THE UNIVERSITY OF QUEENSLAND

STRATEGIC PLANNING: 2018 AND BEYOND

CONSULTATION PAPER

THE UNIVERSITY
OF QUEENSLAND
AUSTRALIA

Create change

CONTENTS

INTRODUCTION

The University of Queensland's Strategic Plan 2014-2017 finishes at the end of this year and so The University's Executive teams have been actively engaged in setting the immediate and long term direction of the University.

Strategic planning and consultation sessions have been held with the University Senate, Heads of Schools and Directors of Central areas, and this consultation paper marks the start of a broader consultative process. This process provides all members of our UQ community and external stakeholders with the opportunity to contribute to the development of The University of Queensland's Strategic Plan 2018-2021 (the New Strategic Plan) – ensuring that it draws on UQ's strengths and promotes a One UQ vision for the next four years and beyond. Embracing internal and external challenges and transforming these into opportunities will underpin the success of the new plan. This paper outlines these challenges, within the context of UQ's strengths and areas for improvement. It also proposes a framework for the New Strategic Plan and communicates The University's future goals and strategic focus areas.

The consultation process requests feedback on a series of specific questions. We encourage everyone to participate. You may respond to every question or just those that matter to you the most. Your feedback will help shape the detail of strategies and initiatives within each of the strategic focus areas and the plan's subsequent implementation.

Feedback can be provided online at **uq.edu.au/strategy**. The deadline for submissions is 6 August 2017.

SETTING THE FRAMEWORK

The University of Queensland's Strategic Plan 2018–2021 will be an evolutionary document that builds upon the current Strategic Plan. UQ's vision of 'knowledge leadership for a better world' will remain unchanged as will The University's mission, values and six foundations.

Existing principles

Our Vision

UQ: knowledge leadership for a better world.

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Our Mission

The University of Queensland positively influences society by engaging in the pursuit of excellence through the creation, preservation, transfer and application of knowledge. UQ helps shape the future by bringing together and developing leaders in their fields to inspire the next generation and to advance ideas that benefit the world. UQ strives for the personal and professional success of its students, staff and alumni.

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Our Values

Pursuit of excellence	Creativity and independent thinking	Honesty and accountability	Mutual Respect and Diversity	Supporting our people

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Our Foundations

Student success coupled with a conviction amongst employers that UQ graduates are 'must have' employees	Research that is high in quality, integrity and impact, in tandem with esteemed public and private global partners	Global connectedness with an ambition to be consistently in the top 50 of the world's universities	A culture where UQ employees and the institution are proud of each other	Systems, approaches and structures that maximise resource available to the academic purpose	Our alumni community who collectively create and build on a priceless endowment of clever ideas and innovations, sophisticated skills and passionate service to humanity

Building on the existing principles: embodying the *One UQ* culture

The pillars of Learning, Discovery and Engagement, introduced in 2009, have served UQ well. While these continue to provide a clear description of our core purpose, the New Strategic Plan will be based upon a more integrative framework that is reflective of the One UQ culture that we wish to embody.

It is important to note that valuable work has already been undertaken to develop and launch the Student Strategy in 2016. This strategy and the St Lucia Masterplan will not be revisited. The New Strategic Plan will incorporate key elements of these documents and embody their principles.

The new university wide strategy will be firmly focussed on three long term goals to:

A *Transform students into **game changing graduates** who make **outstanding contributions** and address complex issues with a global perspective*

B *Develop a **diverse community** of knowledge seekers and leaders who use **collaborative partnerships** to connect and co-create*

C *Deliver **globally significant solutions** to challenges and opportunities by generating **new knowledge** and **partnered innovation***

The framework for the New Strategic Plan, showing how the goals integrate together, is outlined in Figure 1.

The importance of collaboration will be elevated in the New Strategic Plan, forming a strong theme across UQ's strategy. It is integral to everything we do. To reach our long term academic aspirations it is vital that we embrace a One UQ culture to improve internal collaboration and draw on the extensive range of strengths across UQ. We must also build stronger external partnerships to work closely with government, industry and community to ensure our teaching and research has impact and meets external expectations.

Long-term direction/goals and medium-term strategic focus areas

UQ's current strategic plan articulates a vision for UQ to be 'internationally renowned for high quality graduates' and for them to be 'recognised worldwide as must have employees'.

