

EDUCATION: FUTURE FRONTIERS

OCCASIONAL PAPER SERIES

On Education in the 21st Century

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An essay commissioned by the NSW Department of Education

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EDUCATION: FUTURE FRONTIERS is an initiative of the NSW Department of Education exploring the implications of developments in AI and automation for education. As part of the Education: Future Frontiers Occasional Paper series, the Department has commissioned essays by distinguished authors to stimulate debate and discussion about AI, education and 21st century skill needs. The views expressed in these essays are solely those of the authors.

There's a scene in the classic Woody Allen movie *Annie Hall* where the nine-year-old Alvy Singer has been taken to see his doctor because he's become depressed. His mother, who is at her wits end, points out it's because of something Alvy has read in a book. Alvy explains the problem: "The universe is expanding, someday it will break apart and that would be the end of everything." "He's stopped doing his homework" his mother adds, to which Alvy responds: "What's the point?"

This is a more imaginative version of the dog ate my homework excuse and while it's a little early to be getting metaphysical one might expand Alvy's point about there being no point to enquire about the purpose of education in an age of information on-demand, kindergarten robots and artificial intelligence.

In an era dominated by the internet, mobile devices and screens why would one need to physically attend school? Surely everything you need to learn can be accessed from home? Moreover, why bother with spelling, arithmetic or even languages if Google can do all this for you? In fact why bother learning anything at all if you can access everything from anywhere at any time? What's the point?

FAST FORWARD TO THE FUTURE

I am aware of university students refusing to attend lectures, because they prefer to download their lectures and watch them at their own convenience at 1.5 times speed, rewinding anything that isn't instantly clear or understandable. But what's the point of even this if advanced machine learning and autonomous systems are capable of doing almost everything humans can do at a fraction of the cost? Under the current system are we not teaching the next generation to become rapidly redundant in the face of accelerating technological change?

THE ONLY THING WE CAN SAY WITH ABSOLUTE CERTAINTY ABOUT THE FUTURE IS THAT IT'S UNCERTAIN. IT IS THEREFORE SURELY OUR RESPONSIBILITY... TO ENSURE THAT OUR CHILDREN HAVE A DECENT FUTURE.

We've been here before many times, of course. Machines have a long and rather repetitive history of stamping out human skills and while it may be true that the scale and the speed of change are different this time, they might not be.

We would therefore do well to remember the sage piece of advice contained in Douglas Adam's book, *The Hitchhiker's Guide to the Galaxy*, which is "Don't Panic!" We repeatedly overestimate the impact of new inventions over the shorter term and while many superficial things are changing, many deeper things are not.

On the other hand, the only thing we can say with absolute certainty about the distant future is that it's uncertain. It is therefore surely our responsibility as adults and educators of future generations to ensure that our children have a decent future. We should therefore make mild preparations for a number of different outcomes, especially any that currently appear unfavourable. After all, if just about everything else is being digitally disrupted why not education? Surely education is one of the last bastions of the analogue and unless educators start to think about how to maximise the upsides of digital technologies they will rapidly fall victim to the digital downsides.

I'M A LITTLE RETICENT TO SUGGEST THAT EDUCATION NEEDS TO BE REINVENTED, PARTLY BECAUSE MANY ASPECTS OF THE SYSTEM WORK PERFECTLY WELL.

The educational system that exists in Australia today is one largely shipped over from England in the 19th Century when the economy was based upon agriculture, repetitive work and skills that generally resulted in jobs for life. These jobs weren't necessarily interesting, but they did involve physical activity and provided identity and meaning alongside money. This system worked fairly well back then, especially when most workers didn't have to think for themselves.

But the system arguably works less well now when individuals are increasingly paid for their ideas or their ability to manage or motivate others. The system nowadays is also one where individuals are increasingly responsible for the creation of their own lifetime employment. Thus an appreciation of how one sells oneself in an entrepreneurial context might be useful.

