NATIONAL OFFICE
Level 6, 50 Clarence Street
Sydney NSW 2000
GPO Box 56
Sydney NSW 2001

T. 02 8252 6700
E. info@consultaustralia.com.au
W. www.consultaustralia.com.au
ABN. 25 064 052 615

CONSULT AUSTRALIA

Driving business success for consulting firms in the built and natural environment

7 Dec 19

Professor Peter Shergold AC
Chair – Expert Panel
Senior Secondary Pathways Review

Dear Professor,

Submission – Education Council's review of senior secondary pathways

I write on behalf of Consult Australia regarding the public consultation on the Education Council's review of senior secondary pathways into work, further education and training. We are a member of the Australian Chamber of Commerce and Industry (ACCI) and this letter is a supplement submission to the ACCI submission in order to share our recent discussion paper on *Australia's STEM education challenges*. Our discussion paper raises a number of points, in the context of STEM, relevant to this review.

Consult Australia is the industry association that represents the business interests of consulting firms who provide design, advisory and engineering services for the built and natural environment. We represent an industry comprising some 48,000 firms across Australia, ranging from sole practitioners through to some of Australia's top 500 firms, with a combined revenue exceeding $40 billion per year.

Our interest in this review arises from skill shortages in our industry and challenges they pose to Australia's skills development approach and various education systems. Our industry has a number of dependencies needed for the right mix of skills to respond to changing demands, and the education policies of governments and senior secondary pathways are key dependencies. We rely on these policies and pathways as the foundation for our industry's ability to develop the professional skills and experiences needed to meet demands, noting our workforce's increasingly advanced and complex roles.

Our industry's skill demands are driven by the number and scale of infrastructure and other built and natural environment projects being delivered across Australia. The number and scale of projects is set by the investment appetite and policy settings of governments across Australia, in addition to the investment appetite of private sector clients. This investment appetite in many locations around Australia is unprecedented and has been described as a 'new normal' of elevated activity due to the direct benefits of these projects for our economy and communities. As infrastructure development continue to grow it will exacerbate the current skill shortages experienced by our industry in areas such as civil engineering, structural engineering, and transport engineering roles.

Following a review of the consultation paper and our research to date on STEM education challenges, we have outlined below the six areas that we recommend are considered as part of the senior secondary pathways review. These considerations focus specifically on STEM education; however, they may also be applicable when applied in a broader context.

1. Pathways can be significantly improved by better connecting what students learn in-curriculum with real-world examples through industry partnerships. Given its nature, we particularly see STEM education as difficult for students to contextualise and understand how learning outcomes are applied in different career paths and in the workplace.
2. There are negative impacts from the dominance of the Australian Tertiary Admissions Rank (ATAR) on senior secondary pathways. We agree that there can be a culture where students, parents, teachers and/or schools are encouraged to 'game' the ATAR system in the hope of increasing a student's ranking and the school's reputation.

NATIONAL OFFICE
Level 6, 50 Clarence Street
Sydney NSW 2000
GPO Box 56
Sydney NSW 2001

T. 02 8252 6700
E. info@consultaustralia.com.au
W. www.consultaustralia.com.au
ABN. 25 064 052 615

CONSULT AUSTRALIA

As highlighted by the Australian Chief Scientist, the ATAR system can have a malign influence which encourages the avoidance of perceived 'harder' STEM subjects in favour of 'easier' subjects which therefore limits overall participation in STEM subjects and also influences tertiary education choices. We believe education pathways need to be designed to counter this culture and the education system needs to remove any perceptions (perceived or actual) that students are disadvantaged for pursuing STEM subjects and careers.

3. Prevalent school career adviser knowledge gaps on career pathways are a significant concern. A recent Victorian inquiry on the topic highlighted that school career advisers are often unaware of all career opportunities available within industries and how the nature of work is changing, and this is limiting their ability to provide the best guidance to students. The inquiry noted the tendency for career advisers to underpin the above focus on ATAR results is perpetuated by schools and the broader community.[1] This reflects the findings of a national survey of 7000 school leavers in 2017 where 55 per cent believed their schools cared more about ATAR results than student pathways.[2]
4. There has been a decline in STEM standards from curriculum not covering the right content, not promoting inquiry-based learning, and not integrating learning progression across schooling years. One approach that we recommend to overcome these challenges is to work with tertiary education institutions and industry to map how downstream skill requirements link to learning outcomes in the curriculum. A better link between the skills and competencies required between schools, tertiary institutions and the workplace can also limit a 'sink or swim' environment that can occur when students do not have the right foundations as they transition between each.
5. Issues with how curriculum is delivered, particularly in the context of supporting students to transition into work or further education needs addressing. We believe the teaching profession is not attracting a sufficient number of people with STEM qualifications to reflect current needs. This is resulting in an alarming number of teachers who are 'teaching out of profession' for STEM subjects. For example, around 20 per cent of secondary maths and science teachers, and around 30 per cent of secondary IT teachers, have no related qualifications.[3] [4] We see a strong link between teachers with no qualification in the subject area they are teaching and the drop in education outcomes over the past two decades.
6. Curriculum and senior secondary pathways could be more inclusive and recognise diversity for STEM fields. For example, research points to a number of barriers for female participation in STEM education such as a gendered view on education choices and disengagement due to content being perceived as not inclusive because of gendered expectations.[5] Addressing cultural barriers has been a focus of the Australian Chief Scientist over recent years, particularly by responding to myths and preconceived bias that are preventing females from actively participating in STEM education. We therefore believe it is critical for the review to identify tangible improvements that address gender imbalance issues in many STEM classrooms.

Consult Australia thanks you for the opportunity to contribute to this inquiry. I invite you to contact me directly at nicola@consultaustralia.com.au for more information or to discuss our input further.

Yours sincerely,

Nicola Grayson
Chief Executive

---

[1] *Parliament of Victoria, Inquiry into career advice activities in Victorian schools (2018)*
[2] *Year13, After the ATAR (2017)*
[3] *Office of the Chief Scientist, Science and Maths in Australian Secondary Schools (2017)*
[4] *Productivity Commission, Shifting the Dial: Five Year Productivity Review (2017)*
[5] *AAS and AATE, Women in STEM Decadal Plan (2019)*