

Cynulliad Cenedlaethol Cymru / National Assembly for Wales

Pwyllgor yr Economi, Seilwaith a Sgiliau/ Economy, Infrastructure and Skills Committee

Ymchwiliad i ymchwil ac arloesedd yng Nghymru / Research and Innovation in Wales

Ymateb gan Prifysgol Cymru Y Drindod Dewi Sant/ Evidence from University of Wales Trinity Saint David

Inquiry into Research and Innovation in Wales

Responses collated from individuals from Research Innovation and Enterprise Services at University of Wales Trinity Saint David.

- 1. To what extent do you agree with this view and how can Welsh Government ensure that an increase in one type of research activity doesn't mean the other type loses out?**

The view assumes that problems are pre-set or pre-described by industry. However, arguably, setting and developing questions for the Fourth Industrial Revolution is also a priority. This has been recognised, for example, by the Royal Academy of Engineering and the Institution of Engineering and Technology, who are now questioning the value of the term 'STEM' and critiquing current PhD practice – much of which is pre-determined by funding opportunities. It is essential therefore that a balance is struck.

I think I agree with the statement. The two principle aren't mutually exclusive. We need to be more joined up in order to ensure that as an institution (and as a sector) we address the fundamental issues facing Wales today in order to ensure its future prosperity.

As an institution which is not known as a research intensive institution, UWTSD's policy is to develop a depth of research expertise within specific disciplines. The way ahead for UWTSD therefore could include both challenge-led research and the more traditional type of long-term research.

I agree with the statement, it is important to fund blue sky thinking and creativity as well as targeting specific issues. However, I think it is important for any funded research to find its way into the public domain for the benefit of businesses and wider society.

Speed is a key aspect here, if we are to be successful in truly addressing challenge led research set out by industry then funding application processes of 6-8months (particularly in areas of advanced technologies) must be overcome.

2. To what extent should businesses and other organisations be able to receive Government research funding that might have otherwise gone to universities and colleges? How could this be done without under-funding some organisations – might there be unintended consequences?

This view is not new, and once again is the topic of some debate, especially in major manufacturing and AI based industries where academic work may be hampered by a lack of cutting edge equipment, knowledge and resources. The notion of a partnership approach would be preferable, as this enables meaningful dialogue prior to applications.

It is important to give businesses the ability to develop their products and ideas.

The Welsh economy is not renowned for its depth of R&D. In general, we have an economic infrastructure based on small local businesses which are part of a supply chain. Many good, established indigenous businesses are mainly focussed on keeping going.

We do not have a large number of Corporate HQ's or R & D Offices. If the Welsh economy is to grow, then we need these. At the moment, Welsh jobs are expendable.

I'd be very wary of too many middle men/ "advisers". They can become gatekeepers for public sector cash. Empower business advisers who understand business to make investment decisions. Make the decisions quickly. Accept risk.

I think it is important for businesses to have access to research funding, but issues such as ethics need to be considered and managed with the same level as scrutiny as in academia. Businesses should be supported in research activity and the knowledge exchange element should be maintained.

Collaboration is key, whilst I agree companies need to have a more active and influential role in how the funding is used, the nature of the Welsh economy suggests that only the already 'innovative' and research active companies would draw on such funds. Some SMEs have worked in close partnership with us over many years on a number of small and large projects yet still don't consider themselves to be R&D active.

3. What needs to be done to ensure businesses and their interests are not over-shadowed by universities when it comes to research and innovation funding and activity?

To move beyond Wales for one moment, there is a degree of ‘realism’ emerging in Russell Group Institutions that researchers often have unrealistic goals and ambitions. The Set Squared partnership and their Researcher to Innovator Programme is a good example of a solution process, and is more recently supported by the Innovator to Commercialisation (ICure) roll out through Innovate UK

(<https://innovateuk.blog.gov.uk/2018/04/11/innovation-to-commercialisation-of-university-research-icure/>). To bring this back into our University’s context, UWTSD’s IICED have been directly involved with this initiative and help to develop the ‘enterprise mindsets’ required. The lead author of ICure is a Visiting Professor at UWTSD’s IICED and his view is that grounded research can come from Universities once this kind of programme is followed, however the problems and the problem solving that has emerged are not a direct response to industry needs, but more a pooling of high level academic expertise within multi disciplinary groups. The approach enables more flexible thinking than simple responses to calls from industry and facilitates novel solutions to unforeseen problems.

