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AUSTRALIAN SCIENCE TEACHERS ASSOCIATION (ASTA)

Strengthening Australia's Sovereign Science Capability Through Genuine Education Reform

How did we get here in the first place? A position paper to address shortages in skilled science teachers and skilled STEM graduates using upstream solutions.



Title: Strengthening Australia's Sovereign Science Capability Through Genuine Education Reform

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About ASTA:

The Australian Science Teachers Association (ASTA) is a not-for-profit organisation formed in 1951. In 2026, ASTA will celebrate 75 years as the peak body for Australia's science teaching community. ASTA is a federation of the eight state and territory science teacher associations. Members of the state and territory science teacher associations come from a wide range of backgrounds in science education, including individual primary and secondary teachers, primary and secondary schools, tertiary science and teacher educators, tertiary institutions, science and industry organisations, pre-service teachers, retired teachers and laboratory technicians. We are a dedicated and passionate community of professionals, who believe that an appreciation for science can be fostered in every student and a passion for professional growth lies within every educator. Our vision is a world where science literacy and education are recognised as vital to the future of our society.

Acknowledgment of Country:

The Australian Science Teachers Association acknowledges the First Nations peoples of Australia as the Traditional Custodians of the land on which we work and live. We pay our respect to Elders past, present and future and extend that respect to all Aboriginal and Torres Strait Islander peoples.

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**Promoting the
profession: enriching
science teaching**

FOREWARD

Australia cannot afford to have so many young people disengaging from the study of science at school. As this position paper makes clear, the consequences of disengagement and the long-term decline in students' levels of science knowledge and understanding, as documented by the OECD's Programme for International Student Assessment (PISA), pose threats to our national prosperity and to Australia's ability to contribute and compete in the decades ahead.

It would be easy to attribute growing disengagement and declining performance to higher levels of student distraction and lower levels of teacher competence. But in this paper, ASTA rightly identifies the external structures within which teachers teach and students learn as major impediments to better science learning at school. These structures include examination and ranking processes that serve the purposes of universities but not best-practice science learning.

Research tells us that deep learning is more likely when students are motivated by curiosity and wonder than by external pressure; when learners appreciate the meaning and personal relevance of what they are taught; when learning environments are supportive and collaborative rather than competitive; and when learning is recognised as lifelong and teaching is carefully tailored to the stages individuals have reached in their emerging knowledge and understanding. The urgent challenge identified by this paper is to transform external structures that inhibit effective, evidence-based science teaching and learning.

Geoff Masters AO
Former CEO Australian Council for Educational Research



EXECUTIVE SUMMARY

Australia's capacity to act as a sovereign, innovative nation requires a strong domestic science capability. This capability is foundational to national security, economic resilience, and long-term prosperity across priority areas including critical minerals, energy transition, health, defence, agriculture, and advanced manufacturing. While recent national strategies have emphasised STEM (science, technology, engineering, and maths) skills and research investment, persistent declines in senior secondary participation in fundamental sciences, coupled with acute teacher shortages, signal that current education settings are insufficient to meet Australia's future needs.

This position paper argues that sovereign science capability is built upstream—in schools—through coherent, equitable, and fit-for-purpose education systems. Evidence shows that Australia's competitive, ranking driven senior secondary model, centred on high stakes assessment and the Australian Tertiary Admission Rank (ATAR), structurally discourages student participation in mathematics and science, amplifies inequity, and undermines teacher professionalism. These dynamics have contributed to declining enrolments in critical disciplines (Australian Academy of Science 2025), widespread out of field teaching, and weakened confidence and interest among students, despite sustained STEM initiatives and policies.

International evidence from high-performing jurisdictions demonstrates that alternative system designs are possible. Systems that mandate mathematics and science be taught into the senior years do so by prioritising competency over ranking, and rely on formative assessment. They achieve higher participation, stronger

equity outcomes, and more reliable pipelines into scientific and technical fields—without sacrificing academic rigour.