I'm a little reticent to suggest that education needs to be reinvented, partly because many aspects of the system work perfectly well, and also because one of the big problems that education suffers from are endless attempts to reinvent it. You'd think that after one hundred and fifty years or more we might have learned how to teach, but apparently not.

THE LEANING TOWER OF PISA

Every time a freshly caffeine infused official is put behind a desk there seem to be panicked cries to move forward (or sometimes backwards) to compete with countries towards the top the PISA global education rankings, namely: a) Singapore b) China, c) South Korea or d) Finland.

This is a little odd because a) while Singapore is good at memorisation it has an issue with creative problem solving, b) so does China c) ditto South Korea, which by the way has a mental health epidemic largely caused by the pressure of a somewhat binary examination system. d) Finland, was a late developer educationally speaking, so it's fairly easy to dazzle from a distance and demonstrate high gains from a relatively low base.

Finland also unintentionally games the PISA system by doing well across a narrow band of conventionally academic subjects. If you measure student happiness in Finland, for instance, the country is at the bottom of the class. Youth suicide is high in Finland (as worryingly elsewhere) and economically the country is one of the weakest in Europe.

PISA, like its namesake tower, looks distinctly wobbly.

The OECD claims that PISA tests assess whether students have acquired key knowledge and skills that are "essential for full participation in modern societies." They would say this because it's the OECD, but the tests have little or no regard to cultural or regional context and, more importantly, do not assess how individuals perform or feel about themselves across the whole of their lives.

These tests are largely a snapshot of economic preparation, not a measure of lifetime happiness, mental wellbeing or physical health.

So my first suggestion to anyone involved in education in Australia or anywhere else is simply to stop. Stop with the endless proclamations, denigrations, exemplifications and modifications and allow the fine dust of any recent educational reforms to settle. And ignore PISA.

Then, when the air has cleared, pat yourselves on the back for doing a good job with limited resources and little in the way of thanks from students, parents or anyone else. Only then should you start to think about what education in Australia might look like in the future and how it might serve society in the broadest and most useful sense.

THINK. AGAIN.

When I say think, I don't mean cursory glances, snatched snippets or measly morsels. I mean huge heaving plates of contemplation capable of exciting or frightening anyone coming within a country mile of them. Think wide-open spaces of unpopulated possibility. Think curly whirly thoughts that would make Doctor Seuss and his Cat in the Hat grin from ear to ear.

Think about how you'd do things differently if you were building the education system from scratch – a new system with no legacies or liabilities whatsoever. One in which resources, the media, the unions, politicians, parents and the business environment weren't a factor at all. What would you do? More importantly, perhaps, what would you stop doing? Spend about a year thinking about this.

A year? I can already hear calamitous cries coming from the corridors of Canberra. But seriously, what is the rush?

This is serious. There are undoubtedly things that are more urgent, but I struggle to think of anything that's more important than the education of future Australians.

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GET SMART.

In the past Australia has been a lucky country. To remain so it needs to become a smart one too and the only way to achieve this is through education, not digging large holes and exporting the contents to China. This isn't sustainable.

You've most probably got one shot at major reform for the next generation so take your time and don't waste theirs. If you can't come up with any earth shattering thoughts no worries. Just leave things alone and focus on hiring the very best teachers you possibly can. Also constantly reinforce the idea that literacy and numeracy are the foundations upon which everything else is eventually built.

LEARNING SHOULD BE PREPARATION FOR THE WHOLE OF LIFE, NOT JUST WORK.

I'm a fan of Slow Education, which, like Slow Food, teaches us to take our time. Both Slow Food and Slow Education are people-centric, reflective and aim to ensure that individuals appreciate where the things they consume come from. Both emphasise the importance of local difference, craft and quality over standardised production and cheap ingredients.

For me Slow Education is about the pleasure of the process as much as any potentially illusory destination or outcome. It is about classroom interaction, conversation and the slow unfolding of understanding. It is also a reaction to pushy parents and tiger mothers who see all lessons in the context of prestigious professions and the making of money.

