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ACDS SUBMISSION IN RESPONSE TO THE AUSTRALIAN UNIVERSITIES ACCORD DISCUSSION PAPER

The Australian Council of Deans of Science (ACDS), constituted in 1995, represents the executive leadership of Australia's University Science Faculties, Colleges, and Schools. Our members are responsible for the strategic development and delivery of the programs of teaching and research in Australian university science, and we act as a voice for Australian university science.

The ACDS is pleased to have the opportunity to make this submission to the Australian Universities Accord, providing a unique national perspective for University Science. We have read and discussed the Accord Discussion paper in detail, consulted with our members, and focussed our submission on the following areas:

- 1.3 The Nature and Purpose of Australian Higher Education
- 3.1 Quality Teaching Delivering Quality Learning
- 3.4 A System that delivers new Knowledge, Innovation and Capability
- 3.9 Investment and Affordability

1.3 THE NATURE AND PURPOSE OF AUSTRALIAN HIGHER EDUCATION

The ACDS has a clear vision for Australian Universities in the next 10-20 years.

Universities will continue to be the preeminent provider of higher education in Australia and will do so in a highly coordinated, innovative, partnered, and inclusive way that enshrines the primacy of the student experience. **Coordination** will entail visible specialization and identity for individual universities for the benefit of students, their institutions, and their communities. Students will be **innovative** and entrepreneurial through research-informed teaching and development opportunities that empower them to help create a high-quality and sustainable future. **Partnerships** between universities and other higher education providers and/or industry will enable a smooth and flexible pathway for students and their employers and create workforces that are agile to our ever-changing environment and demands. University education will also be **inclusive** through the creation of flexible entry pathways to safe, welcoming and diverse university cultures and environments.

Australian universities will develop sovereign capabilities that enable the discovery of new knowledge, applications of knowledge, and deployment of applications to solve grand challenges for Australia and the world. This will be seamless, because of coordinated end-to-end research support that develops an interconnected value chain of research. Research students and early-career researchers will be optimistic about their career opportunities in Australia with a range of offerings available for them to exercise their outstanding research skills, their entrepreneurship, and their eye for problem-solving in a broad range of contexts.

3.1 QUALITY TEACHING DELIVERING QUALITY LEARNING

Teaching innovation

The COVID-19 pandemic drove transformational changes in teaching delivery and assessment, and consequent flexibility for students. The next 10-20 years will see Universities leveraging lessons learnt through this period to provide an experience that is fit for the next generation of students and life-long learners, through flexible and fit-for-purpose learning experiences, and opportunities to develop leadership, entrepreneurship, and employability skills and to learn from our indigenous colleagues and communities.

Innovations in online and blended learning will continue at pace along with new technologies involving virtual reality, AI, and software platforms designed for various forms of learning interactions and environments. Innovations in assessment, particularly managing the challenges presented by generative AI, will ensure the award of degrees that reflect the authentic and trusted abilities of students.

These changes will put additional pressure on universities to be innovative in teaching and assessment and to enhance student learning and the student experience. Support for this is urgently required. The ACDS argues that this would be best achieved through the reinstatement of a **national body for teaching innovation**, such as previously delivered by the Australian Learning and Teaching Council (ALTC).

The ACDS is therefore delighted by and highly supportive of the Accord Consultation Proposal by Liz Johnson, Sally Kift and Jason Lodge to establish a **National Centre for Student Success**, to enable outstanding outcomes in learning, teaching and the student experience. We acknowledge the profound potential of such a national body to support an inclusive and collaborative approach to teaching innovation, learning design, embedding indigenous knowledge, work-integrated learning, and teacher development and recognition.

RECOMMENDATION 1: Establish a national body to inspire and support teaching innovation to ensure we can deliver the best possible experience for the next generation of students and work-ready graduates.

We also argue strongly for the **development of teaching infrastructure and spaces** that enable the delivery of innovative teaching and help students to learn effectively. We also recommend that this is supported through the re-establishment of the Education Investment Fund (EIF).

RECOMMENDATION 2: Develop strategies to support the development of world-class teaching facilities that enable modern and future pedagogies to best educate future generations of students.

Research-informed teaching

Ongoing curriculum development is a hallmark of university teaching. It is the way that cutting-edge research ideas become mainstreamed into the undergraduate curriculum.

As a consequence of this, **disciplines that were on the frontiers of research last century are now embedded in undergraduate courses**, ensuring that graduates have currency and understand and appreciate the importance of research. Curriculum shifts to incorporate new knowledge are made over time by academic staff and are facilitated by their engagement with disciplinary research. It is also

noteworthy that research and scholarship provide significant role models for ‘soft skills’, the graduate attributes sought by employers.

