards.

Further afield, a survey of music curriculum in 24 countries, via the Commission for Music in Schools and Teacher Education of the International Society for Music Education, conducted by Sam Leong in 1997, found that, of 24 countries, 22 mandate the study of music, at least, at the lower, middle and upper primary school levels. Most of those 22 countries continue this mandate through to the middle years of secondary school. In short, it is clear that, despite recent developments here in Australia, many Australian children miss out on the range of benefits provided through music education.

For us to answer the terms of reference of this inquiry there are three key elements: firstly, the contribution of music education to broader outcomes in academic standards; secondly, the quality of academic standards for music education itself within Australia; and, thirdly, the extent of the availability of music education for Australian children.

I will briefly address these three elements in turn. Firstly, there are examples and strong evidence of the benefits of academic development of children within music. Some examples of these include the long-term research done by Dr Gordon Shaw, which has repeatedly shown that music builds and modifies newer pathways related to spatial and reasoning tasks. These newer pathways are crucial for higher brain function such as maths and science. An extensive study, the National Education Longitudinal Study, was undertaken in the USA by Cantrell et al, from UCLA. It showed an extraordinarily strong connection between school music and numeracy. For example, 21 per cent of grade 8 music students from low socioeconomic households scored higher in mathematics, compared to 11 per cent of non-music low socioeconomic status students. By grade 12, these figures were 33 per cent and 16 per cent respectively. In fact, the low socioeconomic status music students not only scored higher in mathematics than the low socioeconomic students who were not involved in music but were also better than the average of all students.

This research was confirmed by Cantrell in the significant Champions of Change study, which clearly demonstrated that consistent high levels of involvement in instrumental music over the middle- and high-school years is related to significantly higher levels of mathematics proficiency by grade 12. Further research by Sandor, which dates back to 1969, has shown that playing music increases memory, reasoning capacity, time management and eloquence. Weber et al have shown in research that playing music improves concentration, memory and self-expression. Further research conducted in 2004 by Glenn Schellenberg, published in the distinguished journal *Psychological Science*, showed that school children who took keyboard

or singing lessons for a year gained more end-year IQ points than their peers who studied drama or who undertook no extra curricula music activity at all.

I have just referred to a small number of hundreds of studies over the last 40 or 50 years in the area of music participation and cognitive development. I will briefly address the quality of academic standards for music education in Australia. In its report, the Australian government's recent National Review of School Music Education found:

There are gaps in Australian music curriculum documents in some States and Territories, notably in support materials for beginning primary generalist teachers; instrumental and vocal music … conducting; music technology … for gifted and talented students; music for Indigenous students, and about Indigenous music …

There are also gaps in:

… appropriate music pedagogy for different groups, e.g. boys, students with special needs; creativity, improvisation and composition.

To quote further from the national review:

Policy framework curriculum documents focusing on the Arts Learning Area are seen as downplaying the status and identity of music in schools. There is a need for clear syllabus style curriculum documents in music.

The National Music Workshop, a subsequent Australian government initiative with representatives from each state and territory and from each of the public and private school systems, overwhelmingly endorsed the national review and its guidelines for effective music education. They went on to endorse a more national approach to school music education, a recommendation that we would commend to this committee.

In short there is now a national blueprint for the provision of high academic standards in school music. Further, there is a willingness from educators, the industry and the sector to be part of these reforms. To implement this, we need the political will from every Australian government to work together in making these reforms possible.

Lastly, I would like to address the availability of school music for Australian children. Studies in the last decade have indicated that as few as 23 per cent of state school students in Australia have access to meaningful music education. Comparatively, access to music learning in private schools in Australia is much higher, with an estimated 88 per cent of independent schools offering effective music programs. The recent National Review of School Music Education said:

While there are examples of excellent music education in schools, many Australian students miss out on effective music education because of the lack of equity of access; lack of quality of provision; and, the poor status of music in many schools.

To summarise all of the above, we submit that it is clear that the academic standards delivered for school music education are insufficient. Further, we submit that while it is clear that music is critical to broader academic outcomes and standards, many, if not most, Australian students are missing out. In conclusion, it is for reasons of aesthetic, cognitive and social development that the National Review of School Music Education recommended the following:

To ensure every Australian child has opportunities to participate and engage in continuous sequential, developmental music education programmes.

We hope that this committee will urge all Australian governments to work together to implement the recommendations of the national review and adopt the guidelines for effective music education from that report, as well as the recommended framework provided by the recent National Music Workshop which plots a pathway forward.

CHAIR—Thank you, Mr Harvey. I think we would all agree with you on the points that you have made but the question is how we do it. We have already heard evidence from many witnesses that the curriculum is overcrowded to such an extent that we, as a committee, feel there is often not enough room given to literacy and numeracy, let alone other subjects like music. So, realistically, what level of government support would you like to see at both levels—state and federal—for an enhanced place for music? I think you said in your submission that there were already curriculum resources available to a degree.

Mr Harvey—That is correct.

CHAIR—How would you go about implementing those?

Mr Harvey—If I could begin by referring to the curriculum resources, I think the key issue with the curriculum is that it is stated by every state and government that music has a role, and in some cases it is

embedded in particular years. For example, in years 7 and 8 in New South Wales, there is an element of 100 hours for music during that period of time. The issue I really see with the curriculum is that the application of music in schools has largely been devolved to principals. While there are noted shortcomings in the documentation within the curriculum and syllabus context, I think there are a number of barriers that prevent music from being integrated into the curriculum by most schools, and they are largely to do with the availability and training of adequately skilled and confident teachers—my colleague, Professor Stevens, can speak to that in a little more detail in a moment—and the provision of physical resources and equipment to make these music programs come alive. But fundamentally, the most challenged resource is the teacher availability and the quality and standards in terms of skill and confidence.

Prof. Stevens—I might just add a couple of more things to that. Firstly, Victoria is a case in point. The current guidelines—or should I say the framework and standards that we have—tend to focus very much on the arts as a generic area of the curriculum. What we are really lacking—and I think this applies to many states—is a specific syllabus which is a guide for teachers. Ideally, I would suggest that a national curriculum in music based on the guidelines which are in the report of the National Review of School Music Education, would be an answer to that particular issue.

The other issue, of course, is teacher preparedness. It has long been said that teachers of music—we would also have to think about teachers in the other art forms and in areas like foreign languages, and even in science—often come to teacher education without very much background in those specific areas. In teacher education we try as much as possible to remedy the deficiencies of students coming into a teacher education program, but unlike perhaps maths, literacy and even the area of social education, the deficiencies are quite significant. We have to address not just the teaching of pedagogy—methods of teaching and so on—to students, but also remedy the deficiencies they may have in their own personal backgrounds. The other thing that we need to realise is that over the years—and I have been in teacher education for over 30 years—there has been a lessening of the allocated time within teacher education for music. This has come about because perhaps 20 years ago we were looking at the arts as being music and visual art. Now we have not just those two art forms, but dance, drama, media studies and perhaps graphic communication. So, there is a problem, I believe, with generalist primary teachers in particular having adequate skills, knowledge, confidence and competence to implement programs.

Many of our teacher education undergraduate students come in, of course, with music background. They have done Australian music examinations grade exams, they have learnt instruments privately without exams or whatever the situation is, and these people are obviously able to be leaders in schools, but it still comes back to the point that we really need to recognise that more emphasis needs to be put in teacher education programs on music. I might also add, though, that one of the things which would materially assist here would be if teacher registration boards in the various states were to set minimum standards of competency in music for teachers entering the teaching profession, particularly at primary level.

Mr Harvey—To return to your initial point about the crowded curriculum, I can make two comments. Yes, we have all heard about the crowded curriculum and I think we all recognise that lots of things are required of our teachers and our principals. I point to two things. Firstly, within Australia we can see very clearly that in the private school sector, which is delivering, in effect, the same curriculum as state schools, music and some other areas of activity are a fully integrated and vibrant part of those curricula in those environments. Secondly, there is ample evidence that music does exist and flourish in schools where a positive school leadership, adequately trained teachers and resources are available. The issue is that not all those factors are in place in all Australian schools. Additionally, if we were to point to overseas examples—I referred to an International Society of Music Education report in my opening statement—music is a core part of primary education in 22 other OECD countries. The time allowed varies from country to country, but it is between 70 minutes and two hours.

Dr Letts—I would like to decorate these statements a little. In 2004 Robin Stevens did a study from which we can extrapolate that 23 per cent of state school kids have access to competent music education. 88 per cent of students at independent schools have such access, so there is an enormous difference there, and presumably the issues of crowded curriculum et cetera are being solved in the private sector. Also, Queensland has specialist music teachers in primary schools, so obviously they are making time for the use of specialist music teachers and they have overcome the crowding problem.

The other thing I would like to point out is that in New South Wales, for instance, music is mandated throughout the primary years, but the pre-service training of the generalist music teachers who are supposed to

deliver the music education can be as little as 12 hours. In fact, if they go to the University of Western Sydney, it is zero hours. So, 12 hours makes, perhaps, an easier picture to present. How can a teacher with 12 hours training go ahead and offer, for example, weekly music lessons to their classes for six years? It is an absurdity.

Senator MARSHALL—What are you trying to teach in music, if this is not too obvious a question? Is it simply to learn to play an instrument competently, or is that not an objective of learning music, or are there other things? It comes back to the question of how much time is spent in Bachelor of Education courses and other courses. What is the objective? A teacher who does not have the musical skill but is very competent in other areas will not be made good just because they have that necessary competence. It may not make them a good music teacher if it is about learning an instrument, but are there other theoretical things which are important and deliver some of these outcomes? I want to come back to some of the studies that were done in a minute, but if you could just explain for me what it is in music education that they would learn.

Dr Letts—There is great variation in what is offered, but it is probably generally agreed that the broadest benefit comes from performance of some sort. It does not have to be an instrument. It might even be a choral experience. And then there are all the other activities about inventing music or appreciating it, and so on, that you get in the classroom.

Senator MARSHALL—Maybe I will ask the other question and you can answer both at the same time because you have directed us to a number of studies and many more are included in your submission. Just from reading the summary, why have we not done more on music, because there is a demonstrated benefit to the rest of education? So the first question is: are these results not challenged? If they are not challenged, why have we not implemented these results in days gone by? And the flow-on from that is: which parts of music lead to these benefits in English and mathematics? Is it learning to read music, having a good ear or being able to sing? What part of music gives us these extra benefits of flow-on in the other areas?

Mr Harvey—The studies are not without challenge. There have been challenges to these studies. The volume of them and the consistency of outcome now is moving that beyond challenge. It generally seems now to be well and truly understood that fundamental music development—and I will consider what that means in a moment—delivers these outcomes in literacy and numeracy skills. This is not new. There are at least 50 years of studies and several hundred of them. There seems to be a consistency in some of the numbers that come out of these studies now. Similar studies, from the casual study that I quoted earlier, have been replicated in a study by Johnson from Kansas University, which is about to be published. Again, there is a 20 per cent increase in student capacity in literacy and 22 per cent in numeracy in middle-age primary students.

I think the real benefit of music learning is at a young age, at the very beginning of preschool and the very beginning of primary school, where it is the music fundamentals, the understanding and listening skills, the development of rhythm, the harmony and then the beginning of the manipulation, using an expressive tool, whether it be an instrument or a voice, to actually deliver those skills and outcomes. That is where the real benefit of music exists. While it is not necessarily fully understood in a physiological sense, it seems to be to do with the development of neural pathways in the brain and the fact that music does not exist in one place in the brain, like our hearing or our sight may do. If you were to look at musical activity through an MRI you would see, in effect, the brain dancing around. Clapping a rhythm, for example, will see both hemispheres of the brain lighting up alternatively. It is that kind of development that happens in the formative period of children's development that is the most beneficial to the outcomes we talked about in numeracy and literacy. The other correlation is that at the end some of these children will desire vocational outcomes. That talent should be nurtured; it fits into our culture and so on and so forth. But for the 100 per cent, for the broad base, it is the preschool and early primary school years where those benefits are most evident.

Senator MARSHALL—Let me take the theoretical and then apply it to a practical situation on the ground—and you can do that with your personal experiences with your family, I suppose. Especially at the lower preschool level, if you try to push children into learning music when they simply do not want to do so, it is gone. There is then resistance year after year to doing anything musical. To come back to these studies, you talk about the children who get good mid-level music education going on to improve in other areas: is that because that is the percentage who like to do music in the first place? I see the risks in that. I have experienced that myself. That does not mean that flows across the board. It is about testing the academic theory against your own experiences on the ground. I see a significant problem in making that work.

Prof. Stevens—I think many young people are put off music simply because of the way it is taught. If I can add to what Ian said about music encouraging auditory perception, aiding psychomotor response, concentration and multi-sensory intake, all of these sorts of things are obviously going to flow from learning

music. It comes back to making music a fun experience for young children, so it becomes part of their everyday life. At school it is obviously something that they will enjoy doing, as opposed to perhaps taking it out of school and to a private teacher, where often kids feel as if all they are doing is learning scales and the very mechanical things of music, without engaging with others in a group music-making experience. It has a lot to do with the way music is delivered to students.

Mr Harvey—We should also consider that there are times when music has a higher attraction than other subjects within the maturation of the kids. The national review focuses on delivering more music at primary school level, which certainly supports all the research into cognitive development and so on. But you will know just from public experience and from the number of guitars that are imported and sold in this country, for example, that there is an explosion of music making, particularly amongst boys—although increasingly amongst girls—at ages 13, 14 and 15, when they have formed their own musical tastes. With the change of musical styles away from boy and girls bands back to a kind of rock music, the guitar sales have just about doubled in this last three-year period, so I think music has its times when it fits the development of children. It is best, I believe, if we can deliver effective music programs in the primary years and give the children the benefit of those non-musical outcomes, as well as giving them the fundamental musical skills; then they can pick and choose what they do as they get older. They can join a rock band at 14 or 15 if that is what they want to do. We see people coming back to music at 50 and 60 years of age because they still have a desire to make music, although they may not have done so for a period of 20 or 30 years.

Our research indicates that something like 60 per cent of people who have not learnt to play still have a latent desire to learn. It is just that the opportunities or whatever have not been available. Robin's point was very well made: the way that we deliver music programs and the importance of school based music provides the opportunity of putting people together. Music is a social art, and there is not much value in music if you are sitting and doing what they call 'practice'. I am not sure when playing became practice in our language but, nonetheless, along the way it has, but to isolate yourself through music is not necessarily a good thing. Schools give a great opportunity to have ensemble based programs which is the real benefit of music.

Senator MARSHALL—Yes, because if you say to parents—I am making an assumption—that we are going to have extra music and it is going to be much more formalised, the expectation is that the kids are going to come home knowing how to play an instrument or the piano, or sing in a choir; but that is not the final objective. That is something that will hopefully flow from music education. But that is not what you say is music education itself. It is not simply learning how to play an instrument by rote.

Mr Harvey—No.

Prof. Stevens—To amplify a little: one of the things that we stress with our students is that what we are trying to get children in schools to engage with is the elements of music, so they have an understanding of how music works. If they have that in place then they become informed audience members later in life. It is a case that certainly the elements of music are reinforced through practical activity, but underlying it is to understand how music works and how better to appreciate it as adults eventually.

Senator MARSHALL—I am curious to understand the relationship between your organisation and Crosby Textor.

Mr Harvey—Crosby Textor are the Australian Music Association's policy and community relations advisers.

Senator MARSHALL—And they were part of developing your submission to this inquiry?

Mr Harvey—Indeed, yes.

Dr Letts—Can I go back to your beginning question, which I think was, roughly speaking, if it is such a good thing, why are we not doing it? I had two thoughts about that. One is that if you want English performance to be better, then the natural action to take is to improve English teaching. To say that you are going to get that result by bringing music into the curriculum is rather a circuitous proposition and maybe that is just too hard. The other thing is that if only 23 per cent of public school kids are getting access to a competent music education, when that works its way through to the decision-making level of adults, a very small percentage of them have had access to a competent music instruction and, presumably, an even smaller percentage had access to a successful music instruction, because, of course, there is good teaching and bad teaching, and in music there is a special need that it be good. It is something that can be full of life and passion, but if it is not taught in that way one can dislike it and can have a bad experience.

