



Australian Government

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***Understanding the Future of Australia's Innovation and
STEM Strategy***

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2.10 PM

SYDNEY CRICKET GROUND

Before I start, can I say Australia needs the people – people who can do what we have heard about; people who have the talent and skills.

Australia does some things very well with respect to science and STEM.

Our best are up there with the best in the world.

Our investment isn't bad.

Our best education institutions are generally excellent – not all.

But there are flags flying that urge caution and change.

There are signs that we could be and ought to be better.

And that means carefully thinking through what we do, where and how, and it requires leadership.

A few months ago, a book by British author Ian Leslie was released. The title was – *Curious: The Desire to Know and Why Your Future Depends On It*.

Leslie had become a father for the first time last year and as parents do, worried about his daughter's future.

But it was the focus of his concern that was most interesting.

He said:

What if she's incurious? What if she doesn't want to know what an alpine mountain looks like or what stars are made of? What if she remains stubbornly uninterested in why Hamlet pretends to be mad or why churches have spires? What if she regards all that "Why" and "How" stuff as, essentially, a waste of time?

The only thing worse than having to explain to your child how babies are made would be a child who didn't want to know.¹

For Leslie, this was the greatest fear of all: a child trapped on the wrong side of an emerging cognitive divide.

He goes on to argue:

Economies are rewarding those who have an unquenchable desire to discover, learn, and accumulate a wide range of knowledge.

*It's no longer just about who or what you know, but how much you **want** to know.²*

Leslie sees the fingerprints of change in every facet of human life.

- In school: a hungry mind is the single best predictor of achievement and keeps students on the path to higher learning.
- In university: the curious earn better grades and boost their employability through work placements.
- In the workforce: people with qualifications earn more, move more flexibly between jobs, and have an increasing share of the market to themselves.
- In living: we profit from new technologies, new government services, new ways of connecting to the world.

And we can pull back our focus to see the wider world, creating these opportunities for individuals.

¹ <http://www.theguardian.com/lifeandstyle/2014/jun/07/importance-encouraging-curiosity-children>.

² <http://www.newstatesman.com/culture/2014/05/why-curiosity-will-rule-modern-world>.

We know that industries are growing more complex. Technologies are pushing smart companies to the lead. There is a premium on knowledge, agility and skills.

Countries at all levels of development are not just offering unprecedented incentives for R&D investment.

They are also striving for the infrastructure of the twenty-first century:

- Research facilities
- World-class schools and universities
- Enabling technology networks and industry clusters.

And above all, they are striving to foster in their people that spirit of curiosity - to want and to seek out opportunity.

This brand of curiosity is not synonymous with 'science'. There are many ways of trying to understand the world.

But Leslie makes it clear that we are not just speaking here of our instinctive impulse to touch the shiny button.

We are talking of intellectual curiosity – and that is hard work for nations and individuals alike.

- Logic and reasoning.
- Method.
- Knowledge of history and theory.
- Balancing of risk and reward.

In short: the capacity to generate knowledge and fuel innovation, on a scale never matched in human history.

Science is and must be at its core. And it is likewise at the core of the global growth agenda.

The question is: are we in Australia prepared for this new reality? We might point to our stand-out performers and say absolutely.

But I think on the whole, curiosity is an asset in worryingly limited supply.

You might have read yesterday's newspaper coverage of a new report from my office – *Benchmarking Australian Science, Technology, Engineering and Mathematics*.

In view of the central importance of STEM, we need to know how we perform. We need to get 'a fix' on our performance—not an easy one, against 'the world', but a more challenging one, against nations that, like us, are essentially free-market economies with serious science engagement.

So what are the headlines from the report?

- Our patenting rates are poor; and the linkages between researchers and business among the worst in the OECD.
- Less than one in three Australian researchers work in industry; half the OECD average of 60 per cent and substantially less than the US, where some two in three researchers are in the business sector.
- Just 1.5 per cent of Australian companies developed new to the world innovations in the latest year for which statistics are available, compared to between 10 to 40 per cent in other OECD countries.
- Worse - just two in five businesses identify as 'innovators'; and one in five say that they have introduced new or significantly improved goods or services in the last year.

We have also tried all manner of things to correct these trends and after 25+ years, we are still where the numbers I just used put us. But we do this without the benefit of a plan.

We have lacked as a result the **focus**, **scale** and **alignment** to achieve our real objective: a great shift in the way we *all* think.

We *all* need to put science first.

- Not just people in lab-coats, but people with blue and white collars.
- Not just in ad hoc projects, but as core business for every firm.

Not just as a marginal agenda, but as the focus of economic policy.

There is now one nation in the OECD that does not have a national plan for science, technology or innovation. We happen to live in it.

Our science investment and policies are too heavily dependent on so-called 'terminating program' grants, funding offsets and sporadic commitments to infrastructure. And worse, they have suffered from a lack of coordination. As each agency, department or university independently makes its necessary budget adjustments, our national science profile is what's left over. And it is compounded by the study choices of undergraduate students, given the numerical dominance of university researchers in our profile. What is important may not be popular.

We have long presumed that good things will just happen. That in amongst the churn we will still have what we need when the time comes. *She'll be right*, we might say. *No worries*.

I'd venture that no-one here thinks that is a wise way to run a business, so why do we think it is a wise way to run science?

Science is a long haul. It is not something that can be turned on or off when we feel like it.

And it isn't like a tooth brush: something you can buy when you get there because you forgot to pack one.

If we are to build both capacity and capability we need strategic investment supported by good planning and long-term commitment. And we need leadership.