

MEDIA RELEASE

Change the STEM curriculum to break out of the downward spiral, experts urge

23 May 2018: An integrated curriculum, early intervention and a stronger teaching workforce are key to reversing Australia's downward spiral in science, technology, engineering and mathematics (STEM) teaching and learning, according to a report released today by the Australian Council for Educational Research (ACER).

Challenges in STEM Learning in Australian Schools identifies three specific areas in which the school sector has its strongest chance of making a difference to student outcomes in STEM: broadening access to and monitoring of STEM learning, rethinking the STEM curriculum and building the STEM teaching workforce.

Report co-author and ACER's Director of Research Development and Quality Assurance Dr Michael Timms said that, in order to maximise the limited space for STEM in the crowded school curriculum, there must be a shift from the current focus on discrete learning areas to a modern conceptualisation of STEM as interdisciplinary and constantly evolving.

"Australia's unbalanced and fragmented STEM curriculum is leading to declining interest among students," Dr Timms said. "An integrated approach that focuses on practices, skills and capabilities, and not just disciplinary knowledge, will create a relevant context in which content can be learned."

Dr Timms said that, in light of research showing that science achievement gaps begin very early in life, equitable and early access to STEM is vital.

"Students' opportunity to engage with STEM should not depend on their capacity to pay," Dr Timms said. "Yet STEM learning is so often packaged as extracurricular activities with inherent barriers to access for less privileged learners."

"We must invest in creating the same level of engagement and excitement about STEM as part of the standard program in *all* early childhood centres and schools," Dr Timms said.

The report notes that the Australian Government's Early Learning STEM Australia (ELSA) project is developing play-based STEM programs for preschool children. For older students, the report's authors recommend the establishment of a greater number of specialised STEM schools, such as the STEM career academy – or 'school-within-a-school' model.

In relation to the STEM teaching workforce, the report notes that only around one quarter of primary school teachers have a strong background or tertiary qualifications in science or mathematics and, at the secondary level, the relatively small number of STEM specialists tend to teach senior students, leaving students in Years 7–10 to be taught by out-of-field teachers.

"We do not currently have the supply of qualified teachers we need to improve STEM learning," Dr Timms said. "Incentives to attract people to STEM teaching are one way to address this, but we need better data to understand where in the teacher supply pipeline we might best target such policies, and to gauge the extent to which those policies are working."

Read the full report, *Challenges in STEM Learning in Australian Schools*, Policy Insights 7, by Dr Michael Timms, Professor Kathryn Moyle, Dr Paul Weldon and Pru Mitchell, and published by ACER, at <http://research.acer.edu.au/policyinsights/7>.

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Media enquiries: Julia Robinson, 03 9277 5582 or 0419 340 058 communications@acer.org

Australian Council for Educational Research Ltd

19 Prospect Hill Road (Private Bag 55) Camberwell VIC 3124 Australia

t +61 3 9277 5555 f +61 3 9277 5500 www.acer.org

ACN 004 398 145 ABN 19 004 398 145