Slow leadership within education might ensure that the influence of such parents is kept to a minimum. Explaining to a five-year-old that there's a good chance they'll live to become a one-hundred-year-old might also ensure some much needed perspective. Slow learning obviously has some negative associations, but one of the biggest problems we've got in our get it done yesterday world is the idea that faster is always better or more productive. Nonsense.

Never confuse movement with progress and remember that things that are done slowly tend to be done well and are remembered. It's also worth recalling that the word school comes from the Greek word *schole*, meaning leisure or leisurely. Learning should be preparation for the whole of life, not just work. Schooling (and I include further education here) should be about understanding oneself rather than understanding where a set of somewhat subjective examination results might lead over the shorter-term. Again, it's about taking a whole of life perspective.

But, unfortunately, this ancient Greek lesson has been lost. Today education is tied up almost exclusively with economic utility. In other words, the point of education is largely workforce preparation, although, as we've seen, there's the very real danger that the current system is preparation for a workforce that won't exist in the future.

Some studies (e.g. Frey & Osborne) suggest that a third or more jobs could vanish over the next few decades due to automation, artificial intelligence and robotics. I think such claims are a little alarmist, but nevertheless it would do no harm to think about whether or not the current system is positively aligned to future developments.

Importantly, are we equipping students with the right attitudes and skills to compete globally - and locally - in a market where value will be derived largely from human interaction and the ability to invent and interpret things that machines cannot?

But the future economy is merely one factor. It is critical that people are given the mental resources to earn a living in a knowledge economy and, perhaps, even within Industry 4.0 and a post-knowledge economy (whatever they may be).

However, the ability to earn a living and buy products should be the by-product not the primary objective. People should be taught to be more than mere producers and consumers or the managers of machines.

ADVANCE AUSTRALIA FAIR.

For me the purpose of education should first and foremost be the creation of a fair and just society. You might argue that the purpose of education should be employment and that full employment has served Australia well as an output recently, but I think this idea is failing fast and we should all try harder to come up with something additional that's a little more inspiring for future generations.

Albert Einstein is often quoted as saying that "Education is what remains when one has forgotten everything one learns in school." He didn't actually say this at all. He refers to "a wit" that said: "Education is that which remains, if one has forgotten everything he learned in school."

The critical word here is "if" and the point is not the importance of learning anything per se, but the act of learning itself. This learning starts at school, but it shouldn't end there.

The role and purpose of education beyond the creation of a fair and just society should be to teach people to think and to think well. This, hopefully, will create and continually reinforce a fair, just and inclusive society. If the prospect of satisfying, meaningful and purposeful work is the preserve of a highly educated elite then the whole system will eventually fail. We need to demolish disadvantage, not entrench it still further.

But we seem to have forgotten this hugely important lesson.

We have forgotten that society means 'we' not 'me' and that true individuality can only exist within the context of an enlightened and liberal whole. We can only truly be ourselves in the presence of others and this includes those that think differently about things. But, unfortunately, education nowadays seems to be increasingly focussed on individual attainment regardless of any wider consequences.

In some ways this is a good thing. Individuality and innovation are strongly linked. But innovation only truly flourishes in societies that are diverse and tolerant of other individuals, especially those with seemingly strange or non-conformist ideas. This is why countries like a) Singapore, b) China, c) South Korea and d) Finland all struggle to replicate the radical thinkers that reside in places like California, which, interestingly, isn't dissimilar to Australia in many respects. Both are open to migrants (well both used to be), both have vast open sunny spaces where the imagination can soar and both regard themselves as young democracies that have escaped the oppression of a colonial past.

In this context, the primary role of education in Australia should be the creation of a common, yet flexible culture ("We are one, but we are many... from all the lands on

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earth we come"). This should be supported by a unifying purpose in which humans and humanity are central, not the economy or technology. But alongside the fetish of the individual we have elevated both business and technology to God-like status when both are mere tools (and you can read that last word any way you like).