To rebuild Australia's sovereign science capability, this paper calls for genuine education reform that re-centres education on learning rather than ranking and sorting. Recommendations include making Year 11 mathematics and science compulsory, removing bell curve driven assessment incentives such as the ATAR, and adopting competency based assessment models that support all students to reach agreed standards. These reforms are presented not as isolated education initiatives, but as essential national capability -building infrastructure required to meet Australia's strategic, economic, and societal challenges in the coming decades.

'Students are required to fail for the ATAR system to work'.





CONTEXT: WHY THIS MATTERS NOW

Sovereign science is fundamental to Australia's capacity to make independent, informed decisions in a rapidly changing global environment. It underpins the seven priority areas of the Australian economy, which is supported by the National Reconstruction Fund. Without a strong domestic science capability, Australia risks diminished control over its future prosperity and reduced capacity to respond to emerging challenges and advances across health, energy, environment, agriculture, defence, and emerging technologies.

Sovereign science capability depends not only on research and innovation systems, but also on a strong pipeline of scientific knowledge and skills developed through education. Strengthening this pipeline is, therefore, a long-term national interest that depends on the courses that students undertake and a robust teacher workforce that can support this.

In 2008, Education ministers endorsed the Melbourne Declaration on Educational Goals for Young Australians

(*Ministerial Council on Education, Employment, Training and Youth Affairs 2008*) affirming literacy, numeracy, and deep disciplinary knowledge as foundational to schooling. The declaration emphasised the development of 21st-century skills required for active participation in a complex, knowledge-based economy. It acknowledged that schooling must do more than transmit knowledge; it must also lay the groundwork for future scientific capability by supporting student engagement and achievement in STEM.

The national focus on STEM education intensified following the release of *Science, Technology, Engineering and Mathematics: Australia's Future (Office of the Chief Scientist 2014)*. The report highlighted persistent systemic challenges, including stalled or declining student performance against international benchmarks and falling participation in senior secondary science and advanced mathematics.

Delivering on Critical Minerals: Australia's Sputnik Moment

Sputnik will always be associated with being the original catalyst for transforming science education into a strategic national priority and for shaping modern STEM policy. It's moments like Sputnik that expose perceived strategic and intellectual gaps in our STEM capabilities where science education is no longer about academic enrichment or achievement - but a matter of national survival.

Australia's recent critical minerals agreements with Canada and Japan to secure and industrialise critical mineral supply chains—from mine to market to support clean energy, infrastructure and construction, and advanced manufacturing—is Australia's Sputnik moment. Already the Australian resources sector contributes more than 13% of the nation's GDP and two-thirds of national exports, a system already under strain with skilled geoscientists narrowing. With this sector already in crisis, it is projected to need a six-fold increase of geoscientists by 2040 if Australia is to deliver on these bi-lateral agreements.

These agreements explicitly aim to expand end-to-end critical minerals value chains from extraction to processing, refining and recycling, and not just mining. This requires far more domestic technical capability than Australia currently produces, particularly in applied science, engineering, and advanced manufacturing. The current implication is that STEM education (especially mathematics, chemistry, physics, materials science, and systems engineering) needs to shift from a 'skills agenda' to sovereign capability infrastructure that requires the same 'Sputnik shock' that led to educational reforms. Current weak mathematics and science participation at senior secondary level represents a supply chain risk, not just an education concern.

In response, Australian Education ministers agreed in 2015 to the National STEM School Education Strategy 2016–2026 (*Education Council 2015*). The strategy states that reversing declining trends in STEM engagement and achievement would require sustained and coordinated effort across jurisdictions and over an extended timeframe. The strategy's focus was to improve student outcomes, strengthen teacher capability, and promote participation in STEM pathways.

While improvements in STEM education were necessary, recent evidence indicates that broader science capability challenges remain. The Australian Science, Australia's Future (*Australian Academy of Science 2025*) report, identifies eight science disciplines in critical decline and calls for immediate action to safeguard Australia's long-term prosperity.