Senator BIRMINGHAM—Thank you, gentlemen, for your submission and presentation today. It has opened our minds to some different issues that perhaps were not on the table for this inquiry beforehand. I will return, firstly, to the issue of curriculum crowding or cluttering. Is it your contention that music is perhaps one of those traditional specialist subjects or disciplines like, for example, history or geography that used to receive a lot more focus in the school agenda and today have been squeezed out by a raft of newer subjects and issues that schools are expected to address?

Prof. Stevens—In a sense I tend to agree with you. As I said before, it is a case that the arts were traditionally music and the visual arts. This is certainly the case in many other countries. Malaysia, Hong Kong and so on still have probably fewer discipline areas within the curriculum. My feeling very much is that although notionally the whole idea of children being educated in a broad range of art forms is a good one, practically it has meant that in schools and in teacher education less attention is being given to music. It is probably part of the whole information explosion that we are currently suffering, but I am very strongly convinced that, in a sense, music is almost a special case as far as the arts is concerned, particularly the performing arts, because of many of the benefits that it brings to children's overall development.

Mr Harvey—There is probably evidence for a degrading of music for the last 40 or 50 years and, to some extent, there is some cultural overlay to this. There is the belief that to be musical you almost have to be touched by God and that it is a talent that you were given through the womb rather than through something that is developed and nurtured as part of a broad based education. It comes back to the notion that only the talented can achieve in this area. It is fairly easy to identify some of those really talented students but we do not apply that in other areas of endeavour. We do not apply that in sport, for example. We encourage everybody to be a participant in sport because there are lots of sporting variables to try your hand at. There is a mythology that is built around music about performance excellence and about there being no point in being involved in music unless you are going to be really good at it. That is something that has probably developed since Victorian times, and we have really seen the brunt of that in this last 30 or 40 years. So why bother giving music exercises to 100 per cent of the people when we can find a few to be the next James Morrison or the next Richard Tognetti or whoever those icons of music are and in whatever genre. It could be Bernard Fanning and good song writers—those kinds of things.

It has been very easy for the community and governments to put a couple of specialist music schools in place in a cities like, for example, Melbourne or South Australia, and in your state where there are, I think, four specialist music schools, and to have those cater for the talented and not worry about everybody else. It is like the old thing of the cream rising to the top, so you can deal with those 200 or 300 really talented kids at any one time through a relatively narrow vertical process, rather than giving a breadth and depth of understanding. Music is one of the few things that you will spend your life engaged with. I did geography for years but when do I consider anything geographical apart from when the tsunami sadly hit a couple of years ago or when I am down in Victoria looking at Wilsons Promontory and saying, 'Ah, that is an isthmus.' Yet, all of you will engage in something that you like about music and you will share that from the time you are born virtually until the day you die. In fact, in most cases you will leave accompanied by music. It is something that you share your lives with. Very few things that we learn and experience are shared to that extent, and are that personal over that length of time. As a cricketer I had a 10 or 15 year cricket career. I still love cricket but it is over. Music is with me and it will be with all of you for as long as you live.

Senator BIRMINGHAM—You are quite clearly very passionate, which is good to see. Professor Stevens, you used the words 'special case' with regard to music. Looking at that, if we are talking about primary curriculum and the time given in primary schooling, which is where you have focused a lot of your attention and where, I understand, the National Review of School Music Education focuses its attention, I take it you would argue that where the tough decisions have to be made as to what is in and what is out, because music offers these apparent additional benefits in literacy and numeracy—and I see issues of phonological awareness raised in your submission—that, if a choice had to be made, music should be in and perhaps other areas of the arts should be out? Or other issues that are tough.

Senator MARSHALL—We have a report that identifies drama, doesn't it? 'Chop out drama,' says one of the reports.

Senator BIRMINGHAM—I studied drama longer than I studied music, I have to confess.

Prof. Stevens—I must say that I would find my drama and dance colleagues becoming quite irate with my view on this, but traditionally, areas such as dance have been incorporated within music quite successfully. Certainly drama has often been incorporated into English studies and literacy, for example, quite successfully.

In the end it is a matter of prioritising within the curriculum. The point that Ian made earlier is that it is a matter, I suppose, of teaching particular curriculum areas at optimum stages in children's cognitive growth. I certainly think that music should be introduced to children in the lower to middle primary school in particular, and perhaps some of the other art forms may be better introduced somewhat later in the school curriculum. I do not know whether I would have any agreement from my colleagues on that.

Mr Harvey—There is ample evidence to support that. For example, the physical development of people for dance may come a year or two later than the auditory and neurological developments involved in music. So generally I would support the view that if you could embed music in the very early years of primary school, that is the best time to achieve that.

Dr Letts—The other aspect to this is that the recommendation of the national review is that music instruction should be continuous, sequential and developmental. You can probably teach painting by having a few lessons over the next few weeks and then having nothing for six months, but in music, especially in terms of physical development, the development of motor skills really needs to be continuous. The skills accrue as the practice goes on.

Senator BIRMINGHAM—The Adelaide *Advertiser* reports today on the response of the South Australian government to the national review. It looks at some of the issues involved in that response—in particular, with a chronic lack of skills in primary teachers, to be able to pick up what I think is the response of the South Australian government to at least offer some more discrete teaching at a year 5 level. That seems to fall short of the proposal for continuous and ongoing learning—and I would like your feedback on that. I would also like some commentary on how you think we can best address, at the teacher training level, getting existing and future primary school teachers up to a standard where they can teach music in a way that gives us the literacy and numeracy benefits.

Mr Harvey—I have not seen the article in the Adelaide *Advertiser* but I think we are all well aware of the situation in South Australia. I think that, overall, the response by the South Australian government is insightful and broadly positive. There are a couple of challenges that confront them in taking that forward. One point that was not highlighted in the media reports but is clearly stated in the documentation surrounding this change is that the South Australian government is also now in the process of examining the best available method to deliver classroom music activities from reception to year 4 as a precursor to that instrumental activity in year 5. So I think our view is that the South Australian government is doing the right thing by bringing what is essentially a year 7 activity into primary schools. They are also now looking at how best to prepare a child who enters at a reception level in a South Australian school for instrumental activity in year 5. I might hand your question on the challenges in teacher training to Robin, who has expertise in that area.

Prof. Stevens—As I have suggested, we undoubtedly need to have more time allocated to music in pre-service courses. Another aspect which is very important for the success of music teaching in schools is professional development. Teachers need more incentive to undertake professional development in music. They need to have the opportunity to do something that I have heard people say on many occasions that they missed out on—that is, to learn a musical instrument. In some respects, we need to look at practising teachers as being already skilled in the actual process of teaching. What they are lacking is discipline based experiences in music. Therefore, I think professional development which gives them the opportunity to learn the guitar, keyboard or something like that would be a way forward. How this would be organised at a state level, I am not quite sure. There may be a possibility, as an incentive, that teachers undertaking 12 months of tuition in a classroom situation may be able to gain some credit for a graduate diploma, a graduate certificate or something like that. Certainly those sorts of practical music skills could be recognised by the teacher registration boards as part of the ongoing professional development requirements that most have.

Mr Harvey—The University of Wollongong, which is one of the teacher education institutions in this country, has for the last 12 months or so been running an elective program in which the kinds of activities that Robin has been talking about—co-curricular learning in how to use your voice and play either the guitar or the keyboard as a precursor to your teacher training—have been in place. It is an elective. I am not sure of all the consequences of that elective, but the university has advised us that more than 50 per cent of the current pre-service teachers are undertaking that music elective. So I think a lot of the students recognise the importance and value of the opportunity to undertake this additional learning in music—it is just that we as a sector and as policymakers need to be able to facilitate that better than we currently do.

The National Music Workshop document outlines the broad brushstrokes on how that might be achieved. The next stage is getting down to developing some detailed policy on that. But I think that is all achievable. It

is no different from what is being done in Japan, Singapore, Hong Kong, Finland, Norway, Sweden, Hungary, France and so on. Before they get registered as practising teachers, all pre-service teachers in those countries are required to demonstrate core musical skills using their voice and either the guitar or the piano keyboard as an accompaniment instrument. Without demonstrating that skill, teachers in those countries are not being registered. I think we have to recognise that, if we were to adopt such an approach, it would take time to achieve that. We might need to set a target of five or six years out, but, in the meantime, the approach that Robin referred to is an interim step to improve the numbers with those skills as a halfway measure to some kind of recognition via the registration process.

Prof. Stevens—I think students would recognise that they are not only receiving professional development but also enhancing their own personal appreciation skills in the process. There is a two-way benefit for them.

Senator FISHER—Most of my questions have already been asked by my colleagues, but at the risk of sounding like a broken record—pun intended—I would like to drill down a bit more into the crowded curriculum issue and ask what I see as a tail-end question. You suggest that music needs to be a core part of the curriculum nationally—and we have heard about the crowded house. You have attempted in your submission to draw links between mathematics, literacy and music. You say that one is based in the other and vice versa. You say that music is essentially another form of language. In answer to Senator Marshall, you indicated that the evidence of the links was not without challenge. Senator Troeth asked you what you can realistically expect of government in that environment. You are fighting for a room in a crowded house. In answering Senator Birmingham's question you have attempted very diplomatically to tiptoe around prioritising music and dance—and, Dr Letts, you have suggested that painting could be done intermittently. What role do you think associations like yours can play in assisting a government that may want to find a way to achieve the policy outcome that you are seeking, yet needs to base that decision on empirics and evidence? What role do you think your association can do to effectively rank music against all other forms of curricula? Even if you accept that literacy and numeracy stand alone, what work can you do with respect to other aspects of the curriculum?

Mr Harvey—In gardening, for example, we have companion plants—plants that work well with each other. My view is that, in a primary school environment, music is a companion subject to literacy and numeracy. In fact, you can teach mathematical principles through musical activity. We know this from our nursery rhymes. Any of you who have had children will know that that there are nursery rhymes about counting, concepts and those types of things. I do not know why nursery rhymes were invented, but they exist for a purpose—and I am sure they were a core part of education.

I said the empirics are challengeable—and they have been—but I do not think that is any different from the challenges that are made on global warming and all sorts of other things. With respect to global warming, there appears to be increasing commonality in the findings. Year on year, there are another dozen or so studies and they seem to be progressively coming up similar outcomes. I am not sure that all the mechanisms that go on in the brain are fully understood yet, but there are plenty of things that we do not understand but have adopted into policy.

Senator FISHER—For the purposes of this question, let us assume there is a demonstrable link, without challenge, between numeracy, literacy and music. What work can your association do to assist with differentiation vis-a-vis all the others? I think you have given some good feeders and ideas in terms of the in some ways intangible links that might exist, but what work can be done by your association or others to demonstrate more tangibility in terms of links and prioritising music above the other 'rooms in the house'?

Dr Letts—Do you mean showing that such links do not exist?

Senator FISHER—Maybe that is what you might consider doing. A government, in a policy setting role, ultimately has to prioritise. So what sorts of ideas does your association have for prioritising music vis-a-vis others? Maybe you want to think about that.

Dr Letts—Yes, that is a rather uncomfortable proposition.

Senator FISHER—I realise that, but it may have to be done.

Mr Harvey—Maybe we should come back to you with some thoughtful commentary in addition to what we have presented.

CHAIR—That would be welcome.

Senator FISHER—Relying on studies that say music education should be continuous, systemic and developmental, you have lamented the current status in terms of primary teachers attempting to do their best.

You have drilled down a bit more into this in your answer to Senator Birmingham but, in terms of music education, is something better than nothing?

Mr Harvey—Ultimately, yes, something is probably better than nothing. The reality is that we have a system that has been developed over numerous years, which means there is a box that has already been built. So we have to largely live in, or construct our opportunities within, that box. Dr Letts examined the reason why we talk about music being continuous, sequential and developmental. The difficulty is that some schools will choose to do a term of each of four arts areas: so they will do a term of music once a year—and that second term will be 12 months later. That lack of continuity is the big issue for music. I am not really qualified to comment on whether that is the case in other art forms, but it is absolutely critical for music. Without continuity you cannot develop musical skills and the benefits that flow from that. I still believe that there is an opportunity, within the context of primary education as it stands at the moment, to deliver that through a combination of better trained generalist teachers and some specialist teachers delivering, for example, instrumental programs and integrating effectively with the classroom.

As I said, music can be delivered in a whole host of ways. It can be, in the classroom sense, a five- or 10-minute activity per day rather than a whole chunk of an hour's activity once a week. As an example, I was talking to a teacher about the recorder—they offer recorder in their school. Of course, that has a whole lot of connotations to it. I said to the teacher: 'I don't know why you are trying to deliver one hour's recorder lesson a week when you should actually be doing 10 minutes every day. You will have a whole lot more engagement. The continuous nature of that is the benefit.' I made that comment, 'I don't know where playing actually became practice.' Playing 10 minutes a day rather than practising for an hour a week is where the benefit lies.

Within the box that exists that we do not need to break down any of those walls, I think we need to be fairly clever in how we reconstruct music's place within that. I do not want to hark back to 6,000 years ago, but music has had its place since classical Greek learning. It was very strong, as I know Robin can attest, through until at least the turn of the century here. In the goldfields, music was one of the core subjects.

Dr Letts—I have a slightly different take on this, which is that we are emersed in music. Music is not a scarce commodity. Adults and children can get music anywhere in their lives outside of the schools. So when you say—I forget exactly what you said—is something enough—

Senator FISHER—Better than nothing—same difference.

Dr Letts—Yes. Senator Marshall told us that he had some experience where something was not only not enough but was actually negative. We have to ask: what is it that the school is going to add? It seems to me that what the school can add is what you do not get through this informal contact but you do get through a proper, sequential, developmental and continuous education.

Prof. Stevens—What we would ideally be looking for is a whole school commitment—principal, staff and parents—to such a process.

CHAIR—That is very true. Thank you very much. We have had a very interesting discussion.

[11.33 am]

TOPFER, Mrs Christine, National Vice President, Australian Literacy Educators' Association

TURBILL, Dr Janice Betina, President, Australian Literacy Educators' Association

CHAIR—Welcome. Do you have any comments to make on the capacity in which you appear?

Dr Turbill—I currently work as a Senior Fellow at the University of Wollongong, New South Wales.

Mrs Topfer—I currently work as a senior teacher at Lansdown Crescent Primary School in Hobart.

CHAIR—Your association has lodged submission No. 26 with the committee. Do you wish to make any amendments or alterations to that?

Dr Turbill—Not to the actual submission but I would like to have the opportunity to speak to it.

CHAIR—Yes. I now invite you to make a short opening statement and then we will ask some questions.

Dr Turbill—Thank you. ALEA, the Australian Literacy Educators' Association, represents teachers of all levels of the system and of all systems, with a particular focus on literacy, of course; but we do think about other areas, because we think about literacy as being more than just paper based or print based. So it was interesting to hear the discussion before us.

We acknowledge that it is the teacher not the program who makes the difference in the literacy outcomes of our students. Teachers who have a deep understanding of literacy theories—note, I said 'literacy theories'—processes and teaching strategies are able, therefore, to make professional decisions based on sound assessment theories and practices of the literacy learning needs of their students.

I do not know whether you have a copy of *In Teachers' Hands: Effective Teaching Practices in the Early Years of Schooling*, but it is one of the DEST documents and presents the results of a huge research that took place over the past few years. It clearly demonstrates the role that the teacher plays in this process. We support that view.

We believe very strongly that quality professional development is a critical factor in maintaining and further developing the literacy knowledge of our teachers. For instance, ALEA, along with AATE, the Australian Association for the Teaching of English, whom I believe is following us today, is hosting some 800-plus teachers at a conference while we speak—the conference ends today—with presentations that are both national and international. That involves a lot of our work. Adequate funding is required to support the professional associations in these endeavours. We cannot do it without funding. We acknowledge that DEST and the ACT DET gave us wonderful financial support for this conference.