Fair and just means that we should be taught to treat each other - and our planet - with respect and learn not to carelessly exploit either for financial or individual gain.

Whatever you end up doing regarding reform is clearly up to you, but if I were you I would start by exploring purpose in more depth and then move on to what makes humans different to even the smartest machines, because it is within this territory that a sustainable and fulfilling future lies.

In short, how can education contribute to human happiness and fulfilment in the broadest sense and how can education be applied to ensure that humans work with and not against automation and artificial intelligence?

TEACHING PEOPLE TO BE UNIQUELY HUMAN

To my mind, human creativity and empathy would be at the top of any list of uniquely human characteristics along with the ability to make moral decisions. I would therefore dig deeply into what educational cultures, processes and tools are available to extend and enhance these human traits. In some cases this may mean going backwards - or at least changing a few things - if we wish the world to remain the same.

For example, it's well known that technology companies see the future of education as digital and fully connected. There is big money in this for them. This may well end up being the future, but be very careful not to write-off any old ideas simply because they are old or well used. Many things that are very old became so because they're very good.

Thinking of old ideas, don't forget to dig into the history of education too. This would not only provide some further perspective, but there could be ideas hidden in the attic of education that could be renovated and reintroduced with minimum resistance.

Last year I had an email exchange with an ex Headmaster of a respected school in Sydney. He reminded me of the thought propagated by Aristotle and cultivated by Thoreau that society all too often suffers from improved means to unimproved ends. In this context there is a danger that the excessive use of digital technology and connectivity is simply sending us to the wrong destination even faster.

Paper is a case in point. In the rush to digitalise education, we've perhaps forgotten that paper is one of the smartest technologies we've ever invented and one that appears to make people clever. Words slowly written or read on paper tend to be digested better than those written or read on hyperactive screens. As a result context and argument are seen and understood more clearly on paper. Speed and distraction are inversely proportional to understanding.

A similar point about understanding might be said of downloading lectures and watching them at 1.5 times speed or even potentially of MOOCs. If you live in the middle of the outback then online learning is better than no learning at all. Used wisely online learning can enhance and extend other forms of learning.

But be careful not to write-off the importance of physical teaching and classroom interaction completely. It's difficult to question an online teacher and good lessons and classroom discussions have a habit of spilling over into the playground or the college bar afterwards in a way that a recorded lecture, often watched alone, cannot.

DIGITAL STARS

It's also difficult to become motivated or inspired by a machine. I know you can offer digital rewards to students, some of which seem to work, but liking a teacher and liking an app are totally different things. At the time of

writing my eldest son is sitting his exams and he has been particularly diligent about revising for geography. Why? Because he really likes his geography teacher and doesn't want to disappoint him. I suspect that in twenty years time he'll still remember his name while the apps he used at school will be long forgotten.

Moreover, do not forget that the early years of education in particular are partly about learning to get on with other people. If you remove, or significantly reduce, opportunities for physical interaction among students and staff it could well be that you are propagating a system in which individuals are taught to ignore, or at least misunderstand, the needs of others.

Remember too the importance of place. I looked into the future of Public Libraries in NSW many years ago and one theme that shone through strongly was that libraries weren't just about borrowing books. Public libraries were neutral civic non-commercial spaces in which books, historical objects and, most importantly, people interacted and learnt about each other. They were where people come to learn about things and to find things, including themselves. Schools could borrow an idea or two from public libraries.

The importance of good architecture and design is therefore important, although in the end it is the people and especially the physical interaction between inspiring teachers and willing students with sponge-like minds that's most important.

Another issue – and this circles straight back to not only PISA, but to human uniqueness – is that we seem to be worrying more about how well we are doing what we think we must do rather than thinking about what needs to be done. Aristotle, Thoreau and Donald Rumsfeld all rolled into one if your mind goes back that far.