If we are moving away from “tradition” and going down the route of impact (economic), then in many cases, the business world needs to be in control. We will then be dependent upon the business world being the innovators. Given the nature of the indigenous Welsh economy, does the business sector have the time? Does it have the capacity? Does it want to spend the money? Is the support there?

For many areas of applied research in UWTSD this has not been an issue and this is due to the fact that the research is industry led. If there is not a clear business need for doing this then questions should be asked about whether funding is allocated at all. Research developed to fit the funding profile and achieve the correct outcomes and paperwork accordingly very rarely succeed in delivering any real impact or sustainable outcomes. It can be the case for both businesses and universities that huge amounts of work can deliver very little. Research is successful when both partners have clear and equal benefits as a result of the work.

4. What is currently in place from universities and Welsh Government to help and support student and graduate entrepreneurs turn their ideas into successful ventures?

First and foremost, this is also a well-trodden debate, with much evidence to call upon.

The first port of call would undoubtedly be the work of the Quality Assurance Agency for Higher Education, whose Guidance for Enterprise and Entrepreneurship lay out the entire journey, both within and beyond the curriculum. In partnership with the European Joint Research Centre, this was central to the development of the EU's 'EntreComp' response to recognised skills gaps in Europe. Welsh Institutions are already engaged with these guidance documents and The University of South Wales helped to develop the ETC toolkit, which contextualises the approaches for differing disciplines.

What is often overlooked, and reiterated in the question here, is the realization that ideas development competencies are poorly developed in many subject areas and that creativity is central to opportunity recognition strategies. This results in poorly considered ideas and a lack of ability to pivot in response to change.

This issue is acknowledged to be the case beyond Europe, and is the topic of a new intervention being developed at the OECD. Both QAA's Guidance and the European Commission's Framework offer insights into how this dilemma can be resolved in HEIs.

UWTSD's IICED are directly involved in all of the above, and would be happy to provide further insights.

5. Is this support systematic and consistent across Wales and is there more Welsh Government and others could do?

All Welsh HEIs and some FE provision uses the above guidance documents, however as articulated through Enterprise Educators UK (EEUK) there is a glass ceiling for those engaged in the agenda, and few reach management levels or are promoted on the basis of their enterprise capabilities and networks. The IEEC Concordat of 2010 was launched in Cardiff with the First Minister in attendance as a keynote speaker, and this is one goal (of five) that remains an issue. Research at European level recognises these individuals as critical to success, terming them 'Boundary Spanners'. Recognising and rewarding those who willingly undertake this type of educational approach at grass roots level could do much to accelerate progress in Wales.

The IEEC Cardiff Concordat can be found at: <http://ieec.co.uk/previous-conferences/action-in-enterprise-education/ieec2010-concordat/>

We would also wish to point out that Professor Donaldson's 'Successful Futures' is also dealing with this issue within Welsh Schooling, and that UWTSD is internationally recognised as leading teacher education in this area. For example within Wales, a team led by UWTSD IICED had led a review into the wider skills agenda within the 6 AoLE areas, and was the first in the UK to offer this type of teacher training, again with the support of Welsh Government. The aim is to enable teachers to produce "enterprising, creative contributors, ready to play a full part in life and work".

The Welsh Government start up figures are great, but are they the people who would set up anyway. Are they developing despite the "system"?

Support is a bit of a "token gesture". It's not enough. We need to identify hungry, ambitious people and back them.

We have an enterprise manager and there's a small enterprise development budget in place. We could do with a start-up bursary. We need risk takers in the public sector.

There is support but more could be done, staffing is minimal in this area.

6. What are businesses and universities able to offer each other when they work in collaboration on research and innovation projects?

Our earlier responses touch upon this, though we would also point out that specialist interpreters who can work as translators between academic understanding and industry needs are critical players. These may be the roles of, for example, Business development Officers or Enterprise Educators. An example of this might be the academics desire to be 100 per cent correct prior to initiating a solution, with associated lengthy timescales - whereas a BDO or Enterprise Educator will be far more sensitive to issues such as time to market and competitors' responses.

A potential weak point may be Intellectual Property Rights and their management. This has been discussed in high-level meetings at the UKIPO and through national surveys undertaken by the Student's Union. IP understanding amongst academics is relatively low, and this is reflected in the lack of teaching and learning that has been evidenced in research. The aforementioned Set Squared programmes have found that they need to devote an entire session to this shortfall of understanding.