There is clear evidence that the teaching of literacy in Australia is and has been relatively successful over the years, and I am sure that you have read in submissions and heard from people like ourselves that the OECD PISA results in 2003 demonstrated that our 15-year-olds are doing quite well, thank you. They are second to Finland and South Korea, who are in the top band. We are in the second band.

Our state tests of all year 3, 5 and 7 students—which have been running over the years and, in New South Wales, since the early 1990s—generally indicate an increase. However, we also acknowledge that there is a tail of learners who are not achieving, and certainly this is a challenge for all literacy educators.

The diversity of Australian children in our schools is huge and is possibly the greatest in the world. For instance, the school that I work closely with in Sydney has students from 48 different linguistic and cultural backgrounds, including Indigenous students. So the challenge of teaching such a wide diverse group of students is huge, particularly in the area of language and literacy. Therefore, we again come back to the notion of professional development and the quality of that professional development.

One of the speakers at our conference, Linda Darling-Hammond, a professor at Stanford University, talked about the relevance of literacy in students' lives and that, if we are going to proceed in improving literacy in our students, particularly those from diverse backgrounds, we must connect to the relevance of literacy to the community and to in students' lives. She strongly indicated that no one program or method will ever make a long-term difference. We support that view, and we did so in our submission.

We also argue that every teacher, regardless of what subject they are teaching and at what level of the system they are at, is a teacher of literacy. For instance, in the four-year maths-science program that we run at the University of Wollongong, I teach a subject called Meeting the Literacy Needs of Adolescence. It is

presented in the third year of our maths-science pre-service teachers. At first, they cannot see the point of doing anything called 'literacy' when they are maths or science teachers but by about the third or fourth week, they start to make some connections.

They go out on their practicum for two weeks during that time, and are armed with strategies that they get from something called the MyRead—which is an online PD program that ALEA and AATE produce. They have to trial those on their practicum and come back with reflections on them. The interesting thing is that they come back with great 'aha' experiences and indicate that they are not only good but that they really work in helping them to teach their students. It really supports the strong point that every teacher is a teacher of literacy.

I have had experience in working with schools in the past six months with the A to E reporting mandate. That is a top down mandate that came upon schools across this country. That caused a great deal of confusion, a terrible amount of overwork for teachers and it did not fit with the criterion based standards that are being put in place for teachers at all levels, which are working. Finally, our association, in connection with AATE, developed a set of professional standards in early 2000 that we call STELA, the Standards for Teachers of English Language and Literacy in Australia. We have found that extremely useful, as has Teaching Australia, and it has formed the basis across the country for some of the institute standards as well. That is some work that we have done in that area.

CHAIR—Would you like to say something?

Mrs Topfer—No, we have prepared that together.

CHAIR—We have had discussions in Sydney, Melbourne and Perth with teaching associations about Australian students performing very well at an international level, but there is also the question of the long tail and how we engage those students and get them ready for either secondary school, study training or work in which literacy is still a large component after they leave school. Perhaps you could tell us about some of the strategies that your association has used to work with that long tail.

Mrs Topfer—The importance of the professional learning that members of our association are involved in is looking at differentiating the curriculum and providing flexible programs. The teacher's knowledge and understanding of literacy means that they are able to design programs that fit the needs of the individuals that they are working with, because that will vary from context to context and individual to individual. We try to empower our literacy teachers with the knowledge and the strategies to design flexible programs that are relevant to the community and which engage the learner. There is no one way—it is the teacher having the knowledge and the understandings to be able to craft that program. As we say, it is the teacher that makes the difference, not the program. Differentiation is the most important thing.

Dr Turbill—At the pre-service level at the university where I work we try to provide our students with a range of theories and practices while looking at what particular needs a child has compared to another child and how to build a program within a classroom and within the school context in which they work. It is always looking in to look out, but also looking at what the community needs and working with the community to support the literacy needs of the student. For instance, in a school in which I have been working closely with over the past four or five years—which is an inner city school in Sydney where the population is predominantly Chinese speaking—the parents have instilled expectations into the children that they sit up and listen and learn and do not question.

The teachers want them to question; they want them to talk. They want them to use their English in the classroom situation because they do not get English outside their classroom situation as it is predominantly a Chinese community. However, once we started to reach out more into the community and made links with the parents about the importance of the parents reading to the children, whether it be in Chinese or in English and so on—a lot of that relationship building made a lot of difference in the attitude of the children as well as of the parents towards literacy. That is just one small example of what can happen all over this diverse country of ours.

CHAIR—We also had evidence in Queensland from some university professors that, even among the brightest students, the capacity—I suppose those who qualified for law or science—to use English properly, by which I mean the construction of sentences and the old rules that we all know about, seemed to be largely lacking even in their very good first-year students. I guess those students—it is not as though they would not have the capacity to learn English but for some reason they do not bother about it. Is that right?

Dr Turbill—Yes. I think the word 'bother'—they do not see the need all the time. We have to provide students with a purpose for wanting to learn something. They learn what they want to learn very quickly. SMS text messaging—I do not know whether you have ever tried doing it, but we have undergraduate students who can sit in our lectures and SMS each other while I am talking—you do not pass notes any more, you SMS each other. They can do it with their thumbs as quickly as I can speak. There is a purpose for that. It is a very strong community in which they live. They need to do that, so they do do that. There are no capital letters and there is no punctuation; they just talk. I too work with undergraduate first-year students and with the first essay I might get from the students I can tear my hair out and think, 'What have we taught these students?' They really cannot produce good work for me. It is an insult. However, we go through the purpose as to why they need to demonstrate that they know these kills, particularly if they are going to be teachers, and it is amazing how different the second assignment is.

Senator MARSHALL—So you are saying they actually know it; they just do not use it.

Dr Turbill—They often do know it; they just do not take the trouble of going back and checking their work, proofreading their work. What you are talking about is proofreading. It is a copy edit if you work in the area of publications. When you are handing in something it is a copy edit job. You write it first—I am sure you do the same—but then you go through a copy edit process or you get a secretary or a PA to do it. Somebody does it for you. That process they need to really get down and be able to do. Often they do not know that process.

Senator MARSHALL—That is an important point. I think a number of witnesses—I am sure not maliciously—have wanted us to make the assumption that these things simply are not taught.

Dr Turbill—Yes.

Senator MARSHALL—You are saying—I will not put words in your mouth—but you are indicating to me that you think it probably is taught; it is just not used because the emphasis on using it and correcting it is not applied through the lesser levels.

Mrs Topfer—Yes. I have a personal example of that. I have a son in first year of law this year. I have also been in a school where I have taught my son and known his teachers and I have seen that they have learned those sorts of things. But now he has an absolute purpose to write a persuasive text. To get marks at university you have to be able to argue and argue well in order to do well. He suddenly has realised—not that he would say he learned it back whenever—that now he has a true purpose because this is where he wants to go in his life and the writing is changing. The really important thing is it is not just the purpose; it is the importance of teachers teaching this from kindergarten to university; it is the scaffolding that happens.

He now needs somebody to do what we talk about in primary education as the guided release of responsibility, where teachers model—this is what it looks like, we do things together, let us do this together—we call that shared writing, guided reading and things like that. Then you have a go on your own. They need that wherever that is coming in because that is how we learn in life. We cannot keep blaming the people who went before because as adult learners, you would know, you suddenly have a new need for something. You need to go back and have a look at a model or even a report you are writing for some different context. We need to revisit those things, so I think it is important that it happens across all levels of education.

Senator MARSHALL—Your submission is fairly upbeat about the standard of education in Australia which, again, is a bit of a different direction that a lot of other submissions are coming from. There is a point I want to come back to, but before we get there you talked about the strong link between curriculum and assessment. Could you expand a little on that and where it fits in the overall education process?

Dr Turbill—It is a chicken and egg sort of response, or even a question. Where do we start when we are teaching? Do we assess and then devise a curriculum to teach, or do we devise the curriculum and then teach it and assess it, and so on, so it is a very cyclic process. When we say we acknowledge the strong link between curriculum and assessment, we are not talking about state-wide assessment. That is part of it, but what is critical is that our teachers understand the assessment process that they need to take. In fact, they often do that informally without even realising that they are doing it because they are looking at a child's work, they realise there is a problem here, they start to make some decisions right there and then and they start to change the way they are going to teach because they have assessed, they have made some decisions about it and they change the curriculum. Now we are talking about curriculum with a small 'c' here, but it is what goes on in the classroom which is, in fact, the curriculum. So that strong teaching-learning cycle, which is what we are really

focusing on here, is imperative for our teachers to understand that assessment fits at every part of that, and the reflection process of the teacher also needs to be highlighted as to being very important.

The informal, or what is often called the 'formative assessment', is equally as important, if not even more important than the summative assessment, which is what you get at the end. So when you have a curriculum that is mandated by a particular state, as they are now, the standards, or the outcomes as they are in New South Wales—it is a New South Wales outcome standard framework—are set there fairly clearly for teachers to then work with, link to their students backgrounds and knowledge, but without constant assessment—with a small a, not your national or state testing—taking place. All you are doing then is teach, learn and test, without that informing future teaching, which is what is really critical. It is about constantly assessing a student—your student, or groups of students—so that you can re-jig, refocus and decide whether you need to do another modelling of that text because that is what you want the students to know and they are not doing very well from what you have just looked at. So it constantly informs the teaching process.

Mrs Topfer—And assessment as well, when we are working with teachers and helping them to understand that there are different purposes for assessment, as Jan has just described. As far as teachers are concerned, the most important thing is what we now call 'assessment for learning', which Jan referred to as the 'formative assessment'. The teachers are looking closely at the children they teach and where they go next, so that it is re-formed and relevant to the next step. We can teach children something out here but if they are not ready for it they will not get it. The other form of assessment is assessment of learning where we are taking a snapshot for system accountability, so that we can see, as cohorts, where the children are going. That is far more informative when we are looking at large numbers of children or learners, whereas the other form of assessment is—

Senator MARSHALL—But that is where the debate has come, and some of the criticism of the education system really comes back to the point that, as a parent, I want to be able to tell where my child is in school based on that sort of assessment which is really measuring them against everybody else. What do you say about that? Does is really help us? Is that the measurement parents should be looking at in terms of educational outcomes?

Dr Turbill—No. Having just worked for two years in the assessment branch in Tasmania, going through this problem and what AATE has produced, people tell us that that is what parents want, but in actual fact the parents who talk to us as classroom teachers are saying that they want to know how Johnny is going and what you are going to do next. 'What is it that you are going to do to help my child to learn more?' The parents, especially of those children who are struggling, do not need to be told that they are at the bottom of the rank. It is no benefit to the children either. They already know—and good classroom teaching is going to keep them informed—that we have issues here and we are working on this, this or this, but to be constantly and publicly told that you are an E or a D, which is how we are being told we need to do it at the moment, is not productive at all, and it is not what the parents want to know. But they do want to know what we, as teachers, are going to do to help their learner and to support their learner to take them further. That has been my professional and personal experience.

Dr Turbill—The other thing parents want to know is how well their child is doing in school socially. 'Does my child have friends? Does my child relate well to other people?' They are concerned about their child being bullied or picked on; those sorts of issues. 'Does my child speak up? Does my child answer questions?' They are very concerned about the total wellbeing of their child. These are parents from all the different backgrounds, whether they are from Chinese-speaking or Indigenous backgrounds; that is a really critical part. 'Is my child liked?'

Senator MARSHALL—And happy?

Dr Turbill—'Is my child happy?' That is a really critical one. And when the parent starts to see—and certainly as a teacher, when you start to see—that the child wants to come to school, that makes all the difference.

Mrs Topfer—It is easier to engage a learner when they want to be there, as well.

Senator MARSHALL—And that takes me to the other point, given what you have said about the assessment and where you think we are at in terms of our OECD position. The other strong point you make is about the quality of the teacher. I think you also said in your opening remarks that the quality of the teacher is, at the end of the day, the most important thing in terms of the educational outcome.

Mrs Topfer—Absolutely.

Senator MARSHALL—I agree with that. So the best thing that we could do to improve education standards from where we are at the moment—and that is not saying that they are low, but from where they are at the moment—is to have more higher-skilled and better resourced teachers.

Dr Turbill—Yes.

Mrs Topfer—Yes, we would agree with that.

Senator MARSHALL—And that is not to say that curriculum, assessment and everything else should remain static.

Dr Turbill—No.

Senator MARSHALL—Those things need to develop and grow with expectations and as the community thinks, but the most important fundamental thing to have education improved for the future is about the quality of the teaching.

Mrs Topfer—One way you could improve that—coming back just to the assessment—is with moderation and developing consistency of teacher judgement, which works in professional learning as well. So that is another link between your assessment and teacher quality, because I think that building professional knowledge helps teachers make good teacher judgements.

Dr Turbill—It is a very synergistic process because if teachers are much more empowered in their own thinking and learning, and they have those opportunities, the curriculum that they enact and the way they assess the students improve as well. They build upon each other.

Senator MARSHALL—Yes. I am not making a criticism of teachers at the moment.

Dr Turbill—No.

Senator MARSHALL—But I think there is the ability to upskill and have a higher skill. A lot of things flow from that and it is much more difficult than just saying that that is what we would like so let us do it. But we have heard lots of evidence about the resourcing and learning difficulties with different groups and how we actually resource that. Again, if we had that whole package there, that is what will deliver the outcomes.

Dr Turbill—Teaching is a very complex process.

Mrs Topfer—Yes, and the professional learning also. It is one thing to say that we need more professional learning but it is a matter of what good professional learning is and how it is delivered. In our association we talk about that a lot because one of the things we provide is professional learning for our members and ways in which we can help teachers change and improve through professional learning. Something that we have just been talking about at our conference is the mentoring of new teachers. Teaching happens in a box. It is quite an isolating job. It does not sound like it in a school, but in fact teachers can teach next door to each other and not know what is happening in the next classroom. So teachers need opportunities to talk to each other. If time and resources are provided for collegial conversations even within a school, that makes a difference. It is not always just someone coming in and saying, 'Here's a new idea,' or 'This is what we need to do,' but actually providing opportunities for teachers to talk to each other.

Senator MARSHALL—I will just finish with this, which is not in your submission so you may not want to answer it: is there room to increase the student-teacher contact hours? It is not necessarily a matter of extending the day but extending the learning year perhaps? Would education be better served, or do you think it is about right?

Dr Turbill—I am not sure that the children could take that. The kids get very tired.

Senator MARSHALL—The parents would enjoy it though.

Dr Turbill—Parents would love it.

Mrs Topfer—Parents think that you can just manage. Teachers take 25 students every day and they do not want just one of them at home. People talk about this as teachers needing to work more and do more. I see these breaks in the term for the children; the children need the break.

Senator MARSHALL—It has been suggested to us that there is not necessarily the ability to extend the learning day, because there are many stresses, but could there be an extra two weeks in the curriculum, for instance? I only raise it to get an initial response, because it has been put to the committee that this is—

Dr Turbill—I guess from my experience as an educator over all these years, I would say no. I think the children get tired and teachers get tired. The other thing that I am thinking of when you are saying that is:

when would we hold our conferences? If we reduce the time now, this is what we call the 'conference season'. The school holiday period at the moment is when you will find the majority of conferences on. Right now, the Australian Principals Association Conference and the Australian Curriculum Studies Conference are going on. I would like to be at both of those but I cannot be because I am at this. Before this, we had the Australian Teachers Educators Association Conference at the University of Wollongong. Before that, we had the Australian Systemic Linguistics Conference. So there has been conference after conference after conference. These breaks for teachers and teacher educators are when we do a lot of our professional development.

Mrs Topfer—I would add that school is an institution and we think all the learning happens at school. Yes, a lot of it does, but we also need to value the time that our children can spend in their communities and their local cultures building those partnerships. That is a valuable time of learning as well, when they are not at school. I think part of our role as educators is to help communities see how they are contributing to that education, and working together. I think we certainly need to value the breaks that the children have from the institution into their communities as a positive thing.

Senator BIRMINGHAM—In your introductory comments you spoke of the understanding of literacy theories as well as some of the other issues that are raised in your submission. Do you believe that today's teachers, both primary and secondary, are being equipped through their teacher training with that broadbrush understanding of the different literacy theories that are required for teaching students that might require different approaches to achieve success?