The report warns that, without intervention by 2035, Australia will be ill-prepared to meet the economic, technological, and societal challenges anticipated by 2060. At the core of this risk are the fundamental sciences of physics, chemistry, mathematics, and the biological sciences that, since 2006, have experienced declining high school enrolments and performance as recorded by Programme for International Student Assessment scores, despite STEM education initiatives. Further exacerbating the forecasted skills shortages, Australia's Intergenerational Report (Australia Government 2023, p. 182) states that there is a continuous decline in the apparent school retention rate from Year 10 to Year 12, from 83% in 2017 down to 79% in 2022.

Recurring teacher shortages are now at crisis-level, which has led to out-of-field teaching with over a third of mathematics teachers and almost a quarter of science teachers teaching without any subject-specific training or qualifications in 2023.

Further, in 2023, only 25% of students with a Year 12 qualification studied mathematics to at least intermediate level, compared to 30% in 2019 and 35% in 2008. Some science sectors, such as geosciences and engineering, consider these critical declines in secondary enrolment as a crisis that is raising serious concerns about the long-term supply of qualified graduates. In the report on engineering skills by Engineers Australia (2022), Australia faces a shortfall of about 200,000 engineers by 2040, with over 50,000 engineering positions needing to be filled in the coming few years. Engineers Australia are calling for major changes to education and migration policy to meet the demand.



The 2023 *Youth in STEM* (Department of Industry, Science and Resources 2023) report, details a survey of over 2,000 Years 11 and 12 students. Survey findings identified that student intention to study STEM in the future was relatively weak, with 3% of respondents indicating they would pursue Physics, 2% Earth and Environmental Sciences and 2% Agriculture. Of those surveyed, 19% cited that ATAR scores were a decisive factor influencing their subject selections (ranked 5th among top 10 factors), behind personal interests, skill level and influence by teachers. The survey found that respondents did not feel confident in attaining strong

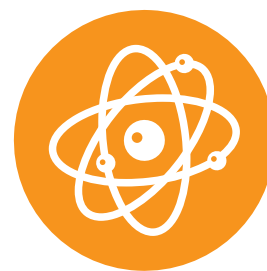
results in mathematics citing reasons such as 'I'm not good at it' (49%), 'it is too hard' (45%), 'I don't understand it' (36%) and 'I have failed this subject before' (28%). A majority (70%) cited that the greatest barrier to studying STEM was a lack of interest in the subjects despite 73% of respondents agreeing with the importance of STEM knowledge for jobs.

The Ambitious Australia Strategic Examination of Research and Development final report (*Department of Industry, Science and Resources 2026*) is as a once-in-a-multigenerational opportunity to address and supercharge Australia's STEM research, development and innovation ecosystem. Although the report does not directly address STEM pipeline issues, it cites that education plays a critical role in achieving the report's ambitious goals within 10 years. It recognises that Australia's education systems are not peripheral to this agenda. They are foundational to Australia's capacity to independently develop, adapt, and deploy science and technology across priority sectors, including critical minerals, energy, health, defence, and advanced manufacturing.

The Heads of Agreement for the Better and Fairer Schools Agreement (Department of Education (2025) provides a funding agreement calling for closing the gap for students and to increase the number of students completing schooling. While we support its priorities and its call for fairness, the agreement's focus on developing the same fundamental skills using the same measures within the same school structures remain largely unchanged since the 2008 Melbourne Declaration (Ministerial Council on Education, Employment, Training and Youth Affairs 2008). Sahlberg (2004) also argued that Australia's adoption of standardisation and competition-based education has been increasingly counter-productive in preparing students for meaningful lives for and beyond a knowledge economy.

If shortages of skilled and knowledgeable STEM teachers are to be reversed while raising the profile and uptake of STEM subjects by students to meet the range of sovereign science demands, Australia must undertake genuine school reform. This includes:

- systemic approaches to schooling to remove barriers to achieving competency
- changing perceptions and attitudes towards the existing competitive model of senior secondary studies that inherently discourages and dissuades students from taking a range of subjects
- building system-wide improvements in schooling that build citizenry and university readiness.