In our view, a quality university education requires ongoing investments to support suitable **forms of research engagement of teaching staff in the disciplines in which they teach**. Engagement should be such that they maintain currency in the fields that they teach, are able to review developments critically and integrate them creatively in courses as appropriate. This requires careful consideration of a funding model for universities that incentivises research-informed teaching.

Science encompasses both a body of knowledge, including indigenous knowledge, and an evidence-based process of discovery. **University education must incorporate both knowledge and discovery aspects of Science** and this is best done when teaching is undertaken by academics involved in, or familiar with, research advances.

University science curricula benefit from the research-teaching nexus when a body of scientific knowledge is organised and presented in ways that are accessible to students and, the processes by which that knowledge is acquired are explained and evaluated. It is only when the latter complements the former that graduates acquire the capability to be **critical and analytical science-literate citizens**, rather than simply consumers of knowledge.

RECOMMENDATION 3: Ensure that research-informed teaching continues to be enshrined in universities. Achieve this through education policy and retaining and supporting an academic workforce in which the academics who deliver teaching are personally involved in knowledge generation or directly connected to research-intensive discipline experts who are at the forefront of their disciplines.

Work integrated learning

Work-integrated learning (WIL) is **the provision of learning experiences that enable students to position and reimagine their education in broader contexts**, particularly those in which potential career paths might lie. The term ‘WIL’ is used to describe a wide variety of activities and is often used interchangeably with other terms, such as workplace learning, industry-based learning, and collaborative or cooperative education. WIL provides employers with the opportunity to contribute to graduate training and development, fulfil corporate responsibility obligations and build relationships with universities and their future workforce, and is thus mutually beneficial to both.

[The ACDS has led the way in WIL for Science students.](#)

Our vision for WIL in Universities is based on **a strong, trusted and mutually beneficial relationship with a broader range of industries** in which the curriculum is co-designed, students undertake WIL to develop an understanding of how industry functions, solve problems, to innovate and work in teams, ensuring the development of these key employability skills. These students include undergraduate and postgraduate, coursework and research students. These students must also include indigenous, regional and remote students.

To enable this, **a broader range of Australian-based industries** that practice and incorporate the comprehensive disciplines taught to students by universities is essential. Such industry must have the capacity and appetite to support WIL. Incentives for international industries to have a base in Australia, as provided to the film industry, should be considered.

RECOMMENDATION 4: Urge state and federal governments to incentivise a broader range of industries that can support WIL for all students to be based in Australia.

3.4 A SYSTEM THAT DELIVERS NEW KNOWLEDGE, INNOVATION AND CAPABILITY

Solving big challenges

It is critical that Australia continues to **develop sovereign capabilities and new intellectual capital** in core disciplines, in order to ensure resilience and responsiveness to future challenges. Such challenges include but are not limited to: climate change and its impacts on biodiversity and habitats, food security and sustainability, preparedness for future pandemics, bolstering our physical and cyber defences, new materials to support technology development, and addressing the energy crisis through renewable options. The latter might include extraction and reuse of resources such as lithium and other strategic materials from spent devices, as part of a circular-economy ethos. It might also include the development of domestic capabilities in nuclear science and technology, as part of a balanced national energy-generation portfolio as we transition to “net-zero” by 2050 and in support of AUKUS.

To achieve this, the Australian Universities Accord panel should consider the importance and **interrelationships across the entire research value chain**, from scientific discovery and knowledge generation, through to translation, application and impact, and everything in between.

This should include **due consideration of the importance of fundamental research** and its role within that value chain. It should also celebrate the importance of supporting the advancement of knowledge without regard to its potential purpose. So many such discoveries have been critical for solving pressing issues years – or even decades – after they were first reported. Contemporary examples include seminal work over 30 years ago in developing our understanding of RNA biology and the subsequent development of vaccines to protect against COVID-19.

Industry engagement and participation are essential for research translation and deployment. The predominance of small turnover SMEs in Australian industries¹ presents a significant challenge, especially in some science disciplines, as these companies often don’t have sufficient funds to invest in R&D or to co-contribute to research funding schemes. There is a pressing need to effectively support SME engagement with universities (e.g. through subsidies to co-fund research grants or to access laboratories and facilities), or for stronger incentives to support large industry being based in Australia or local industry participation in research.

Mission-based funding for non-medical research, along the lines of the MRFF, is desperately needed, as proposed in the pre-budget submission by *Science and Technology Australia*. This latter proposal is strongly endorsed by the Australian Council of Deans of Science.

Federal government research funding schemes are currently fragmented. It is essential that these are well coordinated to provide a pathway to achieve impact across the research value chain, ideally at a higher level of government, to maximize the impact of government investment in research.

RECOMMENDATION 5: Develop a roadmap that enables the current multitude of research funding schemes that currently sit across several government departments to be better coordinated. Establish a governance structure that enables oversight of all schemes and ensures the right balance of discovery and research translation.