Dr Turbill—I can certainly speak from my own university and the answer to that question would be yes. At the national literacy inquiry there was quite a large review of what happens in all the different universities and teacher education places around Australia. There is certainly a diverse range. But I think, as a result of the national literacy inquiry and the *Teaching reading* report, many universities—and I know our university, the University of Wollongong is one of them—have looked at what we are doing and how we might change to fulfil the recommendations of the inquiry. But I would say that our students get as much of the literacy theory and theories as we can give them in the four years we have them. What is also critical is that they see those theories in operation at the school level.

We only get so much practicum time to allow that to happen. Universities like ours have been working at how we can get our students into schools more without paying teachers, because the more they are in the school the more they get that sort of information and the more they see the theories enacted in classrooms. Many of our universities—and certainly ours—have been looking at ways of doing that.

Last year we put our first-years into schools as part of what we called a 'school experience' program. That was where the teachers were not paid to have them, but the students went in groups of three to six according to how many students could fit into a primary school. Last year was our first year and it was very successful and this year it has been put into place in the new primary program. They went every Wednesday for the normal school day. They went in the third week of their university life, which sat with the school life, and they were considered part of the school. The professional learning that those student teachers did in that type of culture was 'risk free' because the teachers themselves did not feel the need to be constantly writing reviews and so on. They were not supervising the students. They were not being paid for it and they did not want that. They wanted to have the students around to talk to them. That was very successful. That then moved into the teacher practicum and, by that stage, the students and the teachers knew each other and the relationship between the teachers and the students had been built. That was a very successful program and it is now being embedded into our four-year program to happen each year.

To come back to your question, you can read everything about this—and we do ask our students to read it—but seeing it and working with the theories in actual practice is another thing. That is the area where I think we have not been able to do that as well as we might. As our student teachers graduate and go into schools, the early career programs that are being put in place are really very important so that early-career teachers are mentored and can see all the things that are going on. I would also like to see—and it is quite probably a personal thing of my own—teachers after a couple of years out in the school system continuing their academic qualifications. When they do come back and revisit those theories that they learned in their undergraduate time and they have some of the practice under their belt, they start to make a lot stronger connections. So as for giving them the broad brush, as you say, yes, I think they get them, but just how far that sinks in and how many connections get made depends on how they then see that enacted in schools and how they get opportunities to see that.

Mrs Topfer—That is why we would recommend that they join associations like ours, because we have the research. We offer the readings that keep the teachers in touch with current research as they go through teaching for many years and they can see the way that looks in practice. I guess that is one of the huge benefits of a professional association such as ours and others.

Senator BIRMINGHAM—You jumped quite well into what was going to be my second area of questioning—

Dr Turbill—Sorry.

Senator BIRMINGHAM—No, that is great—regarding mentoring and that vocational training side to teaching. It sounds as though the changes that you have made to the University of Wollongong program would make your student classroom time one of the greatest of any of the teacher training courses that are going at present.

Dr Turbill—We like to think so.

Senator BIRMINGHAM—The greatest in volume, but I am sure it is great in quality as well.

Dr Turbill—Yes. In the University of Wollongong there is also a program called the 'knowledge building community'. That has been honoured by a Carrick Award. What we did with our first years in school program was learn what we could from the research that was done around the knowledge building community—and I will talk briefly to that. We pulled all the things we could off that to embed into the first year in schools program without putting the whole thing in place.

The knowledge building community is where students elect in their first year to be part of that program. For every session—it is one session semester each year—when the practicum is involved, the students go into a cohort of 24 and stay within that group. They look at the subjects that all the other main students do—and there will be always four of them. They identify the critical things in each of those subjects. They could be music—we heard about music before—educational psychology, language and literacy. They look at the key issues, pull them all together and start to then problem solve or develop assessment tasks around those sorts of areas. So they have their assessment tasks out there, then they spend three days in the one school as a cohort of three or four or maybe five students. The 24 students come back and spend one full day only within a homeroom with an academic or with various academics coming in and out during the day to talk to them about different aspects of the curriculum of whatever it is they are studying, or the subjects. They might get the ed psych person coming in and giving them a couple of hours around questions they have identified because of the work they have been doing in the schools and the readings they have been doing as part of the subject and so on.

It is very hard to explain it in a very short time. It has been a very successful program, but at this point it is difficult because of the university structures to actually put across a whole program, a whole cohort. We have put it into our one-year Dip. Ed. program on the Shoalhaven campus of the university. That has been happening now for three years and it has been highly successful. The students have done their undergraduate and they come in for their one year and most of that time they actually spend in schools. But then they have one day a week in the homeroom going through the theory. In fact, I suppose they are going from not theory to practice but practice into theory and making those connections. If we can get that sort of mix going, I think we will be much more successful.

Senator BIRMINGHAM—When did you first introduce the main program of embedding students into the schools earlier and for longer periods of time?

Dr Turbill—The KBC program was the first attempt to do that with just one cohort of students out of the first year. The first-year students had a primary program. That began in 1999 as the first trial and it has been happening ever since. The KBC program at the Dip. Ed. level is in its third year, so 2005 was the first year that we did it at that level.

Senator BIRMINGHAM—Is any research available on the effects of that?

Dr Turbill—Yes, certainly.

Senator BIRMINGHAM—Would you be able to provide some of that to the committee secretariat?

Dr Turbill—Yes.

CHAIR—Thank you very much for appearing before us today.

Dr Turbill—Would you like us to leave any of these?

CHAIR—I think we have that one, but the research that Senator Birmingham just mentioned, if you could send that on, that would be great. Thank you.

[12.14 pm]

BULFIN, Mr Scott Anthony, Board Member, Australian Association for the Teaching of English

HOWIE, Mr Mark, Vice President, Australian Association for the Teaching of English

CHAIR—Welcome. Thank you for your submission. Do you wish to make any amendments or alterations to it?

Mr Howie—No.

CHAIR—I now invite you to make a short opening statement and then we will move to questions.

Mr Howie—Thank you for the opportunity to appear today. Our association welcomes this inquiry as a chance to have publicly acknowledged the outstanding work of teachers of English and literacy in this nation and the outstanding results being achieved by our students by national and international measures. In other words, it is a chance to affirm Barry McGaw's statement that Australia is a high-quality country in terms of its educational outcomes, particularly in the area of literacy. As parents of young children ourselves, we find that most reassuring and most encouraging as we look forward to our children's future success as they move through school.

The sorts of measures that we would point out as reaffirming what I have said are things like the PISA results, where we are second only to Finland. Also, we have fewer students in the lower levels of those results than the international average. Over the last five or six years, national literacy benchmarking has consistently shown that, on average, 90 per cent of students are meeting the benchmarks in reading and writing.

At this stage, it would be worth while addressing some of the concerns that people raise about those results. In some ways, some of those concerns strike me as rather odd. The first one is that it is often suggested that we should look at what PISA is not, as though that will somehow detract from the demonstrable achievement of students in reading and understanding what they are reading and applying that knowledge as a PISA test. For example, certain commentators have said, based on one statement in an ACER report in 2000, that PISA does not test spelling and grammar. There are a couple of issues with that. On one hand, it is a very limiting notion of what literacy is and, on the other hand, it ignores the fact of the norm referencing of PISA. It does not actually address the argument: what is the evidence to suggest that, if you looked at comparative performances, students' performance in Australia would be any less than that of people in other countries and why wouldn't we retain our relative performance? That argument does not address that. There is certainly no evidence to support the argument that we would be likely to do worse.

The other argument that people often cite is the TIMSS results in maths and science as a sense of questioning the performance of Australian students. Again, a couple of odd uses of that data are made. One is that it is often used as an argument against constructivist based teaching and outcomes based syllabuses. But what is often not pointed out in that commentary is that, if you use the United States as a benchmark, for example, if our results in maths and science are lower at year 4 than in the United States, the ACER reports on TIMSS are showing that we have caught up and are equivalent to the United States by year 8. So my question to critics of constructivist teaching outcomes based syllabus using that sort of data would be: why does outcomes based teaching and constructivist teaching limit our year 4 students but somehow enhance their capacity by the time they get to year 8? Clearly, the issue is much more complex than a matter of outcomes and constructivist based teaching.

We also see and welcome this inquiry as a chance to highlight what the ACER recent report on syllabus standards found in relation more specifically to our area of concern about English teaching in a secondary context. That is, English teaching in this country is still firmly based on the traditions of literature, as the basis of the subject, and that all syllabus documents in this country at year 12 level pay due regard to the basic skills of spelling, grammar, punctuation et cetera. So some of the populist sort of commentary which we are getting that teachers are somehow neglecting these things is simply not supported by the research into what is actually in the syllabuses, and that is the most reliable guide into what is happening in classrooms, as opposed to anecdote.

We also emphasise that we support the idea that English and literacy teaching in this country needs to be internationally benchmarked, and the sort of data that we have pointed out in our submission that I have re-emphasised here today does that. But there is also significant commentary from researchers and writers overseas highlighting the strengths of Australian curriculum and supporting educational results. A recent

survey published in 2000 of English curricula in the States, the UK and Australia has suggested in its conclusion that the Australian model of English teaching is the way forward, as opposed to the direction that the UK and the US have taken.

Also, at our national conference held yesterday, Linda Darling-Hammond from the States spoke as the sort of doyen of researchers relating to teacher effectiveness and teaching standards, pointing out that people such as her look to Australia as the model of where education needs to be going. The sorts of reforms that she is working with in schools in the States are very much based on strategies such as you heard Jan Turbill speak about earlier around assessment and the nature of the curriculum that we are offering. So we are getting the stamp of approval from people overseas, yet we seem to have this odd sort of cultural cringe or some version of the tall poppy syndrome that Australian teachers are failing their students. The perception from international experts is that that is not the case and the data certainly does not suggest it.

One of the things that Linda Darling-Hammond pointed out yesterday, which was very interesting to us, was that countries that are fast improving in the area of literacy in PISA, such as Japan and South Korea, have moved nationally in their reforms to looking at curricula, teaching strategies and assessment strategies which move them much closer to an Australian model and to the model in Finland than they do to a UK or US model. In Japan they have explicitly rejected certain initiatives that are now being put in place in the States as a result of the No Child Left Behind legislation.

We would look at the data within our association and argue that we cannot afford to rest on our laurels. The other side of Barry McGaw's coin that we are a high-quality country is that we are a low-equity country. Certainly, a country such as Finland is showing that you can get high quality and low equity, and Australia is not doing that. The PISA results clearly show that—

Senator MARSHALL—What do you mean by high quality and low equity?

Mr Howie—The PISA results show, for example, when you break the stats down by groups around advantage, gender, Aboriginality and things like that, Finland is taking all those students with them, whereas Australia is tending to polarise. McGaw is saying that we are doing very well internationally, but there are certain groups in our student population who are not doing as well as other groups within the nation. That is not the pattern for all countries, and he particularly holds Finland up as one where it is not the case.

We are firmly committed to critical reflection and professional learning through our association. Jan, I believe, is going to table our STELLA standards work. That is a model that we have been using for promoting collaborative practices around critical reflection, with teachers strongly focusing on improving the learning outcomes of their students by reflecting on results and their own practice in order to move their students forward. We are also firmly committed to our work and to what we offer our members coming out of an informed principled base. Recently, we have also been working collaboratively on a series of statements of belief, which are a set of value statements which we believe take us into the future from a principled position. I would like to table those today.

CHAIR—Thank you. Mr Bulfin, do you have anything to add?

Mr Bulfin—Not at this stage.

CHAIR—Could I open by talking about the comment and debate that has been around recently about the change in the way that literature is taught and the vehicles that schools use to teach literature. I would certainly be the last person to ever propose an unadulterated diet of Shakespeare and Chaucer, but there is no doubt that the pendulum has swung a long way from that. Do you consider that, in the changes that have come about in the teaching of literature, students are still being adequately fitted for all those Mayer key competencies that you talk about in the submission?

Mr Howie—Are you talking about the fit between the teaching of literature to how—

CHAIR—Yes.

Mr Howie—I guess the key there is the pedagogy you are using around the text or around the work of literature—definitely. Your example of Shakespeare is an apposite one, because Australia is leading the world in the publication of teaching support materials for work with students around, say, using a traditional canonical text like Shakespeare in ways that involve students in what are called constructivist based learning. That dovetails very nicely with those Mayer key competencies—working in groups, for example, to produce a performance aspect in the study of Shakespeare as opposed to the old model of reading it around the class and trying to translate what Shakespeare said into modern English and then working at the meaning of the text

through group performance, inquiry based approaches to the study, working on projects that are devised, where people are working over time, setting themselves goals, setting measures by which they are going to report to the teacher on their progress.

All of those sorts of workplace competencies lend themselves very neatly to the subject of English through, as I suggested before, a constructivist approach to teaching as opposed to a transmission model. That is where the teacher is the sage on the stage, if you like, and there is the presumption that students are empty vessels and are not bringing anything to the classroom that can be tapped into to connect them to the world of Shakespeare. Australia is definitely leading the world. That is acknowledged internationally through the sorts of educational resources that we are publishing in that area.

CHAIR—What about the relative merits of texts? For instance, you will occasionally see an article in the paper or a discussion on TV about students in year 12 being asked to dissect an advertisement or something totally to do with the modern world or perhaps a text that may not be considered usually as literature?

Mr Howie—In the media it is often represented as an either/or debate. The reality of our syllabuses is that they are not either/or documents. Teachers become English teachers because they love literature, not because they love reading advertisements. In the recent revisions for the HSC in New South Wales—or going back to 1999 and then more recently the junior syllabus in 2001 and 2002—the messages coming out of English forums that the educational authorities were running are that Shakespeare needs to be retained in the syllabus and traditional literature needs to have a place, but we need to acknowledge that we live in a fast, changing world. In our statement of beliefs we draw attention to this: we need to have that sense of tradition and continuity. But the realities of the modern world are that students are engaged with visual and electronic text every day. So we need to find ways in the curriculum of bringing the two together.

Again, it is not an either/or debate. For example, my year-11 classroom this year has studied *Henry V*; my year-12 class has studied *Anthony and Cleopatra* but has also studied Huxley's *Brave New World*, in conjunction with Ridley Scott's film *Blade Runner*. You are finding ways of bringing the two together, not saying that the popular or the contemporary subsumes the traditional.

CHAIR—So it is the skills that are taught to the student which matter?

Mr Howie—That is right. Often the contemporary text is a way of engaging the student in a set of ideas, a set of values or an inquiry based process. The more traditional literary text then takes them out in a much richer and more extended way rather than being something that subsumes and kills it off.

Mr Bulfin—As Mark mentioned in his opening statement, a recent ACER report looked at curriculum across the country in terms of commonalities and found that, as you indicated, concerns occasionally expressed in the media do not bear much reality to the reality of classrooms. These examples that are often posited as the general way or kind of shift that is being undertaken from traditional based literature to the analysis of film and advertisements are a few examples. In the large majority of examples, certainly in my experience, literature still forms the bedrock of much of our teaching. In picking up Mark's ideas, too, about the change in visual culture, if students really do want to engage with the future then it is necessary to find a balance between traditional texts and new kinds of texts.

Mr Howie—Scott mentioned the ACER report. Another part of that standards' process that ACER went through was that they went out to community reference groups on those sorts of questions. They gave a list of the possible sorts of things that could be studied in curricula and asked people who are not English teachers or people connected with the training of English teachers—professionals, writers, people with an interest in what happens with the study of English in our schools—how they would rank things in order of 'necessary' down to 'would be nice but not so necessary'. One of the interesting things about that was that Shakespeare ranked below the use of websites and CD-ROMS in schools. So the idea of where the community is at with this question too in some ways is more problematic than has been perhaps represented in sections of the media.

Senator MARSHALL—You said that in terms of the PISA testing we came in second to Finland.

Mr Howie—Yes.

Senator MARSHALL—That is terrible! What is our excuse?

Mr Howie—I guess that is the point about not resting on our laurels. That is a fair point. There is more to do and we should not be relaxed and comfortable about these things. We should be constantly reflecting on how we get better. But what has been missing from a lot of the public commentary about these results is what we can learn from Finland. Instead we are being asked what we can learn from the States, who finish below

us? What can we learn from the No Child Left Behind legislation? The answer would seem to be: very little. I certainly welcome that question in terms of us starting to look at Finland a little more closely. We are yet to hear much public commentary about what we can learn from Finland.