EVIDENCE BASED POSITION STATEMENTS



1 Fundamental Senior-level Sciences are Non-Negotiable

Strong capability in mathematics, physics, chemistry, and the biological sciences is the bedrock of all applied STEM fields. Reversing long-term declines in participation and achievement in these disciplines is a national imperative. Nations that require senior-level Maths and Science can be categorised on a four-tier scale, from demanding the highest levels of attainment in Year 12 (tier-one) to not requiring these subjects beyond Year 10 (tier-four). Despite the Sputnik movement of 1959 and the more recent adoption of the *National STEM School Education Strategy* (Education Council 2015), Australia's school systems have remained at the bottom tier alongside the US and UK that allow students to drop STEM subjects in Year 10, relying instead on post-secondary entry requirements to enforce them. Australia cannot depend on student interest to select STEM subjects as findings in the *2023 Youth in STEM* (Department of Industry, Science and Resources 2023) report suggests that it is largely non-existent. Instead, Australia needs to implement the interventions that have worked for higher performing systems abroad.

Western nations that are often associated with being a high-performing system by international standards stand out for explicitly requiring both Mathematics and Science in the final years of secondary education as a standard requirement for graduation. For example, tier-two nations, such as Canada and Finland, require mathematics (non-calculus) and science subjects to Year 11 without compromising on student choice. British Columbia, a province of Canada, required Mathematics and Science 11 first in 1996. British Columbia is currently ranked first globally in its mathematics performance among Anglophone education systems with over 50% of students electing to take Mathematics 12. This system normalises mathematics and science for secondary students by providing a range of tiered levels of difficulty options for students to select in Year 11.

With mandated Year 11-level STEM subjects, it normalises Year 12-level subjects and female participation as a civic duty and for civic literacy, not just a STEM prerequisite for further studies. Canada's continued high standing in literacy and numeracy shows that it is a system serious about equitable university and citizenry readiness. This directly benefits individuals, regardless of chosen major or area of interest, to have a higher standard of baseline knowledge in mathematics and science.

Models demonstrate that by requiring Math 11 and Science 11, it would likely produce a moderate but system-wide improvement in university readiness at manageable costs, without sacrificing student subject choice.

The *OECD Teacher Knowledge Survey (2026)* demonstrates that students' maths achievement is higher in countries with more knowledgeable teachers. A robust, well-qualified, and sustainably supported STEM teacher workforce is central to building Australia's science pipeline and needs to begin in secondary schools. Mandating Mathematics and Science at a secondary level will, over time, eliminate out-of-field teaching, strengthen disciplinary depth and competency, and repair the relationship with these subjects so that they are normalised prerequisites for improving student confidence, interest, and achievement. Australia's workforce strategy must be long-term, coordinated, and aligned to national capability priorities.



2 Education Reform Must Remove the ATAR Disincentive

Australia's secondary education system is being structurally undermined by an implicit but powerful mandate: high schools are expected to serve as filters for university admissions rather than student learning. This concept has shifted the core purpose of schooling from education to ranking, placing teachers in the role of 'sorting' students by ATAR rather than enabling all students to achieve meaningful success in a broad range of subjects that are not marred by high-stakes exams.

The ATAR provides each graduate with a rank based on an aggregate score from a small sample of student-selected courses. It is heavily criticised for causing extreme student stress, leading students to select less challenging courses and distorting systemic inequity where better access to resources and coaching results in higher ATARs compared to disadvantaged and regional areas. Australia is the only country that puts students under pressure for one number using a between-student competition (Sahlberg 2004).

At the centre of this problem is the bell-curve mentality that is not universally used by high-performing nations. In many senior secondary classrooms, assessments are designed to be difficult and complex to limit high achievement and to ensure a spread of results; a contradiction of a 'close the gap' mindset. The system requires under-performance and for students to fail to differentiate candidates. The premise behind ATAR results is that not all students are expected—or permitted—to succeed, and under-achievement is normalised as students are actively discouraged from enrolling in rigorous subjects to manage cohort scaling. The predictable outcomes are heightened by student anxiety, unsustainable pressure on teachers, and declining enrolments in critical learning areas.