WE SHOULD BE TEACHING STUDENTS ABOUT THE CONNECTED NATURE OF KNOWLEDGE. WE SHOULD BE GIVING THEM THE CONFIDENCE AND SKILLS TO QUESTION CONVENTIONAL WISDOM AND SOLVE FLUID AND CONNECTED PROBLEMS – ALL OF WHICH COMES BACK TO TEACHING PEOPLE HOW TO THINK FOR THEMSELVES.

The Australian system, like most others, seems obsessed with numbers and grades. Progress - or at least attainment - is achieved via standardised testing and one might argue that the passing of exams is the whole point. But are we obsessing about the wrong obsession?

TEACHING TO THE TEST

Exams are how students are evaluated and needless to say the system favours certain subjects, certain intelligences and therefore certain students over others. A model student, as the educationalist Ken Robinson points out, is one in which a student passes from one educational institution to another with the minimum of friction or fuss.

The system, and it's more or less the system everywhere as far as I can tell, has been designed to test ability across a very narrow range of subjects or skills often on a particular day - or series of days - come hell or high water.

Students take the same tests at roughly the same time (and regardless of age or development) and all other abilities, measures or concerns tend to be diluted or dismissed.

What counts is whether you can regurgitate a series of facts and apply them in a logical manner that is consistent with the views of the examiner or exam board. At its most basic level it's a memory test. At a more sophisticated level (and in later years of education) it's a test of understanding, but rarely do the tests assess anything other than the idea that every problem has a right answer.

None of this was much of a problem when the world tended to be simple and static. But nowadays our problems can be complex, uncertain and ambiguous. Furthermore, many of the world's really big problems are connected. It's like a game of Whack-a-Mole. You hit one problem on the head and another pops up somewhere else.

We should be teaching students about the connected nature of knowledge. We should be giving them the confidence and skills to question conventional wisdom and solve fluid and connected problems – all of which comes back to teaching people how to think for themselves.

We should spend more time asking students to solve real world problems and especially in groups rather than alone. And perhaps in some instances we should mark the class rather than the individual. This might promote collaboration and encourage the weaker members of any class.

If you've never taken the Spaghetti Tower Marshmallow Challenge you should, because it teaches everything from physics and negotiation to leadership skills. I'm also keen on goal-based education in the broadest sense. For instance, in addition to teaching science as a subject, science can be taught as the solution to problems such as climate change, water quality or clean energy.

In early years this would generally be explanatory and illustrative, but in later years it can actively be about seeking useable solutions.

Again, in the past there wasn't much need to do any of this. If you had an agrarian or a factory-based economy on your hands what you needed were standardised students that emerged from the system into work fully formed and compliant.

But if you have an innovation or problem-based economy on your hands, one in which people are paid for either their ideas or their ability to motivate or inspire other people to have ideas, then this system might not be the right one.

This links back to many of the countries towards the top of the PISA rankings. Yes, places like Singapore, China and South Korea perform well when it comes to core subjects like maths, but they score poorly when it comes to producing citizens that can think and act independently.

Excepting its Ivy League universities, the US doesn't instantly spring to mind when it comes to being an educational role model (it was 25th on the PISA rankings last time I looked and is consistently at the bottom in terms of maths). But when it comes to developing world-changing ideas it is often in a class of its own. This is largely due to a culture of creative criticism and creative destruction. In the US it pays to challenge conventional solutions. This is one upside to individualism, although even in the US there's a limit to what a single individual can achieve working alone.

Contrast this with the likes of China. I've taught classes of executives from China that won't say a word until the most senior executive in the room has spoken and open criticism is almost unheard of.

How does this sit with the idea that public discussion and criticism are so central to progress? I suppose the trick is achieving some kind of balance between the insight of one and the wisdom of many.