The New Strategic Plan will build upon this through a commitment to:

(A) *Transform students into **game changing graduates** who make **outstanding contributions** and address complex issues with a global perspective*

This objective goes beyond ensuring that we develop graduates who can easily gain employment. UQ's students are motivated and highly capable. In 2017, over 60% of the domestic undergraduates admitted through QTAC had an OP 5 or better. This goal directs us to ensure we develop an educational experience that maximises our students' personal and academic development. We will support them to become enterprising independent thinkers with the leadership, creativity and problem solving skills that enable them to create positive change within industry, academia, the workplace and society more generally.

The engagement pillar in UQ's current plan focuses on the need for 'mutually beneficial relationships' with strategic partners, the wider community, our alumni, Aboriginal and Torres Strait Islander peoples and priority regions and countries.

The New Strategic Plan will build upon this to:

(B) *Develop a **diverse community** of knowledge seekers and leaders who use **collaborative partnerships** to connect and co-create*

Diversity within UQ's community ensures that different perspectives and experiences are brought together to find solutions to global challenges and provide an enriched student experience. Through a One UQ culture we can create an environment that is inclusive and collaborative to ensure that we work together in pursuit of our strategic objectives.

Universities must reflect wider society – working within and for our broader community. Through collaborative external partnerships we can create the connections and networks necessary to understand the needs of industry, government and the community and work with others to meet those needs. This applies to both our teaching and research endeavours.

UQ's current strategic plan articulates a vision for UQ's research to be 'high in quality, integrity and impact' and to 'build on our global reputation in key areas of national and international significance'.

The New Strategic Plan will build upon this through a commitment to:

(C) *Deliver **globally significant solutions** to challenges and opportunities by generating **new knowledge** and **partnered innovation***

There will be a continued expectation that research will be undertaken at the highest academic standard with the highest ethical principles and UQ remains committed to both fundamental and applied research. However, there will be a particular focus on working with others - both internally through collaborations that cut across disciplinary and organisational boundaries, and externally through partnerships and networks. UQ will become a hub that brings the best expertise together to creatively solve complex problems through research and innovation.

The three long-term goals are underpinned by six medium-term strategic focus areas. They provide direction around where we will prioritise our efforts over the next four years. These strategic focus areas are described in detail later in this paper.

Figure 1: The University of Queensland Strategic Plan 2018–2021 Framework

Our Vision

UQ: knowledge leadership for a better world.
Create change.

Fixed/Long-term

Long-term direction/goals

(A) *Transform students into **game changing graduates** who make **outstanding contributions** and address complex issues with a global perspective*

(B) *Develop a **diverse community** of knowledge seekers and leaders who use **collaborative partnerships** to connect and co-create*

(C) *Deliver **globally significant solutions** to challenges and opportunities by generating **new knowledge** and **partnered innovation***

Fluid/Subject to changing priorities or external factors

Medium-term strategic focus areas

1 Transforming our **student experience** through a flexible, **integrated and partnered learning environment**

2 Enhancing our high quality research by improving our capacity to **collaborate** to achieve greater **impact**

3 Building **engaged and strategic partnerships** with a broad range of local and global networks

4 Committing to activities that attract, support and retain a diverse and inclusive community of **high achieving staff** and students

5 Building an **agile, responsive and efficient** university operation that reflects a one UQ culture

6 **Diversifying our income streams** and managing our resources to establish a **sustainable and independent financial base**

UNDERSTANDING THE EXTERNAL ENVIRONMENT

In developing its new strategy, The University must consider the environment in which it operates – an environment that is changing rapidly and radically. The digital revolution and rise of artificial intelligence are profoundly altering the way we live, work and learn. These changes are placing greater demands on the university sector and the academic community at a time when quality higher education and innovative research are increasingly important to our future prosperity. It is also an era in which government investment is diminishing and Australian students are being expected to pay for a greater share of the cost of their education[1].

