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

Submitter: Mrs Felicity Sandral
Submitting as a: Teacher
State: NSW

Summary

To become well-rounded, educated, creative and critical citizens of the world, Australian students need a carefully sequenced, and explicitly taught, knowledge based curriculum. According to the research, this is the most efficient and equitable way to provide a powerful and cumulative education for all.

Main submission

Submission questions

What should educational success for Australian students and schools look like?

What capabilities, skills and knowledge should students learn at school to prepare them for the future?

We don't know what the future will look like. However, it seems reasonable to assume that whatever jobs and challenges there are in the future will evolve from existing human knowledge. Therefore, it is important that students have wide breadth of knowledge across all the subject domains, so they have a strong basis for learning new information and skills.

Cognitive scientists agree that the more knowledge we have, the easier and quicker it is for us to learn additional knowledge. (Willingham, 2006) This ability to learn quickly is essential, and can be fostered by building a solid base of knowledge K-12.

Desirable skills such as creativity and critical thinking are also dependent on a strong knowledge base. They are not generic, transferable skills, but rely upon people having an excellent knowledge of the particular domain. For example, a film director may be very creative in his own, artistic field, but be unable to be creative in a different field, such as sports management, in which he has limited knowledge, training and experience. (Kaufman & Baer, 2002) Similarly, research shows that being able to think critically about chess is not a function of abstract skill, but a result of accumulated chess knowledge and experience. (Chase & Simon, 1973)

It seems unlikely, therefore, that vital skills such as creativity and critical thinking, can be taught directly. They are better learnt indirectly and cumulatively, through a carefully sequenced, knowledge rich curriculum.

How should school quality and educational success be measured?

School quality and educational success should continue to be measured by a combination of internal school assessment and well designed external testing. Internal assessment allows schools to tailor assessment to their communities' needs. Quality, external assessment provides excellent accountability for the benefit of students, schools and society more broadly.

Although teachers work hard to ensure the best outcomes for their students, research suggests that they are not immune to bias in their assessments, and external assessment can lead to better results for more disadvantaged pupils. UK assessment expert Daisy Christodoulou (2015) quotes this from Burgess & Greaves's 2009 Working Paper: "It is argued that pupils are subjected to too many written tests, and that some should be replaced by teacher assessments… The results here suggest that might be severely detrimental to the recorded achievements of children from poor families, and for children from some ethnic minorities."

What can we do to improve and how can we support ongoing improvement over time?

How could schools funding be used more effectively and efficiently (at the classroom, school or system level) to have a significant impact on learning outcomes for all students including disadvantaged and vulnerable students and academically advanced students?

What actions can be taken to improve practice and outcomes? What evidence is there to support taking these actions?

Using school funding to develop and implement a carefully sequenced, knowledge rich curriculum would have a significant impact on learning outcomes for all students, but especially for students from disadvantaged backgrounds. This would make explicit the knowledge that is required to succeed - knowledge that more advantaged children are exposed to as a result of their more socially privileged and educated family backgrounds. The powerful effect of cumulative knowledge can be seen in the rapid educational improvement of US states who have adopted a knowledge rich curriculum. (Stern, 2009)

What works best for whom and in what circumstances?

Humans are more similar than different, in education, at any rate, because our brains work in very similar ways. Due to the limitations of our working memories, explicit instruction appears to be the most effective and efficient means for novices to learn new material. Despite the popularity of various 'discovery' learning

activities, these seem to be better suited to expert learners, for example, Masters or Ph.D. students, and less useful for primary and high school students, who are, almost by definition, novices. Novices' working memories are quickly overwhelmed by the operational difficulties of an open-ended project, to the point that the aim of the learning activity is often not achieved. (Kirschner, Sweller & Clark, 2006)

This is not at all to say that projects should not be used at all in K-12 education. They could be used judiciously at the culmination of a unit of study, when students have enough explicitly taught knowledge to undertake a carefully designed project suitable to their knowledge and experience.

It seems, then, that explicit instruction works best with what we now know about human cognitive architecture.

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?

Maintenance of proficient teacher accreditation requires fifty hours of professional learning activities over the five year maintenance cycle. Perhaps this could include a small mandatory element, for example, reading and discussing an annual, teacher-friendly summary of recent important educational research, produced by a respected organisation, such as the NSW Centre for Education Statistics and Evaluation.

To help this occur, it would need not only to be mandated but, crucially, teachers must be given dedicated, student-free time to undertake this professional reading, discussion and change implementation.

How can system enablers such as targets and standards, qualifications and accreditation, regulation and registration, quality assurance measures and transparency and accountability provisions be improved to help drive educational achievement and success and support effective monitoring, reporting and application of investment?

If, as above, there was a requirement for schools to provide time for teachers to read and discuss quality research, such as from the NSW CESE, as part of the accreditation maintenance cycle, that would be a helpful accountability measure.

Are there any new or emerging areas for action which could lead to large gains in student improvement that need further development or testing?

Yes, Cognitive Load Theory. In January 2017, the highly respected UK educationalist Dylan Wiliam tweeted "I've come to the conclusion Sweller's Cognitive Load Theory is the single most important thing for teachers to know". Through understanding the limitations of human working memory, and taking these into account when designing learning activities, teachers can reduce the cognitive load and make

learning easier and more efficient for students. (Sweller, Education Review http://edrev.asu.edu/edrev/index.php/ER/article/viewFile/2025/545)

Are there barriers to implementing these improvements?

If yes, what are they and how could these be overcome?

I think that the biggest barrier to implementing these improvements are that people don't know about them. Teaching a rewarding but difficult and time consuming profession, leaving little time for 'extra-curricula' professional activities. A minority of teachers actively participate in online learning forums such as eduTwitter, where recent educational research is eagerly shared and debated. Bringing educational research into the staffroom is the biggest challenge and providing dedicated and sufficient time for this is the way to achieve it.

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