As students begin to incorporate AI technology into their studies, there will be an upward trend

for schools to make senior-level subjects far more difficult to maintain a spread of marks. This will put additional pressure on teachers who are already experiencing situations where the content in the courses is outpacing their current skills and knowledge. This will

A Teacher's Tale: Suppression of High Performance

Attitudes towards the bell curve is a systemic issue: when a 'low level' Year 10 class, through differentiated, targeted support and coaching, surpassed the highest-ranked class, the surprising results were met with concern, not celebration. Teachers are being told to cease providing additional support and resources, and effectively told to stop being a 'high performing teacher' to avoid disrupting the 'predicted scores' and the narrowing bell curve. As a result of this 'anomaly', proceeding assessments were designed to be far more challenging, where a 50% failure rate was the desired target to normalise the bell curve. Teachers are openly discouraging students to enrol in certain courses that 'don't score well' suggesting that exams and ATAR ranks are being prioritised over national interests. This clearly shows that the system has abandoned its ultimate purpose.

exacerbate the current teacher shortage crisis. An education system that depends on failure to differentiate students is neither equitable nor defensible. Schools exist to educate children, not to generate rankings for universities. Current data suggests that approximately 25–35% of school leavers admitted to a Bachelor of Science do so without using an ATAR score. In 2026, there were over 100 qualifications through platforms like Open Universities Australia that do not require an ATAR.

Across Australia, many jurisdictions rely on high-stakes standardised state-wide subject exams and assessment tasks to develop a student's rank. In comparison, high-performing systems such as in British Columbia, underwent assessment and graduation reforms in 2009. A government-commissioned review (*British Columbia Ministry of Education, 2013: 32–140*) and academic research concluded that these high-stakes exams were dictating pedagogy, encouraging memorisation and coverage at the expense of deeper learning and skills development. Further, these over-weighted single assessment events disproportionately consumed large amounts of classroom time for test preparation.

The report emphasised that test performance is not the same as learning and that high-stakes assessments to produce a single score exacerbated anxiety without reliably measuring broader learning. Universities in British Columbia began de-emphasising or removing provincial exam results from admissions decisions as early as 2008. Internal admissions analysis showed that individual course grades alone predicted first-year university success almost as well with the provincial exam scores.

British Columbia began to eliminate most subject-based high-stakes exams (worth 40% of the final grade) between 2011 and 2016 as part of a deliberate shift in how student learning is assessed. The decision was driven by pedagogical, equity, and system-design reasons, not by a claim that assessment was unnecessary. Instead, British Columbia replaced subject exams with literacy and numeracy graduation assessments aligned to a redesigned curriculum. In 2025, the graduation rate in British Columbia was at its highest level, with 89% of students completing Year 12 within six years. All students were, at a minimum, at standard (not simply ranked where failure is acceptable) and had completed a Year 11 Maths and Science. In comparison, around 76% of students in NSW completed Year 12 with no guarantee that they were at standard and had taken a STEM-related subject beyond Year 10.

Until we confront the misalignment of attitudes towards high-stakes assessments combined with bell curve grading and shift focus to student learning and closing the gap, reform efforts will continue to treat symptoms while the core structural issue remains unresolved.



3 Adopt Assessment Practices, Attitudes and School Structures that Close the Gap

While Australia has remained focused on standardisation and competition-based education since the mid-90s, other nations, namely Canada and Finland, engaged in a model of schooling driven by formative assessment that focused on building trust, teacher agency, and active continuous learning and improvement. They now have the highest levels of literacy and numeracy, high Year 12 graduation rates, low levels of teacher attrition, and a robust STEM pipeline with the highest number of university graduates per capita.

Each nation, adopting a 'growth mindset' model of education (Dweck 2004) moved away from the reliance on high-stakes subject-specific summative and standardised assessments to adopting ongoing formative assessment practices that focused on every student reaching a standard. Formative assessment drives a risk-free competency-based education that ensures all students receive a strong educational foundation, with individual strengths and weaknesses monitored and targeted support is provided, as necessary, to close achievement gaps.