Another issue with the narrow educational focus we have now is that this approach takes no account of the fact that students learn at different speeds and are good at different things. Students tend to be categorised at certain ages (with testing starting as young as five in the UK) and the categorisations can be fairly fixed. In other words if a child is thought to be a dimwit at the age of eleven it's assumed that they'll stay this way forever and this can be reflected in lower standards of teaching. This is clearly a load of old tosh.

It's also rubbish that your whole future can be determined by how you perform on a particular day. Maybe we should mark individuals across their

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entire school career or if you really do want to go down the path of endless examinations why stop at school? Hey, why not have the government publish annual rankings of individuals from birth to death based upon a series of tests or, more practically, on the opinions of social networks? (Please don't do this.)

A TOLERANCE FOR FAILURE

And what of the role of luck? We aren't generally taught about luck at school - or failure for that matter, but both play a significant part in most peoples' lives. How and why might one integrate luck and failure into national curricula?

Life in the broadest and most general sense is about a series of experiments, many of which will result in failure. The trick, it seems to me, is to carry on with a negligible loss of energy or enthusiasm.

This isn't the same as the Silicon Valley mantra that all failure is success, but failure can and does teach us about determination, inventiveness and resilience. As the designer, inventor and billionaire entrepreneur James Dyson puts it: "Creative breakthroughs always begin with multiple failures... true invention lies in the understanding and over coming of these failures." Quite. Schools in particular surely have a responsibility to not only encourage safe and non-judgemental experimentation but ensure that every student has the opportunity to find out through failure what it is that they most enjoy and are best at regardless of peer pressure or subject hierarchies. We need bright chemists and mathematicians, but we also need great farmers and ballet dancers. And, of course, great teachers.

As for luck it's important to learn that sometimes things don't work through no fault of your own, but equally that luck responds positively to energy and effort. Teaching those that will later do well that luck has played a part also acts as a counter-force to any egotistical urges.

Failure teaches adaptability and resilience, which are possibly two of the most important attributes you can have in a world that's become volatile, uncertain and complex and is set to become more so in the future.

But let's get back to intelligence.

Defining intelligence in a traditional manner (generally IQ rather than EQ) writes off large numbers of students from an early age. Putting to one side the issue of giving everyone a fair go, I'm constantly talking to employers that despair of graduates with perfect biographies or first class degrees.

High achieving students are usually technically more able, but they can be more fragile too, never having experienced major failures or frustrations. Their character, personality and selling skills can be sadly lacking too.

The idea of multiple intelligences usually lists eight forms of intelligence, but in education we tend to focus on just one or at best two. We are obsessed with logical and to some extent linguistic intelligence followed (if you are lucky) by physical and creative intelligence. Social, personal, moral and spiritual intelligence are mostly ignored. This is nonsense. We need to broaden what we value and give students more opportunity to discover what they might be good at. Learning a little bit about everything before you focus on learning everything about something is a lesson we've largely forgotten too. So let's broaden both teaching and student assessment to include

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a more rounded and societally cohesive set of skills, capabilities and behaviours.

Putting to one side the fact that our narrow focus throws huge numbers of students into a dustbin at a very early age - and potentially for life - it's dreadfully daft because the intelligences most likely to be made redundant in the face of artificial intelligence and advanced machine learning in the future are logical and linguistic.

In contrast, the remaining intelligences, especially social and creative intelligence, are likely to remain the domain of humans not machines. Go figure.

Creativity (which to my mind includes curiosity, intuition, imagination, originality, aesthetics and divergent thinking) is the intelligence where smart machines are at their very weakest. So too are the nations we seem to be in awe of educationally. But despite this we seem to be hell bent on removing the teaching of creative subjects from many curricula to allow for a deeper focus on logical subjects. Illogical. In the UK, for example, half of UK schools have axed design and technology examinations so that students can focus on what they consider core subjects, especially STEM.

Putting to one side the thought that art, music and other creative subjects are valuable in themselves because they explain, illuminate and medicate the human condition, there's the question of exactly where our future scientists, technologists, engineers and mathematicians are

supposed to get their world changing originality from if anything remotely resembling an imaginative subject is removed during their formative years. STEM is a short stalk going nowhere if you don't feed it with some imagination.