Senator MARSHALL—That was going to the serious element of my question. You talk about Japan as a fast improver in the PISA testing, looking at the Finnish and Australian models. I was going to ask whether they are fundamentally different or whether it is tinkering around the edges.

Mr Howie—The things that we are learning from the Finland experience are that they have gone to a sort of devolution, if you like, away from a centralised curriculum to giving teachers maximum flexibility to determine the curriculum in their schools to meet the needs of their particular students. They have moved away from a fixation on mass standardised testing to school based assessment. They have moved to trying to pare down the curriculum to get to core essentials and maximising the time that teachers spend on those core essentials. They have moved to the sorts of things that Jan talked about—about ensuring a genuine, extended, ongoing process of professional learning for teachers. For example, Finnish teachers, typically, all have masters degrees and they have been supported in those studies by the government in terms of funding and the paying of any sorts of fees et cetera. The school day is organised so that teachers have timetabled collaborative time in which to jointly program and evaluate those programs and to consider the results of their students.

They also have a strong focus on establishing close relationships with their students through, for example, setting up teachers' workloads so that they take on a sort of mentoring role with a small group of, say, 15 students in the same way that we in Australia might be allocated a class. So, rather than having year 10 English for six periods, I would have six periods in my fortnight of mentoring a group of 15 students, really building up that close relationship with them and then setting in place very regular meetings with the parents, the student and the teacher around the child's learning goals and an evaluation of the child's results as a matter of course. So it is a complex process of thinking about curriculum assessment, plus how we organise teachers' working days, their teaching loads, and how we support them in their professional learning and, I guess, generally thinking about the status they hold within society.

Senator MARSHALL—Is the assessment that you talk about an individual assessment by the teacher of the student as opposed to the broader assessment of where a student may be across the country?

Mr Howie—Exactly.

Senator MARSHALL—So nearly all those things that you mention—and I am sure there are other differences too—go to the way the teacher interacts with a student and the way the teacher teaches.

Mr Howie—In a local level and in a specific school context, but also with a lot of strategies to ensure collaboration and teachers working together coming out of a common sort of culture. One of the things that struck a chord with me about that was some research in New South Wales recently. Dr Paul Brock has been heading a research team in New South Wales. Some years ago now they went quantitatively to look at effective HSC teaching, starting with results. They identified effective HSC teachers who get, in other words, atypical results regardless of their context, and they have done that over time. Then the research team went into a qualitative process in schools. One of their key findings is that these effective teachers by those quantitative results are typically supported by a very coherent collaborative faculty culture—if it is a larger school, like an English faculty. In smaller schools the culture was much more of a whole-school culture. That would seem to tie in quite nicely with the path that the Finnish have realised seems to be the way to go.

Senator MARSHALL—What is the international response to things like PISA testing? Is there an analysis of why some countries finish at the top and why some finish at the bottom? Is there an international critique of that and some sort of result?

Mr Howie—Professor Darling-Hammond reported to us at our conference that from her perspective working internationally governments around the world are very interested in their standing in PISA. The Japanese, for example, where she had been doing some work, had sent delegations to Finland and had spent some considerable time there looking at what was working in Finland and why it was working and then making the appropriate changes. We know that Germany, for example, are very worried about their PISA results and are introducing all sorts of reforms to address that. That is a bit beyond my expertise but my brief tends to follow that sort of stuff that suggests that.

Senator MARSHALL—But apart from some sort of internationally based academics having an opinion about it, is there some sort of work or body of research that has been commissioned to have a look at that that

we can point to, or is it a matter of their finding out what different people have said or their opinion of what has happened?

Mr Howie—My perception—and I am no authority on that sort of level—is that it seems to be that particular governments around the world have set up their own projects to try to understand their results and to look at what works and what is not working.

Senator MARSHALL—It would be a bit strange if we start looking at moving away from what we are doing while other people are looking at us and moving towards what we have been doing.

Mr Howie—And the very odd thing about the debate is that our PISA results do not seem to be adequately celebrated in this nation.

Senator MARSHALL—I will change subject and finish on this: can you give me a view on the quality of people who are being attracted into the teaching profession, specifically into your area of expertise? Is there a problem attracting people? Is it seen as a good career opportunity? It is a very broad question.

Mr Howie—I do some work in teacher education as well, and I have over the last couple of years. It is a complex debate because in some ways that issue has been hijacked, in a sense, around university entrance scores as the sole measure of the capacity of a person entering the teaching profession. That is a rather odd argument when you think about the direction that the University of Melbourne, say, has gone in relation to professional courses, or the University of Newcastle with its medical program, where they have moved beyond a UAI to a whole range of other measures.

Speaking personally, if you are looking at why people are drawn to teaching, one of the really encouraging things for me in the work that I do in an outer Western Sydney school and teacher education work that I do at the University of Western Sydney is that that particular institution, for example, is drawing in a whole lot of young people from that area who are committed to staying in schools in the outer Western Sydney area and really making a difference to the lives of the young people they know in their communities. These are typically second generation Australians who have come through our public schooling system and really are driven by a sense of wanting to give something back. As the head of a department and as a parent, I am very encouraged by that. These people have a firm belief that teaching is a noble and worthy pursuit. They really see it as a chance to make a difference in their local communities in order to ensure that all young people in that area have the benefits that they feel they gained from the education system in this country and the opportunity that is giving for social mobility et cetera.

Mr Bulfin—I can add a few thoughts. I have done some work in teacher education myself. The committee may be aware that career changes are increasing in terms of their applications to teacher education. We have a lot of people these days—and the numbers are increasingly—who have had professional experience in industry and in a range of other fields, who are now turning to teaching. From my perspective, I guess the complication is not so much how to attract teachers and how to attract the best types of teachers but the kinds of supports we give to teachers early on in their careers, whether they are young teachers or whether they are career changers. This is much more significant than teacher attraction.

In fact the committee may be aware of the figures and statistics around teacher attrition and teachers leaving the profession within the first five years, depending on the state. This is an international trend really. It really points to some of the points that Mark was making about the kinds of cultures that are created in schools. We think of the Finland model, for example, where strong collaborative cultures are created within faculties and within schools and, more broadly, within communities that support the work of teachers and provide professional recognition and quality professional learning. These are not just piecemeal approaches that might help or be intended to upskill teachers but real efforts to help teachers feel as though they have a stake in their profession and that there is some long-term future.

These discussions are also complicated by issues of remuneration, with the way we pay teachers and recognise their successes. Of course these are linked to debates about performance or merit pay and the complications around the ways that some models propose some kind of an approach which might divide teachers rather than create those collaborative communities which can support teachers in the time that they are in schools. It is our experience—and I am sure that you would have had this with any teachers appearing before you—that conditions of teachers' work are increasingly difficult, so much so that the job of teaching sometimes is sidelined by just keeping your head above water with the kinds of demands that are made within schools and outside. I think your question is really apposite, but it is one that also needs to look at how we retain teachers after we are able to attract them.

Senator FISHER—Gentlemen, your association's submission talks about the need to master information and communication technologies as part of all of this. Whilst that is being incorporated, you talk about some shortcomings—resources, methods of assessment or effective professional learning. Can you expand on those?

Mr Howie—There are many sorts of things faced in schools that are affecting teachers' day-to-day work. For example, you will get a system, a file server et cetera, installed, but who is responsible for the maintenance and upkeep of that? It will be a teacher who has typically gone and had to teach themselves these sorts of processes and who is trying to manage their teaching load, their marking load, their meeting and communicating with parents load as well as dealing with any day-to-day hiccups in the system when it crashes and ensuring the ongoing vitality and health of that. It is the sort of thing that people in private industry would take for granted. If something happens to the computer you get on the phone and ring IT support. We get on the phone and ring some poor colleague who might or might not be able to get to your particular issue in the next three days given that he has to work out when he has a free period and whether he is seeing students at lunchtime and matters like that. That is one issue.

Senator FISHER—Private industry might wish it could take that for granted.

Mr Howie—I have friends who talk about their experiences so it might not be as widespread as I believe. Other issues include such things as: the level of the technology that is supplied, for example, in more privileged areas is often below the level that the children have access to at home. So anything that you are trying to do at school for technology savvy students looks pretty second-rate in terms of what they already can do. The associated issue there of course is the age of the population of teachers and upskilling them to be at the level of their students. So you are behind them there and that creates issues. When you have this pressure that somehow your curriculum should be techno-savvy, how do you meet the needs of the students plus get yourself out of that with second-rate equipment?

There are also issues around the access that every individual student has to the technology and for how long. In a school, such as the one I teach in, you have two designated computer rooms, plus a couple of spaces where it is a bit smaller. By the time you timetable in your HSC, your preliminary HSC courses, your year-10 technology courses and all those courses for students facing public examinations, it is very hard to find a spot where you can get a sustained period to work on something with the students using that sort of technology. So there is a whole complex range of issues about the rollout, the skilling of teachers and where students are at compared to other students.

Senator FISHER—We could probably talk for a long time about the resource difficulty, but I have a subsidiary question about that, without wanting to talk forever about it. Private industry, I would suggest to you, does face many of the same challenges. There would be many workplaces across Australia where employees have inferior technology in front of them compared to what they have at home. What sort of thinking has your association done about whether you accept that, because of the nature of the fast pace of the development of the technological world, teachers and classrooms will inevitably be behind the eight ball? What sort of thinking have associations like yours done towards saying, 'We may accept that as a given, but how can we nonetheless engage students in this age with those tools?'

Mr Howie—The real area in which we can have some sort of influence or do some sort of productive work is professional learning. In that area of new technologies and English, AATE has had a range of initiatives over the years. It has been part of our publishing schedule, for example, so we have produced a major work on it and typically are doing the sorts of things that you are suggesting around trying to show how people have managed what they have with their particular groups of students and how they have done it successfully and how they have got those sorts of good news stories out to people. It has been a targeted focus at particular conferences over many years when we have run a strand particularly associated with these issues and have, again, shared best practice and offered people the opportunity to develop ideas and strategies to manage their particular situation.

Mr Bulfin—I have a couple of thoughts on that. With respect, while business may face similar difficulties, I think most teachers' and students' experience of technology resourcing in schools is that education is generally the poor cousin, anyway. So, while an IT worker may be frustrated by the speed of their internet, that is a far cry from students who do not have any computers at all. While there are economies of scales here and differences, I think the challenges that we face in education are very severe. Resourcing, as you point out, is only one of those issues. The kinds of approaches that teachers use in the absence of those things is another one.

An approach that the association and many teachers take is to draw on the knowledge and skills that young people bring from home. If young people have additional resources at home—many do but many do not—teachers can draw on those. For example, students' abilities with hand-held technologies may enable them to conduct an interview out in the community or do an old history project and record that on a MP3 player or an iPod that they have brought from home, if they are so well resourced. They will somehow be able to use that in the classroom. There are a range of, if you like, best practice models that the association tries to provide accounts of and to disseminate those amongst other teachers to suggest different ways of engaging with that problem. You are right: it is a serious one.

Another point is that, interestingly, in calls for more technologising of schools, we also have what is called a back to basics curriculum. This is a real tension and a problem where Australia's school teachers are faced with young people coming to schools with very different approaches to engaging with the world and attitudes towards technologies and their futures. At the same time, conservative commentators call for a kind of back to basics approach, where we focus on grammar, punctuation and reading Chaucer by the riverside. They are all important and interesting things but, when you set these two things up in tension, there can be a tension, a problem or a pressure that we add to teachers' workloads with the kinds of pressures that they face: how do I meet these two demands at the same time as all the other things that we need to do? It is another interesting tension that we need to recognise.

CHAIR—That was a most interesting discussion. Thank you for that.

Proceedings suspended from 12.50 pm to 1.49 pm

BURMESTER, Mr Bill, Deputy Secretary, Department of Education, Science and Training

GRANT, Dr Rosalie May, Acting Branch Manager, Indigenous Business Management Branch, Department of Education, Science and Training

HIRD, Ms Marie, Branch Manager, Curriculum Branch, Schools Quality Group, Department of Science, Education and Training

McDONALD, Mr Ewen Neil, Group Manager, Schools Teaching and Students Group, Department of Education, Science and Training

MERCER, Dr Trish, Group Manager, Strategic Analysis and Evaluation Group, Department of Education, Science and Training

CHAIR—Welcome. We have received your submission this morning. I take it there are no changes to be made to that.

Mr Burmester—No.

CHAIR—I now invite to you make a brief opening statement and then we can move to questions.

Mr Burmester—We apologise for the lateness of our submission but, overall, it covers the areas that we see as important in the terms of reference for the committee. Overall, the submission says that Australian students perform pretty well on international standards but, on a number of indicators, there is obviously room for improvement and areas where we can do better. For example, we cite 30 per cent of Australian 15-year-olds not achieving a level of reading proficiency regarded by the OECD as being needed to meet the demands of lifelong learning in a rapidly changing knowledge-intensive society. Of even greater significance is that 11.8 per cent of 15-year-olds—that is about 30,000 students each year—achieve only at or below level 1 in these tests. Indigenous students continue to perform significantly below their non-Indigenous peers. The performance of students living in rural and remote areas of Australia shows areas where improvement can be achieved.

We then go on to show that research indicates that children can and do learn, but they need the right conditions to do so, and we think the priority areas for focus are good teachers and effective teaching. It is not possible under the current system to make judgements about year 12 standards across the board, and we indicate this in the submission. We are unable to draw conclusions about relative performance expectations across states and territories, in part because the states use different terminology and in part because there is no available comparative assessment of students' work. They do not have a common assessment task or achievement standards.

Finally, we go to the fact that there are not enough students undertaking, in our view, the key subjects of mathematics and science, which is important to Australia's future. Over the decade to 2003, year 12 enrolments in science declined from 173,000 to 146,000. This will clearly have an impact on our capacity for innovation and scientific and mathematical research into the future.

CHAIR—Is it of concern to the department that there is different terminology and no common assessment tasks between the states and the other factors you mention? If we were to measure them differently, would you expect not better results but that it would be possible to raise the level if we had a better idea of the comparative performances between states?

Mr Burmester—Yes. The department has commissioned research in this area through ACER. While they found that a great deal of commonality exists on a number of subjects between the curriculum and the content of the curriculum between states, there was not a similar or even comparable basis of assessment and no comparison between students in different states. So it is not clear and cannot be determined how students in one state are performing under their education system as opposed to other systems. We think that at least having an understanding of the relative performance of systems would give some guidance to the quality of the outcomes.

There are statistical methods by which the universities attempt to equalise entry scores, but that is really statistical manipulation of the scores and ratings that is done independently in each of the states. The government announced in the budget that, in the next quadrennium, it would be looking towards more nationally consistent curricula, which is in line with the MCEETYA decision earlier this year. It was clear that that was not only about the content that might be covered in a more consistent way across the country but also about getting standardisation of terminology for year 12 and some level of standardisation of assessment so

that there can be fair comparison of students across states. Geoff Masters, who did the work of ACER, pointed out that, without that common assessment framework, there is no way in which we will know which curriculum or which students are performing the best in Australia.

CHAIR—We also heard in Queensland the description of the system there in which there is no external assessment or an external exam component but results for year 12 students are moderated across the year 12 cohort so that there is some idea of how they have gone. I understand there has been some recent commentary about that system—also, the ACT does not have an external exam, either, I gather. Does the government have any policy with regard to an external exam process?

Mr Burmester—Yes. Again, as announced in the budget announcements for school education, the government indicated that it would be requiring for the next quadrennium states to implement some form of external assessment for year 12 certificates. A public exam is one way that that external moderation could occur; there may be other ways. We will work with the states to establish what can be best used and the weight applied to each of those external assessments. The important thing to bear in mind, though, is that the government's proposal relates to moderation of the subjects the student is studying rather than just moderation of the student body, which the ACT and the Queensland government systems attempt to do. They do some degree of moderation, but it does not go to the knowledge or assessment of individual students in particular subjects. That is an important component of the government's announcement.