Where there is a clear business need and research question, both partners, working collaboratively stand to benefit greatly in a number of ways.

Universities are a huge resources to businesses, not only through their intellectual/academic expertise but also through their skills pipeline, their equipment and resources, their breadth of contacts both in industry and govt and also their resource in applying for and managing funding. Very rarely do successful projects start and end with a funded research project,

successful collaborations will see many years and multiple projects and activities between partners. For this university, collaboration is most successful where industry engagement is at the heart of everything within that area of activity. These collaborations influence and fuel teaching and learning, publications, case studies, live projects, placements and internships which in turn has a direct impact on REF, TEF, employment stats etc and therefore directly influencing marketing and recruitment.

7. Should Welsh Government and others be doing anything differently to bring smaller businesses together with universities to collaborate on research and innovation projects? What is working well and what isn't?

Again this can be seen to be a cultural issue, and need not be seen as merely a research issue, but more an overriding issue where even undergraduate students may be able to play their part. If commenced early enough in their learning careers, students see this to be an integral part of learning, something that they can take into their research careers.

Much of this interplay is already happening under the radar, as it is relatively unrecognised due to the aforementioned lack of recognition and reward mechanisms for the staff involved.

The Welsh Government Role Models are an excellent example of successful interventions, but this was less the case when they were not introduced to how educators develop learning. In England the Careers and Enterprise Company has received significant criticism for its lack of engagement with the educators their role models are intended to support. In some cases 'evangelistic' business people have disenchanted learners and teachers by making their successes appear beyond reach, or their problems insurmountable. Wales now avoids this mistake, and the model could be expanded to include research-based education more effectively.

It may be seen of some note that Sir Rod Alridge is amongst those championing this more embedded approach outside of Wales, and his support of UWE in Bristol, including a full professorship for the director of his new Centre, illustrate the types of intervention that can have impact. Sir Antony Seldon has lobbied the UK Government using the same lines of argument.

Whilst some interventions are working very well e.g. SMART Partnerships, the majority of application processes in terms of the levels of scrutiny and time scales are off putting for smaller companies. The ability to access more bite sized pots of funding for small research projects with a view to growing would be welcomed. Many small companies may not view universities as an obvious business resource and many have a view that they are very 'academic' and not

applicable to their business or industry. Interventions to 'try us out' would break down these barriers and misconceptions and I'm sure lead on to more R&D. SIPs was a great programme of this nature and certainly brought great successes for this university.

8. What should Welsh Government and others be doing to help businesses use the knowledge gained from research activity and turn it into marketable products or improved services?

We return to the notion of motivation and the well-debated 'Valley of Death' discussions. The Setsquare Programme and similar initiatives that are emerging, for example Leeds University Goldman Sachs Programme (https://www.leeds.ac.uk/site/custom_scripts/profile-single.php?profileTypeID=&categoryID=3000&profileID=27), epitomise the way that dialogues can emerge and new ideas take root. It may be of some note that educational approaches defined as 'Design Thinking' are particularly successful at encouraging such interactions within these initiatives, and that the approach has become an international driver of collaborate projects. Wales and Welsh approaches would benefit from learning more and gaining insights from initiatives such as these.

We are aware that this question is the first to consider, albeit as an aside, social values, social initiatives and sustainability-driven approaches to business development. Research can illustrate deficiencies, highlight potential ways forward and help Wales to respond to the demands of our Well-being of Future Generations policies.

Universities and businesses can offer different skill sets and different outlooks based on different priorities. They should be able to work together, but the relationship needs to be valued and managed by both sides. The relationship should be seen as natural and symbiotic.

Not sure if Welsh Government should actually be doing anything apart from setting the political and national direction of travel as well as an effective regulatory regime. Ensuring a continuity of sufficient long term funding to enable the relationship between smaller businesses and Universities to grow is key.

I remain unconvinced that core funded career civil servants are the best people to help small businesses (in particular) to grow. In my view, growth will come from industry specialists.

In a utopian world without competition between all universities and companies open innovation moves innovation forward more quickly. This could be supported by the development of a Wales wide triage process. This would be where a business or academic could bring issues and ideas to a group of knowledgeable private sector individuals and academics from a

wide variety of sectors and backgrounds to signpost to expertise and funding for support and development. Issues around commercial confidentiality, IP and competition complicate this kind of process.