Another consideration is that, by default, any narrow focus on academic subjects gives certain supposedly intelligent students tacit permission to behave like complete psychopaths at school and later within society at large.

If the system doesn't value or measure morality or good character then it turns a blind eye to people who don't have any and who, quite frankly, shouldn't be let into or out of school in the first place. Under the current system, all that counts is that students pass their exams. What many schools want are kids that achieve high scores, thereby making their own rankings look good. From there 'successful' students can move seamlessly into a handful of top universities and thereafter into a select group of organisations. At this point their confidence most likely solidifies into arrogance and their brains go to their heads. Have you met any modest CEOs recently?

Physical intelligence (aka sport) looks like it is in reasonably fine fettle in Australia, but we should remain vigilant so that it stays so and resist any attempt to trivialise or dilute its teaching. Childhood (and adulthood) is becoming increasingly sedentary and screen-based and we must flex our muscles to ensure that we all spend as much time outdoors as possible.

We will surely be less inclined to value nature if we spend far less time interacting with it too. A reverence for nature should be taught at an early age and reinforced throughout education. If there's one lesson we don't teach as often as we should it's that we only have one world and we should take more care of it. To be fair this is taught during the primary years, but the lesson is largely lost in later years.

Personally, I'd like to see more schools growing their own food and cooking it too. This isn't domestic science; it's biology, physics, and chemistry infused with a hint of sustainability. Come to think of it you could throw in some geology and astrophysics and perhaps eventually get to God if that's your thing.

I'd also like to see more lessons about the quality of the air we breathe and the pollution we throw into our seas. Indeed, given the number of physical acres devoted to education I'd like to see more schools aiming to be resource positive or neutral by harvesting their own energy and water (science lessons, design, engineering and perhaps economics).

That's probably enough about sustainability. Much more and the journalists at the Daily Telegraph and Sun Herald will create so much hot air that they'll become a renewable energy source.

What else might you think about? It's difficult to cover an area as vast as education in Australia in 5,000 words, but one other thing I would consider is demographics. This might sound a bit boring, but think of it as being about people again.

The Australian population is ageing and while this has implications for student enrolment a more pressing problem might be teacher recruitment. Too many teachers are set to retire in the near future and you might consider thinking about ways to prevent them from doing so - or at least keeping a little bit of them once they've gone. This in turn links to another people point. Schools are pillars of the local community, but they can be islands of isolation and segregation. Why can't school resources and facilities be more widely used locally? Why do schools have to close when the students have gone home? Why can't older citizens (especially retired teachers) be seen as potential reservoirs to be tapped when other resources dry up? Wisdom can be learnt from older generations and many would be happy to help if only they were asked.

At the other end of the age spectrum, perhaps students could help older people to understand the digital world and maybe school leavers, and especially university leavers, should be required to spend time in their own community or, more usefully perhaps, a distant one. If an aim of education is the tolerance and understanding of others then time away could be highly educational.

Another demographic theme to consider might be the influence of foreign students. I believe that the flow of Asian students into Australian universities is highly significant. Is this a concentration risk? What might happen if this flow dramatically slowed or dried up altogether? But, even if it doesn't, why not design new courses to create new revenue streams for schools and other educational establishments? Evening classes for those aged 65 plus looking to re-enter education for instance?

I think my time and word count are now up so my final point is this: The thought that the universe will ultimately vanish into darkness can be read one of two ways. Either, as Alvy Singer says, there is no point to anything. Everything we do is ultimately inconsequential. We should therefore put another shrimp on the barbie and have fun in the sun.