Teachers guide and coach students to achieve the prescribed learning outcomes from the curriculum without anxiety, pressure, high-stakes exams, or sorting of students using a ranking system. The expectation is that all students will reach a basic level of competency. Evaluation of students is done to provide continuous feedback with strong trust in teachers' professional judgements and eliminates 'teaching to the test'. The system prioritises closing the gap for all students who are given every opportunity to achieve. Difficult student behaviours are virtually non-existent in school systems that allow students to thrive in a non-competitive environment (Masters 2026).

Another fundamental principle is the focus on individual development rather than

comparison between students, as is the case with ATAR rankings. This reduces the competitive pressure and encourages students to focus on personal improvement and, in the case, of Canada, to introduce 'IP' grades where students are still 'In Progress'. This gives the student the opportunity to strengthen their knowledge and to make up any persistent gaps. Because the focus is on reaching standards, student grades should, in theory not vary when gaps are closed. This change in attitude where learning takes priority over final grades will shift Australia's education system toward developing citizenry and developing university preparedness for agility across disciplines.

A case study of school reform in District #36 British Columbia, Canada

The paradigm shift around the purpose of assessment and grading came about in 2004 with the release of two critical papers from Black & Wiliam and Dweck. Their research guided district-wide school reform that was implemented almost immediately, while letting go of norms, to reflect best-practices in assessment. With learning outcomes and grades now being made transparent, with students knowing exactly what they had to achieve to reach the highest level of competency, students became the drivers of the learning, highly motivated to keep improving. Teachers and students co-constructed multiple opportunities to demonstrate how their learning was improving and progressing. Provincial exams were dropped and regular formative assessments were adopted.

While retaking tests and repeating courses several times became the norm, the system developed multiple modes for students to undertake courses. Secondary schools introduced the semester system, where a course could be repeated up to 4 times in the final two-years; publicly funded night school and summer school provided alternative options for additional schooling as well as the introduction of virtual schooling in 2007. In 2010, the Surrey School District (#36) a very multicultural and diverse district, with a school system comparable in size to Canberra, reported that 3,000 of their 60,000 students self-selected to retake a Year 8-12 subject through Surrey Connect, with mathematics being reported as their most popular virtual subject. Despite Maths and Science 11 being compulsory subjects, the district reported a 97% graduation rate in 2011 and that over 70% of Year 11 students in several of the largest schools elected to take 3 or more science electives in a risk-free environment where closing the gap was truly occurring. The core lesson at the time was that it is the education system ethos that matters most.

New models and modes of learning must be built from an understanding that every student is on a long-term path of progress, that students of the same age and grade can be at very different points on this path, and that every student is capable of excellent further progress with well-targeted teaching and learning opportunities. In *The Children We Leave Behind*, (Masters 2026), the paradigm and structural shifts to schooling that must accompany assessment reforms and the sole reliance on differentiated lessons are explored. The author draws attention to ways in which the present machinery of schooling exacerbates inequality to highlight the mismatch between assumptions of schooling and the realities of student learning, and to propose an alternative way of thinking about learning at school. The ultimate objective is to reduce the number of students being left behind and labelled as poor learners.

There were two gradual but necessary changes implemented in British Columbia as early as 2002 that supported closing the gap mandates:

1. Introducing semester schooling that supported students to focus on half of their subjects at one time, which enabled mastery across a narrow range of subjects but also allowing for students to repeat the subject in a supported environment within the same calendar year if remediation was required. Generally, high school students complete eight subjects each year, but only four at one time. This relies on a reduced number of specialist teachers, specialised resources, equipment and spaces at one time. As subjects were only five months in length, students and teachers were less fatigued and anxious about the number of assessments, and formed positive relationships that focused on student wellbeing and achievement.
2. Providing alternative tax-funded modes of completing or retaking individual subjects that are flexible and student-centred such as summer school, night school, and learning online. With a full spectrum of options available to students, it created a culture of learning and high expectations that has had intergenerational societal benefits that has been spared shortages of skilled graduates.

Recommendations and Calls to Action



1 **RECOMMENDATION 1:**

Make Year 11 Maths and Year 11 Science compulsory subjects; a move that would align Australia with other Western nations.

