Public submission made to the Review to Achieve Educational Excellence in Australian Schools

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Summary

Planning and implementing practices to develop self-directed learners who are given the time and space to focus on open-ended tasks, chosen because they excite their curiosity or because they are personally meaningful to the student.

Building teachers capacity over a longer scale of time to teach maths, science and digital technologies in an open-ended way by developing hubs of expertise, and employing mentors to coach them over the year or few years. Giving primary school teachers release time to meet regularly to plan and have the opportunity to team teach in a local school of best practice and go back and implement it with guidance and reflection. Allowing primary school teachers to meet with other teachers in their area who teach the same age group to plan together and share ideas.

To make more widely available information on neuroscience regarding trauma and brain plasticity, and the efficacy of talk therapy in altering the physical structure of the brain.

To evaluate alternative schooling models to adapt some of their best practices.

To facilitate a widespread introduction of digital formative assessment for students, especially as an alternative to NAPLAN.

Give more PD to teachers and schools to flip the classroom and make lessons available 24/7 for students.

Half the crowded curriculum so that teachers can have a greater focus on process, without being forced to always race ahead to cover the curriculum.

Main submission

Capable of being a self-directed learner, regardless of age or year level. Characteristics of a self- directed learner include: playfulness, autonomy, internalised evaluations, openness to experience, intrinsic motivation, self-

acceptance and flexibility. These characteristics need to be planned into the curriculum and students need to be tracked on a continuum of development.

https://www.opencolleges.edu.au/informed/features/29-steps-toward-more-self-directed-learning/

Skills of working productively in a team environment, producing to a deadline and communication in a considerate manner need to be developed.

Reading comprehension is emerging as a factor holding senior college students back from accessing coding and STEM subjects. The level of challenge of texts needs to be increased in earlier years, with student being expected to cope with text dense media, as opposed to the visually appealing text books and web pages usually accessed.

Teachers tend to teach what is being assessed, therefore if we don't assess a capability along a continuum, it tends to get overlooked.

School Quality and educational success can be measured in exit surveys ascertaining how happy students were with their experience of the school, and how their school experience could be improved. These are the people we need to listen to, they are the consumers and when given a voice, they are insightful and wise.

Each new generation is motivated by different factors, and just as the world of work has had to change its parameters of expectations and modus operandi, so to do schools.

Learners expect autonomy and choice, yet in the school environment they are given what to learn, at what level and for how long. Yet each classroom has a spread of years in terms of ability and motivation to learn, teachers are told to differentiate, but don't teach ahead, because the teacher in the following year won't like it. So teach across, go deeper, if you have that deeper knowledge, but at the same time get them all ready for NAPLAN.

Many teachers feel that they are failing many of their students because they are overwhelmed by all the demands of meeting their needs. In my experience, teachers tend to focus their time on the middle group, then on the higher-needs students to a certain degree, but accepting that they will probably just get moved up to the next year, and continue to be left behind as the curriculum moves on.

Many teachers lack the confidence or the time needed to upskill in teaching deeper mathematical, scientific or technological concepts. However, without this teacher capability, how can students be engaged in these concepts?

Building teacher capacity takes time and built in accountability to work with a team of teachers, develop resources, use them in the classroom, meet again for feedback, and continue this cycle.

In order to build students capacity to be innovative and creative, they need opportunities to play and have fun in their learning, to to self-motivated and in control of the process and the product. They need autonomy but also guidance.

Students should be taught using open-ended tasks. It is the process that is most important and needs to be assessed against. The curriculum is so crowded, teachers are forced to move on to cover more and more content, instead of focusing on the journey. Sitting with a students, ask questions and deliberating on the answer is a seldom luxury is todays harried classrooms. Can't curricula be pared back, with digital formative feedback over the years of schooling instead of re-inventing the wheel each new school with each new teacher? For the majority of the class it's going too fast or too slow anyway! It doesn't really matter if they don't know all the facts of the curriculum, if the students have developed the processes and skills, which takes much more time in the classroom.

Innovation, flexible thinking, creativity and originality cannot happen in a crowded curriculum. This cannot happen while teachers don't feel and think with a confident mindset, with information that is well informed and up to date. Teachers will keep doing what they have always done, because it worked for them and they aren't comfortable with open-ended tasks, where they may not be able to control the outcome. Students learn better in an open environment, but many teachers and principles aren't comfortable with this type of learning, and so innovation and free thinking is stifled.

Students of high ability are often bored by procedural teaching. Their natural curiosity is being stifled and they become frustrated by teachers' unwillingness to allow them more autonomy. Jo Boaler talks about the Japanese approach to highly able students in her book, 'What's maths got to do with it?'. They strongly believe that no students should be subjected to measuring of capabilities or aptitudes. Instead they focus on students helping each other and all students are given the opportunity to learn through challenging and high level work.