It's only 10 years since iPhones and Android phones were first released,[2] marking the start of a new digital era. Social technologies, such as mobile devices, continue to transform our day to day lives and enable us to be connected 24 hours a day. They have helped drive the digital economy[3] and broken down geographic boundaries by enhancing our ability to easily communicate and collaborate with others across the globe.[4]

As continued advancements are made, innovations such as machine-learning and artificial intelligence are expected to further transform the way we work, interact and complete everyday tasks.[5] This will generate many challenges and has direct implications for the higher education sector. It is estimated that roughly 60% of Australian students are studying or training for occupations that will become automated through computerisation in the coming years.[6] Employers are therefore moving towards valuing generic enterprising skills – such as problem solving, teamwork, creativity, digital literacy, and critical thinking – over technical skills.[7]

Today's graduates will therefore need to be adaptable and students are looking for an education that prepares them to compete for the jobs of the future.[8] Universities will need to develop graduates who not only have the depth of discipline knowledge needed for new and emerging occupations, but who are also able to communicate effectively, collaborate with and lead others in dynamic work environments, come up with solutions, spot new opportunities and think on their feet.[9] These kinds of skills will also support the growing appetite among young people to start their own business, estimated to be around 65%[10] .

Recent policy announcements also demonstrate that government has a clear expectation that universities will produce an educated workforce that meets the nation's needs. The Australian Government's latest Higher Education Reforms[11] include a proposal to quarantine 7.5% of funding under the Commonwealth Grant Scheme for performance based funding. It is expected that measures of graduate employment outcomes, student satisfaction and retention – such as those collected as part of the Quality Indicators of Teaching and Learning (QILT)[12] suite will be a key driver of this funding.

As the teaching expectations of universities shift and rise, competition is also increasing within the higher education market.[13] A university degree is still the main pathway to professional or knowledge based work but other avenues are emerging. Within Australia, there is keen interest from many new operators in becoming registered providers of higher education.[14]

In just the last five years, 130 organisations have applied to register as a higher education provider with TEQSA (Tertiary Education Quality and Standards Agency)[15] and non-university providers now enrol 7%[16] of the country's higher education students. A more competitive market with greater choice has been a policy position of the Australian Government. In 2014 an attempt was made to deregulate (i.e. uncap) undergraduate student fees[17.] While this legislation did not pass, the government currently supports a private provider market through the provision of loans to students enrolled with private providers through the FEE_HELP scheme.[18]

Technology is also changing the way education is delivered[19] and through this driving the growth of additional competition. The ease with which we can access information and knowledge has radically improved and this is being leveraged by new organisations and consortiums that have emerged to deliver Massive Open Online Courses (MOOCs) [20 21 22]. These courses are offered for no fee, or a very low fee, and provide students the opportunity to explore their individual interests as well as the flexibility to study in a way that suits their personal circumstances.[23] Many MOOCs include verified assessments and are emerging as pathways into formal qualifications.[24] This presents both a challenge and opportunity to universities. Though predictions of traditional place-based universities closing their doors as a result of this revolution appear to have been unfounded,[25] it has encouraged the university sector to re-think its delivery models. Many universities are embracing digital learning approaches to complement their on-campus offerings[26,27] and see the value in shorter, specialised online courses to support the delivery of professional development.

While universities are adjusting their teaching to respond to increasing competition and trends in online delivery new recruitment trends amongst employers may end up circumventing this all together. Some employers are beginning to find other means of identifying workers with the attributes they need through recruitment processes that are less reliant on formal qualifications. Global companies like Ernst & Young, Google and Deloitte have recently either removed or relaxed their degree requirements in efforts to find the right talent for their businesses.[28]

Building knowledge and the ability to use it across different contexts is challenging and takes time. While many of today's learners are digitally minded, they still value and benefit from quality face to-face interactions, real life experiences, and more traditional forms of communication alongside digitally facilitated ones. [29 30] As outlined above, graduates will require a solid knowledge base and enterprising skill set to forge a successful career path across multiple industries and vocations. Additionally, global challenges can be best solved through creative thinking[31] and by drawing on expertise from multiple disciplines.[32] Despite the fact that traditional models and expectations of higher education are rapidly changing, universities that provide a research-led learning experience[33] can offer a distinct and compelling advantage that should be clearly articulated and celebrated.

