FEDERATION OF PARENTS AND CITIZENS ASSOCIATIONS OF NEW SOUTH WALES

POSITION PAPER - STEM Education

Skills and knowledge of STEM fields are increasingly beneficial to the economy and workforce in the 21st Century. An interest in STEM subjects must be fostered from a young age, as it is a strong measure of a society's ability to perform well in a 21st Century economy and workforce. Qualifications in STEM fields may increase the likelihood of employment, and it is therefore imperative that all students have equitable access to quality STEM education. It is the obligation of governments to ensure that schools can foster a high interest in science and can guarantee that students' performance in science reflects their full potential. The growth STEM industries must be supported and encouraged throughout New South Wales and Australia as a whole. The Government must implement policies to ensure there are real employment options for those who have gained STEM qualifications.

Curricula of STEM subjects must be designed and taught in a way that maximises students' skills and knowledge, and prepares students for their future. All maths and science teachers must be qualified in these areas, and we call on university STEM courses to have prerequisites for entry. Coding must be incorporated into school curricula, as it has become a useful life skill in numerous areas. P&C Federation supports the launch of the Rural and Regional Enterprise Scholarships.

Background

- The concept of STEM is broad, encompassing areas as diverse as chemistry, computer science, information technology, engineering, geosciences, life sciences, maths, physics, astronomy and to a lesser extent the social sciences such as anthropology, economics, psychology and sociology.

- PISA scores indicate that scientific literacy scores in Australia are higher than the OECD average (510 points vs OECD average of 493 points. However, Australia's scientific literacy scores declined 17 points in 2006-2015.

- PISA also indicate that mathematical literacy scores in Australia are higher than the OECD average (494 points vs OECD average of 490 points. This is a decline of 10 points since 2012.

- NSW had a 15 point decline in mathematical literacy between PISA 2012 and 2015, the 2nd largest decline of all states/territories. NSW also had a 27 point decline in average scientific literacy scores between PISA 2006 and 2015, and 18 point decline between PISA 2012 and 2015, the largest decline of all states/territories

- Three quarters of IT graduates and over 90% of engineering graduates are men, and girls in primary and secondary school often report less confidence and/or interest in maths and science subjects.

- Rural and Regional areas are characterised by lower levels of scientific and mathematical literacy.

Under 1% of STEM enrolments in 2013 were indigenous students.

- The Rural and Regional Enterprise Scholarships provide 1200 remote and regional students with $18,000 to undertake STEM studies in vocational, undergraduate and postgraduate education

Additional Resources

Whannell and Tobias. 2015. Improving Mathematics and science in rural Australia: A practise report. *Australian and International Journal of rural education*. Vol.25(2).

Australian Department of Education and Training. 2017. Rural and Regional Enterprise Scholarships. https://www.education.gov.au/rural-and-regional-enterprise-scholarships

ATSIHEAC Background Paper: Indigenous Science, Technology, Engineering, and Mathematics (STEM)

Office of the Chief Scientist. 2016. *Women in STEM: A story of attrition*. http://www.chiefscientist.gov.au/wp-content/uploads/OCS_Women_in_STEM_datasheet.pdf

STEM graduates most likely to get jobs, earn more money - http://www.news.com.au/finance/work/careers/stem-graduates-most-likely-to-get-jobs-earn-more-money/news-story/a631fcf1ecc3114a4d7ed9b02004c8e1