CHAIR—With regard to your comments on science and maths, one of the arguments or one of the reasons we heard for students not doing the harder elements of science and maths in senior years was that the universities have dropped their prerequisite subjects for maths and science degrees and, with the schools no longer having to fulfil those prerequisite passes, students are adopting what you might call the easier subjects in order to get a higher score. Would there be any evidence for that in what you have learned?

Dr Mercer—Last year we completed an audit on science, engineering and technology skills. If the committee does not have that, we could table it. It looks at enrolments across sectors.

CHAIR—Yes, we would like you to table that for us.

Dr Mercer—Yes, we will table that. I think there are a number of reasons why school enrolments have dropped, and certainly part of it has been that the prerequisites are no longer required at university. It is also clear that there is a very wide degree of subject choice. That is an issue also addressed in the report that Mr Burmester referred to—the report by ACER. There is a wide diversity in subject choice and, at the same time, there are very few compulsory subjects. So, if students are looking to maximise their university entrance score, there are probably advantages to them other than doing the harder maths and science. The maths enrolments have held up reasonably well but not in the harder maths, and the science enrolments have definitely dropped, particularly in physics and chemistry.

CHAIR—We heard some anecdotal evidence in Queensland that some science faculties have to spend the best part of the first year bringing students up to scratch, as it were, in order for them to complete the rest of their science degree.

Dr Mercer—Yes, I think we have seen some reports of that.

Senator MARSHALL—Australia came in only second in the PISA testing. I guess there are heads rolling in DEST, are there? Only second against the OECD? What is your excuse for that?

Mr Burmester—I think the PISA results are an indication of overall performance for a range of systems, schools and so on. It is an attempt to make relative comparisons between overall national results. The distinctive feature about Australia's score is that we are performing very well overall, but equally the number of students who are not performing well and are in the bottom component or level of performance is disproportionately large. The view is that it is not fair to those individuals. It is an equity issue about their life chances following school. Also, from an economic point of view, performance early on in school and in the key areas of literacy and numeracy actually determine success at school and subsequent transfer into postsecondary education. So the concern is that, while we have a large cohort of students who are underperforming, we are forgoing their life opportunities but also we as a nation are forgoing the ability to have a more productive workforce in the future.

Senator MARSHALL—So what is a strategy to address the inequity?

Mr McDonald—In the recent budget the Australian government announced a range of initiatives in relation to literacy and numeracy. There was $457 million for literacy and numeracy tuition for years 3, 5, 7 and 9.

There was also an initiative around rewarding whole-of-school performance where a school has put in place systemic changes to improve their literacy and numeracy outcomes. There was also, as you may know—

Senator MARSHALL—Just on those, just so I am clear, is that to improve the overall outcome or to address the inequity issue? I understand there are programs per se, but what is being targeted specifically to address the inequity?

Mr McDonald—Those two initiatives that I mentioned. The one for tuition for years 3, 5, 7 and 9 is for children who are below the benchmark, so that is for the inequity part. They would get access to tuition provided by an individual tutor up to a value of $700. Rewarding schools is also about lifting literacy and numeracy performance within the school itself. It is about relative performance within the school—so increasing the overall performance within the school rather than the system as a whole. Those two are specifically targeted to that aspect.

In relation to the wider literacy and numeracy performance, obviously teacher quality is one area that the Australian government is specifically looking at in relation to teacher standards and ensuring that teachers are well-equipped to teach reading using the latest contemporary research around that aspect. The government is also looking at professional development for those teachers so that they are well-prepared when they enter the classroom. Working with the universities and the schools around the introduction of practicum, increasing the number of days for school practicum and the quality of school practicum are other initiatives in the budget that are looking at that wider aspect of teaching overall.

Senator MARSHALL—Are these matters in your submission? I have not read your submission because it only came this morning and I have not had an opportunity to look at it. If it is in there, I have probably asked a question that you do not need to go through in detail. Is all that included in your submission?

Mr McDonald—Yes, it is.

Senator MARSHALL—All those programs?

Mr McDonald—Yes.

Senator MARSHALL—I will have a look at them in due course—unless there is something extra you need to add.

Mr Burmester—There was one other announcement at budget time. The attachment to our submission details particular programs that the government has initiated, but there was also an announcement that in the future quadrennium the Commonwealth would require schools, or systems and states, to report on school-by-school performance against those benchmarks. So, again, by having greater accountability for performance at the school level, that should increase the focus on and the success of literacy and numeracy.

Senator MARSHALL—Can you explain to me how the process of making these things happen will take place? You need to get some sort of agreement and cooperation from the states and the state departments in every area. Is it a matter of working with the states or is it simply a matter of saying, 'This is what you are going to do and we will tie it to your funding arrangements'? Explain to me the consultative process.

Mr Burmester—There are a range of approaches taken between the Commonwealth and the states. But the non-government sector now accounts for over a third of the school population and so they are a major player. Each of the systems and schools have funding agreements with the Commonwealth and, for a number of years now, the Commonwealth has tied those grants to specific requirements. For example, in the current quadrennium the Commonwealth required that there be standard reporting of A to E to parents about each student's progress during the year. That has been adopted and implemented.

A range of the measures that we have talked about today and mentioned at budget time actually are agreed between the state education ministers and the Commonwealth government. There might be changes in emphasis, but certainly there is a common direction. For example, we talked about a nationally consistent curricula at the last meeting and MCEETYA agreed unanimously that they would work towards one. So the issue is not whether we will have it; it is how we get there, the time frames on it and what will be encompassed in it. It is the same with the year 12 common terminology which I mentioned earlier. That is another thing that MCEETYA has already agreed to. I do not think the Commonwealth is necessarily being seen as the only party trying to impose these requirements; it is a way of the Commonwealth saying, 'We will contribute our part to the achievement of these national goals.' There may be some areas where there is disagreement. That usually goes to the style or level of implementation rather than the general direction. So there is a degree of

cooperation. In fact, the current minister has stressed—including at the MCEETYA meeting—that she wants to work in consultation and constructively with the state jurisdictions to implement a whole range of matters.

Senator MARSHALL—Would it be fair to describe the process up until now as constructive with the states?

Mr McDonald—Yes. Last week we had a consultative forum around the budget initiatives where we invited a whole range of stakeholders from the school sector, the university sector, the state sector, the independent sector and the Catholic sector to discuss implementation and how we could work in a cooperative way to implement those initiatives. The feedback from those consultations has been very positive from the stakeholders and the issues that they have identified have also been very valuable from our point of view.

Senator MARSHALL—Can I ask you about national assessments across universities? Why aren't we insisting on a regime where we test university outcomes against each other? Why should we be accepting a different standard of a law student coming out of Melbourne as opposed to one of the other universities?

Mr Burmester—There is not really anyone at the table here who comes from the higher education area; although, I do have some history there, I have to say. The view that has been put in the past is that universities are autonomous institutions that set their own standards. That is the definition of a self-regulating education body. That is how you become a university as opposed to a school where there is external scrutiny of your performance and outcomes. I think there is a fair degree of commentary saying that there would be some advantages if there were greater comparison between university outcomes. Certainly some of the industry bodies are seeking to have—in regard to a range of generic skills—some comparison and uniform testing of university graduates. So I think you are referring to an area that does have some community interest and support.

Senator MARSHALL—I just think there is some value in that.

Mr Burmester—As far as I know, the government does not have a particular policy on this matter at this time.

Senator MARSHALL—If there is some value in it at one level, I do not understand why the same value would not necessarily apply and be beneficial at another level as well.

Mr Burmester—We would really have to get people from the higher education area to go into that in more detail, I think.

Senator MARSHALL—It may be just outside of our terms of reference. No, it is not.

Senator BIRMINGHAM—I did not hear your opening remarks, so, if I cross over into them in any way, I apologise. I would like to turn to issues of teacher training. We have heard a lot from different presentations about the ability of teachers to be able to teach different theories and different methods of learning, literacy and numeracy throughout the course of this inquiry and we have heard concerns that current teachers, or current trainee teachers entering university, perhaps do not have the standards of literacy or numeracy themselves that are required to equip them going forward. Has the department looked at this and looked at ways that those teacher training and teacher registration processes could be reformed?

Mr McDonald—In relation to teacher training, there were a number of initiatives in the recent budget that went to that issue. The first one was around development of teaching standards, and there is a process under way at the moment where those standards are being finalised in both literacy and numeracy out of the COAG arrangements. COAG agreed that literacy and numeracy teaching standards would be developed by the end of 2007 and there are two papers that have been put out in relation to teaching standards from teaching Australia. AFTRA are being consulted at the moment on those standards. One aspect is teacher standards and the other is around teacher practicum.

A number of reviews have been done in relation to top of the class or to the reading review that was done in 2005. There were submissions put forward around the quantum of practicum that was provided. In the recent budget, the amount of practicum for teachers was increased. We will be working with the schools and the university sector around implementation of that, particularly looking at the quality of the practicum as well so that when graduate teachers enter the school system they are well-prepared, for example, to teach reading using contemporary practice that has come out of the reading review around an integrated approach to reading and teaching phonics.

We have also focused on teacher quality around the Australian government's other budget initiative of summer schools which targets the very best teachers with the budget initiative of $101 million to provide 10

days residential in January of this year in five areas, including literacy and numeracy. So, again, that is about ensuring our best teachers are well-equipped to take that learning back into the schools, to become a mentor and to develop other teachers within those schools. So there are a range of initiatives that the Australian government has put in place around teacher quality.

Mr Burmester—Perhaps I can add to that. In regard to both the two draft sets of teacher standards that are out—the one from Teaching Australia and the one which I think was actually issued by the New South Wales minister on behalf of the other states—both of them require teachers to have personally high levels of literacy and numeracy. That is not only so that they can teach literacy and numeracy competently but so that they personally demonstrate those as well. That is already accepted as part of the standards.

The additional bit that the Commonwealth would be most concerned to make sure gets included in the final version of the standards is that in the teaching of literacy teachers are capable of using a range of approaches in an integrated way as found by the teaching of reading study, which was released at the end of 2005. That seems to be the accepted approach to the best results for literacy being achieved in that way. Under the auspices of COAG there is also an equivalent study being done on the teaching of numeracy and the results of that should be incorporated into these standards as well.

Senator BIRMINGHAM—So, if we look at the literacy debate, teachers should know of, understand and be equipped to teach literacy and reading from a whole-of-language perspective and a phonics perspective and understand the differences and be able to identify to students where they would best apply?

Mr Burmester—Yes.

Ms Hird—That is correct. The literacy inquiry found that the best way that children learn to read is through an integrated approach that includes a systematic focus on phonics, phonemic awareness, fluency, comprehension and a fifth one, which has slipped my memory. Proponents of the whole language approach would probably argue that they do phonics but that it is not in a systematic way. It is as it happens. As a child needs to know how the letter S sounds they would be taught that at the time, whereas the approach of the inquiry would be that you teach phonics, phonemic awareness and comprehension altogether in a structured way.

Mr Burmester—The inquiry found, if I am correct, that that systematic teaching of all methodologies and the ability to identify where it should go was the best way of addressing the tale that we have of students which appears to worsen as students go through the schooling system.

Ms Hird—Yes.

Mr Burmester—Another issue that the review found was that teachers needed to assess the students' progress diagnostically and find the appropriate intervention for students. It was not just giving lessons; it was actually making sure that you were measuring the progress and success for each of those children so that you could target your teaching to their needs.

Senator BIRMINGHAM—That is also a leading answer for me to say: how does benchmark testing fit into that?

Mr Burmester—That is a broad approach to measuring progress. It can be used diagnostically because the results can be given back to the schools, back to the classroom teacher and they can see, firstly, how their class is going and, secondly, within the class, what areas the kids are succeeding in and those where they are not. It is probably a bit blunt for a full diagnostic and you would not rely just on that as a classroom teacher, but I think it certainly would give you some context in which to plan your lessons and so on for individual students.

Senator BIRMINGHAM—Can I come back to something, Mr McDonald, that you said before? You were talking about the practicum. I assume for those of us outside of the education sector that that is the amount of time a trainee teacher spends in the classroom or in the school environment in a sort of mentoring or vocational training type way.

Mr McDonald—I apologise for that. Yes, it is the practical experience a teacher would have to ensure that they are classroom ready when they come in. Another way of looking at it might be professional practice that they have before they go into the classroom. So, although it is defined as 'classroom', it is really putting in place the theory into a practical sense so that, when they hit the classroom, they are able to teach as a beginning teacher.

Senator BIRMINGHAM—Is there a national standard for the quantum of practicum that a student training in teaching should have?

Mr McDonald—At the moment it varies across states. Generally for a two-year degree, it is roughly 45 days—not in every state but just generally—and for a four-year degree it is 90 days. That is the quantum. It has been increased through the recent budget initiative by the Australian government to 60 days for two-year degrees and 120 days for four-year degrees.

Senator BIRMINGHAM—Would that be the minimum expected across all states now?

Mr McDonald—That will be the minimum prescribed by the Australian government in its budget initiative, yes. That is a set figure, and there is an expectation. We would like to work cooperatively with the sectors involved to work out how best to implement that requirement, so that we ensure that the professional practice that is being provided is best practice and that we maximise its effectiveness in terms of its delivery. So they are some of the discussions we would like to have and are having with people in the university sector and the school sector to maximise the benefit of that initiative.

Senator BIRMINGHAM—Universities and the state governments are cooperating in advancing that additional time in the classroom then?

Mr McDonald—Yes. Last week, when we had that wider consultation forum I was talking to Senator Marshall about, there was some representation from a university and certainly representation from the state governments and the wider independent Catholic sector. We had five open sessions around this particular issue, and we got good input and good discussion around the issues, giving us the opportunity to think further about that before we provide advice to the minister.

Senator NETTLE—In your submission you outline the government's response in relation to Indigenous students. Is there anything additional to that that the department is involved in following the Prime Minister's announcement about the Northern Territory?

Mr Burmester—While Dr Grant is getting to the table, I would just say that education and school attendance are part of the government's response in the Northern Territory. It is seen as part of requiring school attendance in the communities and also making sure there is adequate provision of teachers and so on. Whether this particular program is further than that, I will have to ask.

Dr Grant—I can say that we are working in cooperation with the Office of Indigenous Policy Coordination to bring forward some strategies and some proposals to underpin and contribute to the government's emergency response to Indigenous education in the Northern Territory, but I do not have the details with me.

Senator NETTLE—You spoke about two components to that, the school attendance component and then the resourcing for school availability. I am interested in both, if there is any more information you can provide on that, and particularly in the resourcing. What involvement does the federal government have in relation to resourcing for schools in Indigenous communities?

Mr Burmester—This has just occurred in the last little while since the Commonwealth announced its greater involvement in the Northern Territory, but it has been working for some time on making sure that, through agreements with communities, education provision and attendance occur in Indigenous communities. For example, some time ago in the community of Wadeye, where the community agreed that they would increase the attendance of children, make sure that all children were attending the school, the facilities that had previously existed in Wadeye were not great enough for the numbers of students that ended up being enrolled and attending in that community. So that will, we expect, happen across the Northern Territory as more and more communities agree with and start achieving high levels of attendance. That will mean that there is a need for extra teachers, extra classrooms and so on. We will be working, and already the department is working, with the Northern Territory department of education—because it is their responsibility to provide those services—on how that can be best facilitated.

Senator NETTLE—Is there any financial contribution from the Commonwealth associated with those discussions?

Mr Burmester—The normal funding arrangements exist in that the Commonwealth funds on a per capita basis through its general recurrent funding arrangements. So, if there were an increase in enrolments in the Northern Territory as a result of the intervention by the Commonwealth, there would be some increase in our per capita contribution to the Northern Territory. Beyond that, it will depend on the Commonwealth and the Northern Territory governments coming to agreement on what arrangements are necessary to make sure that the communities are well supported, but that has not yet been reached. At this stage the Commonwealth is still doing preliminary surveys of the communities and the facilities and so on that they need, so the education

needs of communities will be worked out over that time and presumably there will be discussions between the Commonwealth and the Northern Territory governments.