Research training and development

Higher degree research (HDR) students and early-career researchers (ECRs) contribute enormously to the research output of Australia but are currently in a perilous situation as career progression

¹ 92.6% of Australian business have a turnover of less than \$2M pa (Australian Bureau of Statistics 2022).

opportunities and security are at an all-time low. **These young scientists are the future leaders of research in Australia** and should be valued and supported to progress in their careers and be filled with hope for the future.

Our vision for the Universities of the future is for **research students and staff to be well prepared for a range of career opportunities beyond the University sector** and for this to be facilitated by a government and industry ecosystem that fully appreciates the value of the skills these people can bring to their organizations. A broader range of industries should incorporate career tracks that are mutually beneficial. This might include industry internships for academics and the provision of opportunities for industry/university co-appointments. Strategies for recognising and supporting entrepreneurial staff should also be explored. Such arrangements are commonplace in innovative countries and necessitate the establishment of industries that have an appetite to support such schemes in Australia.

We also note **exemplars of this in Australia**. For example, in 2022 the Defence Science and Technology Group (DSTG) launched '[Navigate](#)', which provides opportunities for University ECRs to explore different environments and for DSTG to benefit from research-trained team members and expand their own capabilities. Further benefits of exposure to industry and government include familiarity with different cultures and broader professional development opportunities. In a similar vein, the Australian Nuclear Science and Technology organisation (ANSTO) has developed the ANSTO [Graduate Institute](#) to link ANSTO, Australian universities and industry.

RECOMMENDATION 6: Develop strategies to ensure that HDR students and ECRs are prepared for, valued and secure in Australia's future workforce in universities, government, and industry.

RECOMMENDATION 7: Develop strategies to support industry internships for academics and the provision of opportunities for industry/university co-appointments.

3.9 INVESTMENT AND AFFORDABILITY

Infrastructure development

The Australian government has a long history of supporting national research infrastructure, via the National Collaborative Research Infrastructure Strategy (NCRIS) and other schemes. However, a **human resource capability gap** has emerged in terms of extracting maximum value from existing infrastructure and in developing new infrastructure capabilities. Highly trained professional staff, typically with PhD qualifications and with deep expertise that can help researchers to devise new experimental strategies and instrumental capabilities to unlock the full potential of the infrastructure, are required. However, funding for these colleagues often falls through the cracks of the largely binary staffing arrangements in contemporary Australian universities. They are not academic staff, who have an imperative to devise their own research agendas. Nor are they simply technical staff who are required to keep the infrastructure functioning. Rather, they are individuals with research training and highly developed problem-solving skills who can work directly with (and/or as a part of) research teams to develop new experimental capabilities in support of Australia's fundamental-research portfolio.

RECOMMENDATION 8: Develop a workforce strategy to extract maximum value from national research infrastructure investments.

With ongoing and rapid changes in teaching delivery, support for upgrading teaching infrastructure is also desperately needed.

RECOMMENDATION 9: Develop strategies to support the development of world-class teaching facilities that enable modern and future pedagogies to best educate future generations of students.

Job ready graduates

The Job Ready Graduates (JRG) package aimed to drive changes in student preferences **but has failed to achieve this**. Instead, it has resulted in a net decrease in funding to support teaching and learning in universities, with a significant impact on STEM disciplines which now receive approximately 15% less funding to support teaching in areas that are predicted to be central to the majority of future jobs in Australia.

The impact of this in universities is **a significant reduction in critical, but expensive, practical and laboratory-based activities and field trips**. These hands-on learning experiences significantly enhance the development of knowledge and skills in students and the capabilities and employability of graduates.

Some of the areas that are most impacted include Agriculture, Environmental Science, Earth Science and Veterinary Science. These are areas for which there is significant and unmet demand from employers, that is predicted to significantly increase in the future.

RECOMMENDATION 10: Dismantle the Job Ready Graduates Package and develop strategies to ensure that Universities have the funding to educate students in areas of high importance and need to Australia. This includes sufficient funding to provide an outstanding education, including industry incentives to provide students with transformational placement experiences.

The JRG Package has also had a significant impact on funding the indirect cost of research and this must be addressed with urgency. Prior to the JRG, this was in part covered by the 15% that has been removed from the funding and that recognized the interplay between teaching and research (see above).

RECOMMENDATION 11: Ensure that block funding to universities is inclusive of the indirect costs of research, which is insufficiently covered by the current Research Support Package.

Impacts on equity, diversity and inclusion

The unintended consequences of reduced funding through the JRG include an increased focus on profitability and a consequent reduced capacity to focus on academic workforce diversity. This is critical for the success of universities and needs to be incentivised and enabled.

RECOMMENDATION 12: Provide enablers and incentives to ensure that all universities have a diverse, inclusive and equitable academic workforce.