Or you can take the opposite view. That while it shines, the sun illuminates the importance of looking after our tiny planet and every human being briefly attached to its surface. The best way to do this might be to use education to fuel a sense of wonder about the universe and our place within it. To teach people that everyone leaves behind a legacy. Whether that legacy is positive or negative is down to education. ☺

FROM TINY ACORNS: TEN SMALL IDEAS

1 PAY TEACHERS MORE (OR MAKE TEACHING TAX-FREE)

Teaching needs to become one of the most desirable professions. I might be wrong, but it strikes me that paying teachers a lot more could dramatically increase the quantity and quality of teachers. If paying more directly won't work, how about making teaching a tax-free profession? Or how about building schools with heavily subsidised or free accommodation on site for teachers?

2 END THE OBSESSION WITH FACILITIES

Schools love physical facilities and IT. They are things you can point to when inspectors and prospective parents come to visit. And they can be better behaved than students too. Buildings, in particular, can be a physical legacy for retiring head teachers too. Both are, of course, important, but not to the exclusion of good teachers (see above).

3 MEASURE WHAT MATTERS

End the obsession with exam results and league tables. Or, if you won't, broaden the measure to include other socially desirable factors. For example, could you measure moral character, kindness, dependability or determination? And would someone please start a study looking at the relationships between lifetime achievement (measured in the broadest sense) and schooling.

4 START AND END THINGS LATER

There are two sides to this. On the one hand open schools earlier and keep them open until later so that parents have more flexibility to drop off and pick up. Kids that come from troubled homes could have more time in a safe environment. The second side to this is why not start schooling when children are older, but the quid pro quo is they leave when they're older too. We've doubled human lifespans over the last century, but education still starts around five and ends around sixteen, eighteen or twenty-one. And while we're on the subject of time, why do lessons have to be so rigidly structured? Why can't you have a ½ day art lesson, a day of geography or a week of science? Why can't schools be given more flexibility over lesson length?

5 GET OUTSIDE MORE FOR MORE INSIGHT

In a country as blessed with good weather as Australia why are so many kids constantly crammed in classrooms like battery chickens? Get them outside. Interact with nature. Visit other people, other institutions and other communities. This is something the Finnish system does really well.

6

FORBID THE USE OF MOBILE PHONES

Wouldn't it be lovely if the internet got switched off on Sundays so that we could recharge ourselves? This isn't go to happen, but how about banning mobile phones on school premises until the age of sixteen? OMG. This won't go down well with students, but would remove distraction and could dilute peer-pressure and online abuse. The idea would apply to teachers and parents on school premises too.

7

PROPERLY INTEGRATE SCHOOLS INTO COMMUNITIES

Schools exist within the context of a local community, so why not make more use of this? Invite more people into schools to explain what they do and get more students out into the community to experience everything from policing and healthcare to local businesses.

8

MAKE EDUCATION MORE FUN

I'm loathed to say this, largely because some schools have already embraced this with terrible consequences. In fact fun has emerged as a less taxing alternative to learning in some circumstances because parents don't want their precious little snowflakes doing anything that could be difficult, boring or frustrating. Nevertheless, there's no reason why more humour, wit and outright hilarity can't be injected into everything from education to tax accountancy. Fun is something smart machines will never understand.

9

DONT SHY AWAY FROM WHAT'S HARD AND HARD WORK

This is my counter-balance to making things fun. Not everything is or can be fun. Learning important stuff is hard and can be mind achingly boring. Get over it. Learn maths, learn grammar, learn handwriting, learn science (guilty!) even when you don't really have to. It's training the mind for other things that are hard or boring throughout life. Hard is also satisfying. Easy is the path most people take. Hard is less crowded and eventually has a better view. This is something that China, Singapore, Japan and Korea do get right.

10

PERSONALISE SOME LEARNING EXPERIENCES

This contradicts 'we' not 'me' to some extent and there's a danger of reinforcing special snowflake syndrome. Nevertheless, digital technology affords a great opportunity to tailor some learning experiences. For example, I'm a fan of reading physical books. But physical books are all the same and take no account of the fact readers can be different. An e-book, in contrast, can read its reader and adjust content or questions according to what it learns about the reader.