Senator NETTLE—What current involvement is there for the department of education in the Prime Minister's plan for the Northern Territory? I am trying to work out what your mechanism is. The assessment is going on; does that mean you are not yet involved or that you will be?

Mr Burmester—It is a whole-of-government response. That means that departments concerned with many aspects of the communities are involved in that response. We have, for example, people seconded to the task force in FaCSIA . We have people established as a small task force in Darwin so that there is communication between us and the Northern Territory government on education matters. So we are part of that response. The rollout, if you like, of the initiative in the Northern Territory will take some time and, until each of the communities has been surveyed as to their needs, we are not in a position to make decisions about what facilities or resources are required. That is yet to happen. That, not our involvement, is the part that is yet to happen.

Senator NETTLE—Do you have a time frame for that?

Mr Burmester—No, I do not think there is a fixed time frame at this stage. I think the actual initiative is being rolled out progressively, starting with the communities in the south of the Northern Territory around—

Senator NETTLE—I am sorry; I meant for the second part you talked about—your involvement in the resourcing.

Mr Burmester—No timetable has been established yet. But there is a range of particular Indigenous programs that the Commonwealth already funds in those communities and I think they are listed in part in our submission.

Dr Grant—Yes, they are.

Senator ALLISON—Why is there no timetable?

Mr Burmester—Because it is still in a scoping stage. Until you know the scope of the problems that have to be solved, it is pretty hard to set a timetable.

Senator ALLISON—When will you know when the timetable will be set?

Mr Burmester—I am not sure that I understand the question. It will be done progressively as the Commonwealth establishes a presence in each of the communities. The second phase, the response phase, will then be considered. Again, it depends on the outcomes—what the actual need in a community is. It could be that in some places we are pretty well lined up. In other areas it may not be the case, as was found in Wadeye.

Senator ALLISON—Why, in the funding agreements with the states, has an audit for the funding that is provided for schools never been done, as far as I understand it, which is measurable and which is agreeable to the Commonwealth?

Mr Burmester—I do not think there has been an audit against a standard. We provide a contribution for government schools. The contribution to each state is on average about 12 per cent of the resources for the government schools. The vast majority of those are the responsibility of the state governments to fund from their revenue base. So, in a sense, the Commonwealth contribution is a supplementary contribution.

Senator ALLISON—What are the other areas in which the contribution has an obligation, a lever of some sort over an outcome?

Mr Burmester—There is a range of requirements on our provision of that general recurrent funding supplementation.

Senator ALLISON—So why not this one?

Mr Burmester—It is funded on the basis of enrolments; that is how we look at that. Each year there is a school census on which we base the funding requirements. States have to provide the evidence of their enrolment base and it is funded on that basis. So there is, if you like, a level of requirement to report students' enrolment and attendance at those schools. But in the Northern Territory, given the circumstances, there is a view—and that is what we are trying to establish—that not all children in the communities are actually enrolled.

CHAIR—Senator Burmester, you can go on with that later if you like. Senator Nettle.

Senator NETTLE—Thank you. I want to ask you some questions about the vouchers for literacy and whether, in formulating the decision to proceed down the path of vouchers, there was any comparison done with the effectiveness of providing the funding for improving literacy education in the school as opposed to providing it through the voucher system.

Mr McDonald—In terms of that particular tuition, which is individually based, for those students who do not reach the benchmark, there is other funding provided by the Australian government through the recurrent money that is provided to the school systems for the provision of education. Then there is another $2 billion provided to the state specifically for literacy and numeracy special needs, of which $1.8 billion is provided to the state system. So this is another intervention specifically about kids who are still not meeting the benchmark after those wider interventions.

Senator NETTLE—I understand that. My question is about the vouchers component of it. I know about the other components of literacy funding. In terms of the decision to put additional funding into vouchers, was there any comparison of the effectiveness of, of the outcomes that could be achieved by, putting that money into vouchers as opposed to putting it into the existing school literacy programs that already exist?

Mr McDonald—In terms of the actual decision the government made, I cannot say why they made that decision in the end. But my answer to it would be that, in terms of the wider school bucket, there is money put into that. This is another intervention to try and address those kids who are still not meeting the benchmark. There was a voucher pilot program that you are probably aware of that was originally done. There is also a $20 million program for year 3s currently underway in relation to vouchers. The evaluation of that pilot showed that that intervention improved the reading of kids who participated. So the government sees this as a different intervention.

Senator NETTLE—I am asking you about the comparative element of it. You are saying that we did a pilot and tested whether or not that worked, but was there ever any assessment of the improvement in educational outcome from vouchers as opposed to putting the money into the existing literacy programs in schools?

Mr Burmester—The government's response to vouchers was that, having already provided special funding to states, under one program, to supplement their efforts in terms of literacy and numeracy, there was still a proportion of kids failing to meet the benchmarks. So its intention was to find another intervention that would assist specifically those kids who had not succeeded through the programs that the states and the Commonwealth had funded to improve literacy. So it was saying that, for whatever reason, there were a number of students who were not succeeding under the current arrangements and that a personal direct involvement could actually change that. The results, in terms of individual students' improvement in reading as a result of the first pilot test of vouchers, encouraged the government to say, 'This does work; it does have a positive impact on the number of kids who can pick up their literacy levels.' To measure the improvement in the pilot test of vouchers—and I presume we are still doing so this year for the year 3s—we tested the students before and then again after they had the tuition.

Senator NETTLE—At the point at which that decision was made to look for another form of intervention, was there any assessment made as to the effectiveness of going to another form of intervention vouchers or of continuing with the existing literacy programs?

Mr Burmester—The basis of that decision was that, under the then existing suite of programs and interventions, there was still a cohort of students failing and something had to be done to address that most-at-risk group of students. The assessment was that not everyone was getting to the benchmark.

Senator NETTLE—And so at that point—

CHAIR—Last question, Senator!

Senator NETTLE—Mr Burmester, I think you have answered that to the extent that you are not able to tell me about any assessment that was done, so I will go on to ask you another question. You talk in your submission about teacher quality in terms of the importance of determining the educational outcome for an individual student. Has the department ever looked at what impact school resourcing has on teacher quality? It is whether the resourcing of a school is such that there is an environment such that there is an opportunity for professional development and for educational improvement of a teacher's skill set as opposed to a circumstance where, because of the underresourcing of a school, teachers are very overburdened by and overstressed because of the workload that they need to deal with. Has the department ever looked at the impact of school resourcing on teacher quality?

Dr Mercer—There certainly has been some research around the sufficiency of resourcing, but I would probably need to go back and check on that and provide it to the committee, because it is probably a couple of years back. Certainly there were issues that came out around subjects such as the crowded curriculum. Professional development is well known as the link to teacher quality. It might be better if we took it on notice to provide you with that information.

Senator NETTLE—Okay.

Mr Burmester—But there is certainly a body of research that goes to the quality of teaching being the major determinant of the quality of outcomes achieved in a school, after the socioeconomic backgrounds of the students are standardised and so on. There is a range of research, and Trish might know more as to the specifics—

Dr Mercer—Yes.

Mr Burmester—The general finding is that the quality of teaching is absolutely fundamental in and crucial to the success of students achieving at school.

Senator NETTLE—Yes, if you can provide more information, because you do not talk about resourcing but you just talk about teacher quality. I think it is important to understand the connection between the two.

Dr Mercer—Yes.

Senator FISHER—Much has been said about the inconsistency in the reporting on the performance of students, particularly those at year 12 level, across the jurisdictions. The government has been trying to do some work in this regard. That sort of dilemma has faced other subject jurisdictions. If you treat education as a discipline, it has faced other disciplines—for example, workers compensation and occupational health and safety disciplines—from state to state. Those disciplines have come up with a form of comparative performance monitoring, particularly in relation to workers compensation and occupational health and safety, even though the schemes and rules differ from state to state. What are your views about the progress and status of the negotiations that are occurring in respect of the attempt to more uniformly report so that you can get a picture of how students, in particular year 12 students, are performing from state to state?

Mr Burmester—I think that goes to the nature of the government's announcements in regard to greater national consistency in curricula but also to the MCEETYA ministers' agreement that we should have greater consistency in curricula. The three dimensions that the government is interested in getting greater consistency on go to the scope of what is included in a subject, the depth of the fundamental knowledge that students who undertake a subject should have and then the way that is assessed and their level of achievement is determined. If we are getting standards against those three dimensions, if you like, the last one goes exactly to the point that you raise—that you would actually have a set of standards of achievement that would allow that comparison between states.

Without that, you have to rely on some statistical method of trying to compare population norms. That is all well and good if you assume that student populations are equal. You could assume, in my view, that they are equal in average intelligence, but it does not say that they have achieved equally out of school systems that are different. That is why an approach based purely on statistics does not seem to me to be a valid approach in making comparisons between states or systems or outcomes from schools. You need to have a standards based assessment that allows direct comparisons to be made.

Senator FISHER—Do you think that is achievable?

Mr Burmester—I do. I am an optimist, I have to admit; but I think the government's intention and the agreement of the states to get consistency will necessarily lead us down that path to using standards. The government's budget announcement was about establishing a standards based approach to national curricula, and that is what we will be working on.

Senator FISHER—Coming off the back of that, if we accept that teacher performance, teacher contribution, quality of teachers and teaching are integral components in how students ultimately perform, your submission refers to the proposals that principals hire and fire, the proposals that there be a form of performance based pay introduced for the teaching profession. Along the way in this inquiry we have heard from some who have said that the F word—that is, 'failure'—should be reinserted into the educational vocabulary, in particular with respect to students themselves. I think we have also heard—if I can put it in my own words—some sensitivity, particularly from advocates on behalf of the teaching profession, about reinserting the F word in terms of teachers themselves and their performance, in advocating performance

based pay as an option to reward and provide incentive to better-performing teachers. How do you reconcile the difference between those two approaches? How do you reconcile the difference between an approach that advocates that some teachers will receive more than others versus an approach that says there should be the same rate for everybody within the bounds of what individual teachers are doing in terms of tasks? How do you reconcile those two approaches, or can't you?

Mr Burmester—I think you can. The government has announced that it is its desire in the next quadrennium to have performance based remuneration; it has not been prescriptive about the shape or form of that. But part of what the minister has been saying in that regard is that this is about not only the internal teaching workforce but also the place of the teaching workforce in a growing economy where there are lots of competing jobs and opportunities for graduates and that, if the teaching workforce wants to attract and retain good and high performing teachers, it has to realise that it is competing for those same individuals across the economy. In a lot of professions there is reward for performance, there is reward for effort and your remuneration is not pegged within a fairly narrow and relatively low band, which is what happens with the teaching workforce. As a profession it has a narrow range of remuneration, based on serving time rather than on performance. So, if you look at a broader range of the retention and attraction of teaching, it makes good sense—and the minister has said this on a number of occasions—to have a different way of remunerating the best teachers that we have.

Senator ALLISON—When did the department become aware that the Northern Territory funded only average attendance in Indigenous schools?

Dr Grant—One of the major components of our funding is a per capita rate that we give to the Northern Territory based on the enrolment numbers that come through the national schools statistics collection in the census done each year. That is given to the Northern Territory department of education—

Senator ALLISON—I understand that.

Dr Grant—and then it is their responsibility to allocate that funding to their schools from that. We do have, as part of our funding requirement, a performance monitoring and reporting regime.

Senator ALLISON—So can you answer the question, please?

Dr Grant—I do not have the details but I have heard anecdotally that the Northern Territory department allocate their funding on the basis of attendance for some schools. I do not have the details and I am not fully across the issue, but I can—

Senator ALLISON—So after you heard that anecdotally were any moves made to confirm whether that was true or not?

Dr Grant—I believe that there were, but I was not involved in those discussions. But I could follow up for you.

Senator ALLISON—Mr Burmester, are you able to enlighten us?

Mr Burmester—I am not well equipped to answer that question. My involvement with the programs in the Northern Territory on the Indigenous side actually coincides with the government's recent announcement in response as to the Northern Territory. I think we would really have to have here Tony Greer, who is Group Manager for Indigenous Affairs. He has been involved with Indigenous matters for quite some time. I do not know when we would have become aware of the Northern Territory government's staffing strategy and what we did once we become aware. But we are certainly aware now and that has consequences for the government's response.

Senator ALLISON—And those consequences are?

Mr Burmester—Part of it is that, if enrolments do increase in communities because there is a greater requirement for parents and the community to make sure that there is full attendance, that will mean there will be more children turning up at community schools than those schools are currently staffed for—than under the current arrangements whereby the Northern Territory government only staffs on average attendance.

Senator ALLISON—So what are the consequences?

Mr Burmester—The Northern Territory will have to deploy more teachers.

Senator ALLISON—Do you have a number?

Mr Burmester—No. As I said, that is part of the scoping exercise that we are going through at the moment.

Senator ALLISON—What do you understand to be the Northern Territory government's obligation in providing secondary schooling for Indigenous Australians?

Mr Burmester—They should be able to provide secondary schooling certainly for the compulsory years of secondary schooling. That would be part of their obligations, and I am sure that is covered by their education act. Obviously there are environmental or pragmatic considerations that have to be taken into account in that in a large part of the Northern Territory there are small isolated communities. That will certainly have an impact on the way that secondary education is provided. Certainly an approach will be needed different from what is used in suburban Sydney, for example.

Senator ALLISON—What do you understand to be the extent of secondary school aged students not receiving secondary education in the Northern Territory?

Dr Grant—I understand that some work is being done currently to try to get an indication of the number of students at particular ages who are not attending school—school-aged children who should be at school but who are not attending school. That work is being done in terms of the population data that is available from the ABS. That work has not been completed, as I understand it, at the moment.

Senator ALLISON—So there has never been an estimation or any work done on that question?

Dr Grant—I would have to take that on notice. I know that current work is being done. I do not know whether work has been done in the past. I would have to take that on notice for you.

Senator ALLISON—Can you also take on notice the question of the standards of Indigenous teachers in remote areas?

Dr Grant—Yes.

Dr Mercer—It is very hard for the Commonwealth to work out how many children are in the school-age population. We rely on the census, for example, which is very hard to take down to a fine level. Unless we are able to get enrolment numbers—and also, from the state, their advice of the school-age population—it does make it very difficult for us. It is part of the current initiative to ask for enrolment and attendance data from states.

Senator ALLISON—Presumably we know where people are; nonetheless, we know how many children there are.

Dr Mercer—It is extremely difficult for the ABS to calculate that for remote areas with a great deal of certainty, and the census is the best guide we have. But often, as you would be aware, postcodes are very large in the Northern Territory. Taking that down to community level is extremely difficult.

Senator ALLISON—This committee has taken a lot of evidence over the years—five or six years—to some extent exploring this issue of the underavailability of secondary schooling to even quite large communities where there is primary but not secondary schooling. We have been into many such schools and raised this in our reports, and I am surprised that you are not able to enlighten us about developments in recent years.

CHAIR—Thank you very much for your appearance before us today.

[2.52 pm]

MOTTO, Ms Megan, Chief Executive Officer, Association of Consulting Engineers Australia

OSTROWSKI, Ms Caroline, Policy Officer, Association of Consulting Engineers Australia

CHAIR—Welcome. Your association has lodged a submission with the committee. Do you wish to make any amendments or alterations to that submission?

Ms Motto—Not at this time.

CHAIR—I now invite you to make a short opening statement and then we will move to questions.

Ms Motto—Seeing that we are the last witnesses of the afternoon, I will keep these opening remarks very brief. You obviously have our written report, so I will not go over territory that has already been covered in that. We represent firms that provide intellectual consulting services for the built and natural environment. So the capacity in which we submit our paper and also appear before this committee is in terms of improving the numbers of Australian-born and -bred engineers in Australia that support our industry.

Our industry is undergoing critical skill shortages at the moment in the areas of both engineering and related technologists and that is having a severe impact on the ability of Australia to go forward in terms of our economic growth, our productivity growth and particularly, our infrastructure growth. In fact, at the moment, two-thirds of projects conducted by our members that are designed by our member firms are being reported to be delayed, either indefinitely or for a period of time—sometimes in excess of nine to 18 months—because they just do not have the people to implement the projects or to design the projects. Given that, as a very rough calculation, governments around the country are looking to spend about $500 billion over the next 10 years on infrastructure projects, both new projects and renewal of existing infrastructure, we are facing a critical and long-term problem of not having enough engineers in the country.