2 **RECOMMENDATION 2:**

Remove the ATAR rank or any bell-curve driven assessment that promotes a competitive and exclusionary education system that dissuades students from selecting a broad range of subjects.

3 **RECOMMENDATION 3:**

Adopt a competency approach to education that focuses on standards using formative assessment practices, semester timetables, and other modes of schooling that are designed to close the achievement gap for all students.

Comparative Summary of Implications

Table 1 is a comparative summary of the implications of Australia's current system and how it compares to what was achieved in British Columbia, Canada's highest performing province across many measures.

Table 1: Comparative summary between Australia's system compared to British Columbia.

AUSTRALIA	BRITISH COLUMBIA
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THE ROLE OF TEACHERS

<ul style="list-style-type: none"> ◦ Task difficulty and marking rigour are shaped by scaling, moderation, and cohort distribution concerns. ◦ Teachers are placed (often silently) in the role of ranking agents ◦ Even well-intentioned teachers are pushed into bell curve compliance. <p>Effect:</p> <ul style="list-style-type: none"> ◦ Pressure to discourage enrolment to protect distributions. ◦ Pedagogical distortion ('harder than necessary'). ◦ Moral injury as teachers balance care for students with system demands . 	<ul style="list-style-type: none"> ◦ Assessment supports learning and evidence-gathering over time. ◦ Teachers act primarily as educators and professional assessors ◦ No expectation that teachers 'engineer' the spread of results. <p>Effect:</p> <ul style="list-style-type: none"> ◦ Greater professional trust. ◦ More curriculum flexibility. ◦ Less incentive to make tasks artificially difficult.
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THE IMPACT ON STUDENTS

<ul style="list-style-type: none"> ◦ Even high-achieving students experience anxiety due to relative positioning. ◦ The system requires underperformance to differentiate candidates ◦ Students rationally avoid difficult subjects that threaten aggregate scores. ◦ Declining enrolments in Maths, Science, and languages are structural outcomes, not motivational failures 	<ul style="list-style-type: none"> ◦ Success is non zero sum: many students can meet standards simultaneously as individual performance is independent of one another ◦ Students are not required to fail for the system to work. ◦ Lower systemic anxiety tied to assessment outcomes. ◦ Participation in challenging subjects is not penalised by ranking mechanics
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THE IMPACT ON UNIVERSITIES

<ul style="list-style-type: none"> ◦ Universities outsource large parts of selection to the school system. ◦ ATAR acts as a single, portable sorting mechanism. ◦ Schools carry the political and emotional burden of ranking children. 	<p>Universities accept:</p> <ul style="list-style-type: none"> • subject grades • subject specific prerequisites • sometimes additional institution-specific criteria <ul style="list-style-type: none"> ◦ No single number determines a student's worth. ◦ Responsibility for selection lies with universities, not schools.
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AUSTRALIA

BRITISH COLUMBIA

EQUITY IMPLICATIONS

ATAR magnifies advantage through:

- school scaling
- cohort effects
- subject availability.
- Students without strategic guidance are structurally disadvantaged.
- Equity policy tries to compensate for a problem the system itself creates.

Emphasis on minimum guaranteed competence or achieving standards

- Less reliance on:
 - school advantage
 - subject gaming
 - parental system knowledge.
- Equity issues still exist, but are less amplified by assessment structure.

SYSTEM LEVEL TRADE OFFS

What Australia gains:

- Highly efficient, centralised university admissions
- Clear differentiation among large cohorts

What Australia gives up:

- Broad student engagement.
- Trust in assessment.
- Teacher morale.
- Participation in academically demanding subjects.
- Struggle to mandate senior secondary subjects such as Maths or Science.
- Alignment between national skill needs and schooling incentives.

What British Columbia gains:

- Educational coherence.
- Reduced anxiety.
- Stronger alignment between curriculum and assessment.
- Schools focused on learning, not sorting.
- British Columbia can mandate Math 11 without widespread backlash.

What British Columbia gives up:

- A single, simple ranking number that it has decided is not its core function.
- Some administrative efficiency for universities.

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