How are developments in neuro science being implemented in schools? Vulnerable students need initiatives that help them develop their executive function. What activities develop a student's prefrontal cortex? How teachers are kept informed about the latest scientific understanding about trauma, brain plasticity and the efficacy of talk therapy? Another reason to reduce a crowded curriculum is to allow for traumatised students to build a healing relationship with a teacher, preferably one who is not overworked and stressed. Teachers need to be more valued for the moral guidance they can offer to disadvantaged students, making a positive difference in their lives. For this to happen, these students need to feel welcome in school. Again, more open-ended learning tasks allow for these non-mainstream students to cope with school. They can shine in group work, often surprising their more conforming classmates with their hidden abilities and divergent thinking.

The fact that PD is the responsibility of the state dept of education limits the efficacy of it in terms of scale. In the UK, Maths Hubs were developed in partnership with outstanding schools and colleges. They support all the regions, acting like a maths leadership network involving schools, colleges and organisations with educational expertise in the area. Without mentoring and actually participating in classes already set up and doing open-ended conceptually rich maths tasks, most teachers will not do this on their own.

Effective teachers can be identified by increases in student attainment.

For teaching primary school teachers teaching maths, science and digital technologies, I believe the funding should be allocated to allow on-going collaboration between teachers in a hub, or local region to meet regularly, facilitated by a mentor teacher, with ability, knowledge, experience and expertise, to plan, implement, reflect and re-implement lessons. In my experience, primary teachers are lacking in confidence and deep conceptual subject knowledge of these disciplines. Combined with a crowded curriculum, and NAPLAN, without support students may not be given the opportunity to engage with these disciplines on a deep and interesting way.

What institutional or governance arrangements could be put in place to ensure ongoing identification, sharing and implementation of evidence-based good practice to grow and sustain improved student outcomes over time?

As above, relief funding needs to be made available to allow relies time on a sustained basis to implement best practice. Many teachers are out of their comfort zone when teaching using open-ended maths tasks. It takes time and support to up skill them.

Funding and release time should be made available to teachers to retrain in new technologies, maths, science and how they link to the world outside school.

Accountability is a double edged sword and can be seen as a lack of trust in the professionalism of teachers. Having said that, guidelines need to be in place to ensure that all students are being helped to attain the educational goals. Testing is basically labelling, which is almost always a bad idea. A focus on achieving levels over time, as in a computer game, may be more beneficial for students instead of NAPLAN type tests. Results could easily be assessed, with the focus on personal gains, rather than comparison to peer group, which can be demotivating and disheartening for all involved. Primary school students in general don't like to be labelled or compared to each other.

Greater use of technology should enable more streamlined formative assessment, for students, teachers and schools. Data driven parameters can be assessed against, and feedback can be acted upon.

To develop creativity in student it would be worthwhile to examine the Steiner alternate curriculum, developed to reflect the Steiner philosophy.

Steiner education provides enjoyable and relevant learning through deep engagement and creative endeavour, to develop ethical, capable individuals who can contribute to society with initiative and purpose.

https://www.steinereducation.edu.au/steiner-education/about-sea/

How effective is Steiner education in achieving these goals? How can their practices be adapted to mainstream schools? Why are only a limited number of Australian students able to access such an educational setting, which seems to be so appropriate to the needs of today's society?

Theorists from Johann Heinrich Pestalozzi to Jean Piaget and Maria Montessori have argued that students should learn by playing and following their curiosity. Einstein spent a year at a Pestalozzi-inspired school in the mid-1890s, and he later credited it with giving him the freedom to begin his first thought experiments on the theory of relativity. Google founders Larry Page and Sergey Brin similarly claim that their Montessori schooling imbued them with a spirit of independence and creativity.

In recent years, researchers have begun backing up those theories with evidence. In a 2011 study, scientists at the University of Illinois at Urbana-Champaign and the University of Iowa scanned the brain activity of 16 people sitting in front of a computer screen. The screen was blurred out except for a small, movable square through which subjects could glimpse objects laid out on a grid. Half the time, the subjects controlled the square window, allowing them to determine the pace at which they examined the objects; the rest of the time, they watched a replay of someone else moving the window. The study found that when the subjects controlled their own observations, they exhibited more coordination between the hippocampus and other parts of the brain involved in learning and posted a 23 percent improvement in their ability to remember objects. "The bottom line is, if you're not the one who's controlling your learning, you're not going to learn as well," says lead researcher Joel Voss, now a neuroscientist at Northwestern University.

Evolutionary psychologists have also begun exploring this way of thinking. Peter Gray, a research professor at Boston College who studies children's natural ways of learning, argues that human cognitive machinery is fundamentally incompatible with conventional schooling. Gray points out that young children, motivated by curiosity and playfulness, teach themselves a tremendous amount about the world. And yet when they reach school age, we supplant that innate drive to learn with an imposed curriculum. "We're teaching the child that his questions don't matter, that what matters are the questions of the curriculum. That's just not the way natural selection

designed us to learn. It designed us to solve problems and figure things out that are part of our real lives."

Some school systems have begun to adapt to this new philosophy—with outsize results. In the 1990s, Finland pared the country's elementary math curriculum from about 25 pages to four, reduced the school day by an hour, and focused on independence and active learning. By 2003, Finnish students had climbed from the lower rungs of international performance rankings to first place among developed nations.