It is a global shortage, so migration is not a long-term solution. We therefore have to look to the Australian education system to both stimulate and prepare enough students to go into engineering in the university sector and also into technical courses in the vocational sector. There is no point in having highly skilled mathematicians and scientists if they do not have the desire to go into a technical field, just as there is no point in their having the desire if they do not have the basic maths and science skills to go into those fields. We need to look at all levels of the system. It is a complex issue that covers primary, secondary and tertiary education and it even goes into pre-primary. It is a complex array of issues. Some of the solutions—just to touch on a few points we have made in our submission—that we propose are: minimum curriculum requirements in both maths and science across both primary and secondary education; mandated maximum classroom sizes, particularly in the enabling science subjects and in the secondary education system; better support for teachers so that they can conduct experiential and experimental learning as opposed to theoretical learning, particularly in science subjects; and better careers advice, preferably delivered through classroom teachers as opposed to just through careers advisers. Classroom teachers have a much more in-depth face-to-face interface with the students and they are much better placed to understand the capacity of different students to enter into a science and mathematics career. We are happy to take questions.

CHAIR—Do you wish to say anything?

Ms Ostrowski—No, thank you.

CHAIR—What role does your association play in putting to students that this is a great career and asking them, 'What can we tell you about it?'

Ms Motto—We are very happy that you asked that question. We have just produced a DVD that is part of a three-pronged strategy that will go into every secondary high school in Australia, hopefully by the end of this year. We have the endorsement of the mathematics and science teachers' associations for the DVD. It will go into schools with a face-to-face presentation delivered either by young professional engineers or engineers in exciting fields. The DVD covers exciting projects delivered by excited young people. It is presented by Mark Beretta from the Sunrise program. It covers everything from a roller-coaster engineer, a wind farm services engineer, a coal-loading electrical engineer and a sound engineer for Sony sound studios in Australia. It covers a wide range of projects which we think will appeal to young people. The DVD will go with a physical presentation. The DVD is 20 minutes in length and explains what engineering is.

One issue is the calibre of students that we hope will go into the profession. They know what a doctor, a lawyer and a VET are, but not many students really understand what an engineer is or what an engineer does. I

propose that most teachers of maths and science do not really know either. The DVD explains the career and the type of person that would be interested in going into that career path. We are also producing a number of posters that we will put up in the maths and science classrooms to encourage and enforce that position.

CHAIR—I presume that you would be having female as well as male presenters?

Ms Motto—Indeed, yes. We have a wonderful young lady who worked on the Lawrence Hargrave Drive bridge project.

CHAIR—That is good. Looking at each of the areas that you would be tackling—we have looked at the schools—what about universities? A theory has been put forward, to which I would probably subscribe, that part of the reason why schools have dropped the maintenance of maths and science at a higher level, particularly the harder maths and science, is that the universities had first dropped their prerequisite subjects to get into engineering. Are there any prerequisites for engineering in each of the universities?

Ms Motto—I will take the question largely on notice because I am not aware of any prerequisites that still exist. But I would certainly sympathise with those remarks. I think it is an issue. Our contact with the university deans has indicated to us that the issue for highly technical graduates is that the first year of engineering at the university level is really remedial maths and science.

CHAIR—Yes, we have heard that from a number of sources.

Ms Motto—Yes, and it makes it very difficult because you are now squashing a four-year degree into a three-year degree. So we would certainly support those comments. However, I think that the issue is even more complex than that. Take, for example, engineering. We have seen about the same numbers of engineers go both into and out of the university system over the last 10 years. Around 11,000 young people have gone into engineering in university each year for about the last 10 years—it is roughly similar—and about 5,500 thousand have come out of the system as graduated engineers. The issue is that engineering is now being seen as a very broad based technical degree. Whereas 10 years ago engineers who graduated as engineers would go into mining, manufacturing, the government or consulting, now the same number of the cohort is also being poached by the financial services sector, the IT&T sector, project management, management consulting, the banks and so on and so forth. So, because it is a good analytical problem solving degree with very good technical groundwork, it is being highly sought after by a far greater number of professional fields. We should of course be very excited about this because, quite frankly, the more engineers in our society the better off we will be. However, we are just not getting an increasing number going into university.

CHAIR—This is not a question, but I am pleased that you are offering the DVD on a face-to-face value by somebody who knows something about it. I think so often a career adviser, bless their heart, is somebody who does career advising in a little cupboard in their one spare period from teaching everything else. Very few schools have dedicated career advisers, and if they have not specialised in maths, science or engineering it will not go far. So that is a very good strategy.

Ms Motto—Yes, we made the comment in our submission—

CHAIR—Yes, that is right.

Ms Motto—that the level of career advice through career advisers, be it through career adviser teachers or the high-level career adviser networks that exist, is still just not adequate.

Senator ALLISON—I was interested in the section in your submission about the number of students who are taught physics, chemistry and geology by teachers who are not trained in those subjects. You draw attention to the 2005 science study of the Australian Council of Deans. Can you explain a little why you think this is problematic and what you would do about it?

Ms Motto—Yes. There are a number of issues. In terms of why it is problematic, we all know from our own experience that the teaching experience is very much one that is based on enthusiasm, passion, subject knowledge; obviously it takes into account those things. So as a teacher, if you are not knowledgeable in your subject area, particularly at a high level—and we are talking years 11 and 12, so it is a fairly senior level of physics, chemistry and geology—if you are not fully conversant with your subject area, you are very unlikely to teach it with confidence, much less passion and enthusiasm. This is what translates into students liking the subjects, therefore trying in the subjects and wanting to go further in those subject areas. It is fairly easy to see. There are numerous studies that link teacher enthusiasm and teacher content development with teaching outcomes.

As to why this is having an effect, quite frankly, we would see it having an effect because the quality of the teaching is not seen to be high enough in some physics and chemistry departments. Students who are of a high level would know this and would choose to not take those subjects. They will take subjects for which they know that the quality of teaching is of the utmost. So we think that it is to do with students not choosing subjects because there are not enough teachers who have the prerequisite expertise in those subjects and with students who do take the subjects being turned off, quite frankly, because the teaching is laborious. It is textbook teaching. It is not enthusiastic. It is not experimental and experiential in terms of the teacher physically doing experiments and feeling confident enough to conduct those experiments with the students; rather, it is very teacher textbook type teaching.

One of the points in particular that we would make is that, given we are currently experiencing an unprecedented resources boom in the country, the fact that more than half the teachers who are teaching geology have studied no geology at tertiary level themselves is a crucial factor for our country going forward. The unfortunate thing is that, even if we implement strategies to fix this now, we are talking about a five- to eight-year lag time before those people are in the workforce and working towards our economy. So there are a number of issues as to why students do not necessarily take or do well in those subjects where the teachers are not adequately trained.

Senator ALLISON—What would you do about it? Would you, for instance, support a ban, except under certain circumstances, on teachers being engaged this way? How do you get this moving?

Ms Motto—Rather than a ban at the moment—because, quite frankly, you would be wiping out half of the subject selections because there are just not enough teachers in the system who have educational qualifications in these areas—one of the things that you could do is link HECS payments and the HECS system in terms of repayments with workforce participation in particular fields. For example, you could have a HECS reduction if you became a physics, chemistry or biology teacher and taught in those subjects.

I also think that one of the solutions most certainly needs to occur at the school level. Schools really need to have a look at the expertise—and, once again, this comes back to the recent discussions around principals being able to hire or fire their own teachers. Principals need to have a good hard look at the types of students they have and at the types of teaching resources that they require to teach those students. Quite frankly, principals are scratching around for science teachers, full stop, much less having the pool of talent available to specify what type of science those teachers teach or specialise in.

Senator ALLISON—Victorian principals have that option and the problem is no better or worse there than in any other state, as I understand it.

Ms Motto—And it is pure numbers. It is a numbers game.

Senator ALLISON—Quite a lot of our inquiry is about rewarding teachers in order to get better performance out of them. But a number of submissions have pointed out that a teacher who does postgraduate study, such as a master's degree, is not provided with any rewards for doing that in terms of wages or assistance with time or funds for fees associated with such courses. Do you have a view about that?

Ms Motto—We would certainly support performance pay for teachers. We would certainly support performance pay, in particular, for upskilling of science teachers in particular disciplines so as to be able to engage with the students in particularly, as we have said, physics, chemistry and geology. We would certainly support pay linked to student outcomes. Quite frankly, we would like to see an improvement in the numbers of maths and science students—that is, students who are specialising and taking the advanced level subjects in those particular subjects. If there were an improvement in those numbers in schools, the school might be rewarded with additional assistance.

Senator BIRMINGHAM—Thank you very much for your submission and presentation today. It is always good to hear from industry associations casting a different light on things. Certainly, in the research you have presented, particularly the council of deans study that Senator Allison referred to, it is alarming to look at those stats around geology teachers and chemistry and physics teachers. Only one in four having a chem major and so on is quite remarkable.

Is it fair to surmise that you believe we have developed something of a vicious cycle here? We have teachers at a primary level who are not equipped with the skills and passion to be teaching maths and sciences and are not putting the necessary time, due to the curriculum constraints, into the teaching of those subjects. Students move on to a secondary level where we again have teachers who are not professionals in the subject area in which they have to teach. We have a broader range of subjects being offered. We have fewer students

undertaking those subjects and, therefore, we have fewer people (a) going into engineering and (b) going into the teaching profession to study those very areas that we need. Obviously we need a circuit breaker. You propose some ideas here, but is there a clear-cut issue that you think we should be putting at the forefront of the public debate as a circuit breaker to end the vicious cycle of lack of interest in maths and sciences?

Ms Motto—I think you have hit the nail right on the head; it is a vicious cycle. If you go back one step, a lot of the solutions that most people propose are supply-driven solutions. They are solutions which look at improving the quality and number of maths and science teachers, improving the quality of curriculum of maths and science on offer in the primary school system, and improving the educational system at the tertiary level. So they are supply-side solutions. We would like to see more demand-driven solutions. That is, if more students want to take maths and science and put their hands up for those subjects, the schools will have to find the teachers, pay them and reward them. The system will follow.

One of the things that we have seen—and it is a phenomenon of Western culture—is a move to the humanities over the years and a move away from the hard maths and sciences. That is evidenced by a wide range of things. We have reading groups in primary schools; we have no equivalent for maths or science. We have literacy programs, but the numeracy equivalent, we believe, is not sufficient or broad enough.

When you look at the main influences for student choice, the No. 1 influence, still, for student choice is parents. So what we really need to do is get the parents involved in science—get the parents involved so that they understand the career paths that are available to their sons and daughters if they take maths and science subjects. I think this is a critical factor. Most students do not know what engineering is; most parents do not either. So when parents are influencing their sons' and daughters' choices, they have a huge gap in terms of a great number of career paths.

One of the suggestions that we have put in our submission is to instil science groups as you have reading groups. Parents go along and assist the teacher to conduct basic reading in primary schools. We see a great need for the same thing for science classes in primary schools, for a number of reasons. First of all, it would educate parents about the possible career paths for science subjects. Secondly, it would get the parents more involved in science subjects at school and, therefore, create a better resource around teaching science.

One of the difficulties in teaching science, particularly in the primary school system but certainly also in the secondary education system, is that science is best taught by doing, not by reading. By doing, we mean taking the students out of the classroom, perhaps into the playground, and letting them deal with acids, Bunsen burners and experiments that have an occupational health and safety risk—and a behavioural risk, quite frankly. Classroom teachers, given the class sizes, just do not feel capable or able to manage that risk. So if we had more parents in the classroom, coming in to assist in conducting these quite basic experiments—which parents would be very capable of helping the teacher conduct, just in a supervisory capacity—we feel that this would really make a big difference not only to the way that science teachers teach but also to the way parents understand science.

Senator BIRMINGHAM—You have used the phrase 'step away from the hard maths and sciences' in the early part of your answer. You have said that, in a sense, at the primary level we need to make it more fun and more engaging, as well as to commit more time to it. Is there also a concern that at a senior secondary level we have made stepping away from those hard maths and sciences too easy—that there are too many other alternatives, too many softer subjects on offer? I guess it goes partly to the point that the Chair was making about the fact that, if there are not the prerequisites to go into courses at uni, you can boost your TER, or whatever it is called from state to state, to get a higher score by doing an easier subject that is not physics or maths.

Ms Motto—We have a great concern fundamentally that maths and science are not compulsory through the senior levels of schooling. English is now the only compulsory subject for years 11 and 12. We think that this sends an appalling message to society. Having a society that can read and can write is important, but we also need a society that can solve basic problems, can run its finances adequately and can conduct itself in terms of basic numeracy. We think the fact that the curriculum requirements going through to year 12 miss out on maths and science is a poor message that we send to our society.

Should there be curriculum requirements? Absolutely. If you are going on to years 11 and 12, you should be able to conduct basic scientific methodology experimentation in terms of problem solving in everyday life and you should be able to conduct basic numeracy. English is the only compulsory subject that is taught through years 11 and 12. Many schools will stream their subject selection choices to quasi-force students to take a maths subject. Few will force them to take a science subject; they will often have another alternative on a

science line of choice. Certainly, a lot of schools will force students to take some level of mathematics. But the fact that it is not a high-level curriculum requirement just sends the wrong message.

Senator BIRMINGHAM—Just as a lot of the evidence we have heard says that we need to dedicate more time to English, maths, science and other core disciplines at the primary level, frankly, if at the senior secondary level you are looking to stream off into tertiary studies—taking aside vocational studies for a moment—you should have to do some element of hard maths and hard science, to use your terms.

Ms Motto—Even in vocational studies, if you are going to be a carpenter, a plumber or anything else, you need to measure things. You need to problem solve. You need to calculate basic things. So we would see that it is an enabling subject for community involvement, full stop.

Senator FISHER—You have talked about students best learning science and related subjects by doing, you have talked about occupational health and safety being in part, as you see it, responsible for a decline in the experiential learning in science and you have talked about class size having an impact on that. State governments largely regulate occupational health and safety. Is your equation that simple? Is your equation as simple as what you referred to earlier in terms of teachers being prepared to take that risk?

Ms Motto—I do not think that you can just pin it on occupational health and safety. It is a whole range of issues to do with a duty of care, but it is also a range of issues to do with resources. Quite frankly, you cannot get every student in the class to conduct an experiment if you do not have enough Bunsen burners for every student in the class. So there is a more complex issue behind it than just occupational health and safety. But our civilisation has a higher expectation of teachers in terms of their duty of care. If a student comes home with a scratch or a burn because the student has done the wrong thing—not because the teacher has done the wrong thing—the finger is not pointed at the student; the finger is pointed at the teacher.

I think that is a consideration in the minds of teachers when they are teaching. It is certainly a consideration in the minds of teachers when they are conducting all sorts of activities in the school system, from playground duty through to supervision of detention through to classroom teaching. The fact is that we are in a society that has a higher expectation in terms of duty of care of teachers. Teachers are no longer just educationalists; they are also expected to be behaviourists, social workers, careers advisers and a great array of other things—and I think that is pretty broadly accepted.

Senator FISHER—Are you contemplating a scenario where, if you have more experiments and more experientially based learning, no scar should be experienced by a student? Where do you think we can sustainably draw the line if we increase experiments, for example, in the classroom?

Ms Motto—I think common sense has to be applied. We are in a very litigious society where common sense is not always applied, but I do think that we need to get back to a level of common sense. However, I do think also that engaging parents in the classroom experience would go a long way to addressing some of the issues that can result in occupational health and safety issues—and that is behavioural issues—students being off-task, students doing the wrong thing, students seeing what else they can do with the Bunsen burner while the teacher's back is turned. I think having more eyes in the classroom would certainly go a long way.

CHAIR—Thank you very much for appearing before us. You are a very passionate advocate, I must say, and that is good. I thank all witnesses who have given evidence to the committee today. We will reconvene for a sixth public hearing in Melbourne on 25 July.

Committee adjourned at 3.21 pm