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ACDS submission to Australian Universities Accord consultation

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 by providing feedback on the priority issues within key areas outlined in the Terms of Reference for the Review.

From the perspective of the ACDS, the following issues are of the highest priority and should be considered as part of the Review process:

- **Quality and Sustainability:** With a focus on research-informed teaching and post-COVID-19 teaching innovation,
- **Investment and affordability:** With a focus on the Job ready Graduates Package and the indirect costs of research, and
- **Delivering new knowledge, innovation, and capability:** With a focus on the research value chain and research infrastructure funding.

Quality and Sustainability

There are three significant reflections on the impact of COVID-19 on Australian University Science that the ACDS wishes to highlight:

- the extraordinary creativity of staff in adapting their teaching, building on their deep disciplinary knowledge and project leadership and management skills, arising from their active engagement in disciplinary research.
- the immense staff effort required to retool the teaching delivery and assessment effort using various hybrid/online forms with which many staff had little experience.
- The considerable fragility of our science research training system in its dependence on overseas students, and the threat that this poses to Australia's sovereign capability.

All these issues were apparent prior to COVID-19, but the effect of the pandemic has amplified them enormously and brought home the reality of them. It certainly accelerated developments in respect of online teaching.

Maintain the teaching-research nexus

The first point speaks to the importance of the teaching-research nexus. Staff were able to change the ways that they articulated learning goals with autonomy, flexibility, and creativity because of their depth of discipline knowledge and critical understanding of it. They acquired this capability through their engagement with disciplinary research.

Ongoing curriculum development at the staff level is a hallmark of university teaching. It is the way that cutting-edge research ideas become mainstreamed into the undergraduate curriculum. Some examples are genomics and proteomics, nanotechnology, data science and artificial intelligence (AI). In the last century, these were on the frontiers of research but now they appear in undergraduate courses. Curriculum shifts to incorporate new knowledge are made over time by academic staff and made possible 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 funding arrangements that acknowledge and 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.

We urge the Australian University Accord to ensure that research-informed teaching continues to be enshrined in Universities, through education policy and retaining an academic workforce in which the academics who deliver teaching are personally or directly connected to research-active discipline experts who are at the forefront of their disciplines.

Evolution of teaching delivery and assessment

The isolation requirements of the pandemic forced the adoption of online learning and assessment and greatly accelerated developments in that direction.

The benefits of this intense transition however cannot be understated. Innovations in online and blended learning continue apace along with new technologies involving virtual reality, AI, and software platforms designed for various forms of learning interactions and environments. Innovations in assessment, particularly assessing remote students with integrity, have been transformational and will forever change the options for students to complete their programs.

We note the extraordinary effort required by staff who demonstrated their capacity to rise to the occasion but at considerable cost to themselves. These changes have, however, resulted in high workload pressures on staff as they are driven to experiment and adapt to these new technologies and modes of delivery.

We urge the Australian University Accord to consider strategies for better supporting our academic workforce in a changing environment, for example, by supporting the technical aspects of delivering content online. The ACDS argues that this would be best

achieved through the reinstatement of A national funding body for teaching innovations, such as previously delivered by the Australian Teaching and Learning Council (ALTC).

Fragility of the research training system

The ACDS has collected data on the profile of higher degree research (HDR) students, in the general area of Science in Australian Universities. This analysis has revealed that on average almost half of postgraduate research students in science are international students, and that in many cases, the proportion is more than half.

Australian Universities welcome such a valuable pipeline of talent and are grateful for their significant contribution to our national research outputs, although, as with so many supply chain issues, COVID demonstrated the considerable risk and vulnerability of such a high proportion of international students.

The pandemic period also highlighted vulnerabilities in attracting and retaining domestic HDR students, which suggests that Australia is not investing sufficiently in growing its own cohort of domestic research-trained people, or providing them with opportunities to be valued and pursue a career in academia or industry. There is also an issue of sovereign capability here.

The problem of attracting domestic students into STEM programs is long-standing. The ACDS raises it here in the belief that it should remain a significant issue for any shaping of the university system of the future. Raising the stipend for HDR students to being above the poverty line would go a long way to attracting more domestic talent into the national research endeavour. Driving changes in the culture in industry, e.g. on the value of PhD graduates should also be a priority.

We urge the Australian University Accord to consider strategies to attract and retain domestic research higher degree students and to ensure that they are valued and secure in Australia's future workforce. This includes raising the value of the stipend for research students.

Investment and affordability

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 an area that is 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 activities and field trips. These hands-on learning experiences significantly enhance the capability 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.

The ACDS urges the Australian University Accord to dismantle the Job ready Graduates Package and to develop strategies to ensure that Universities have the funding to graduate students in areas of high importance and need to Australia. We suggest that this includes sufficient funding to provide an outstanding education, including industry incentives to provide students with transformational placement experiences.

The Job Ready Graduates 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).

In 2021, a high-level Research Sustainability Steering committee was established to look into this matter. The Terms of Reference were announced but no outcomes appear to have been forthcoming. The ACDS recommends that fully funding research be firmly embedded into the Terms of reference of the Australian Universities Accord.

The ACDS urges the Australian University Accord to ensure that block funding to Universities is inclusive of the indirect costs of research, which is insufficiently covered by the current Research Support Package.

Delivering new knowledge, innovation and capability

The Australian Universities Accord 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. And the importance of supporting the advancement of knowledge without regard to its purpose.

It is important not to concede the bigger picture of the research value chain by focusing narrowly on a split between fundamental and translational research. Rather than casting these aspects into opposition within a zero-sum game, they should be seen in a wider context of the synergies between them.

The ACDS urges the Australian Universities Accord to coordinate the multiple of funding schemes that currently sit across several government Departments and provide some oversight to ensure that the government supports the right balance of discovery and research translation.

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 this infrastructure. Highly trained professional staff, typically with PhD qualifications, with deep expertise that can help researchers to devise new experimental strategies to unlock the capability of the infrastructure, is 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.

The ACDS recommends that the Australian Universities Accord considers developing a workforce strategy to extract maximum value from national research infrastructure investments.