Changing technology and political forces are also creating new demands on universities to ensure our research endeavours are valued and understood.[34] This is a challenge in an environment where some argue that knowledge has come to be associated with privilege and power[35]. Science as an authoritative source of knowledge for our policymakers and leaders is under challenge,[36] 'alternative facts' punctuate political discourse, [37] and the internet enables the rapid circulation of information (and misinformation) to a global audience. As knowledge creators and leaders, universities play a vital role in ensuring society is able to sort fact from fiction, understand the challenges we face together, make good policy decisions, and generate solutions that improve our quality of life and create a more sustainable future. This is particularly pertinent when dealing with many of the complex global issues of our time such as climate change, food security, violent extremism, disease control, and cyber security - challenges than can often only be addressed through multi-disciplinary perspectives.

Government, industry and the business community also expect universities to demonstrate the value of their research, in economic terms.[38] As structural change to our economy opens up new opportunities in areas such as food and agribusiness, medical technologies, energy, and advanced manufacturing,[39] it is important that the work of universities supports this transition. The Government's National Innovation and Science Agenda[40] highlights the importance of research in driving economic prosperity. Universities are key contributors to this agenda but it is recognised that Australia's overall business-research collaboration is well behind other OECD nations.[41] Recent changes to the underlying drivers of the Australian Government Research Block Grant Scheme[42] (the base funding provided to support research) clearly indicate that this is a concern for Government and an area that they wish to address. Publications are no longer part of the funding

formula, but a University's ability to attract income from industry is now a key metric.

The 2017 Universitas 21 Ranking of National Higher Education Systems demonstrates that the Australian university sector is strong[43] and well placed to meet these changing expectations but it is being challenged by reduced support from government. Australia's national research and development (R&D) spending as a share of GDP is only middle-ranking among OECD nations[44] and Universities Australia argue that the costs of conducting research are not covered by current levels of investment.[45] Universities currently manage this by directing funds from teaching to sustain their research efforts[46] but the Australian Government's Higher Education Reform policy proposes to cut government contributions for Commonwealth Supported Students by 2.5% per year over two years.[47] In the case of UQ this will result in a funding reduction of approximately $15m per year.

In parallel, new international research competitors are emerging. The Chinese government is investing heavily to develop a collection of 'globally competitive universities and first-class academic disciplines by the end of the decade'[48] and reportedly plans to boost its R&D spending as a share of GDP to 2.5 percent by 2020.[49] In the future, this investment may also result in a softening of Australia's international student market – one that provides significant revenue to support the university sector and is heavily skewed towards Chinese students.[50] With nearly 8 million students expected to graduate from Chinese universities in 2017,[51] in the future more and more Chinese students may choose to stay at home for their university education.

Chinese investment in higher education does place significant pressure on the Australian university sector but also provides significant opportunities[52] as our research efforts continue to cross geographic boundaries, strengthen cultural ties, and tackle global challenges with the international academic community.

From every perspective the higher education environment is fundamentally changing. Universities - the value of the knowledge they create, the education they offer, and the academic principles they champion - are being re-examined and reinterpreted by the expectations and needs of a rapidly changing society. In this context, it is essential that universities continue to provide the knowledge leadership needed to successfully navigate uncertain times and build a prosperous and stable future.

UQ STRENGTHS AND WEAKNESSES

UQ is a truly comprehensive, research intensive University. Ranked within or close to the top 50 in the world on all five key international rankings[53] [54] [55] [56] [57]. The University attracted $381M in research funding in 2016, and 100% of its research was rated at world standard or above in the 2015 Excellence in Research for Australia (ERA) evaluation[58]. With programs across 54 of the 73 fields of education, our student population has grown to over 51,000 in 2016, including over 13,300 international students. Our staff have performed extremely well in the Australian Awards for University Teaching since its commencement in 1997.

Building our research strength has required a significant investment and is reflected in all aspects of our operation from staff appointments and promotions, the research exposure offered to our undergraduate and postgraduate students alike, through to our industry engagement and translation. Our success is evident. Since the inception of the prestigious Academic Ranking of World Universities in 2003, UQ has progressed from around 150th position in the world to 55th in 2016[59], while in the more recent Asia 100 ranking, which specifically rewards universities with strong performance across wide range of disciplines, UQ is ranked first[60]. Our research income from industry has also grown by 59% since 2010 to reach $150M in 2016, and our international research funding has grown by 113% in the same period to reach $56M. The proportion of UQ's publications that had an international co-author also increased during this time (from 47% to 52%) but there is more to do in this area as UQ's performance is slightly below the Australian benchmark. As a Group of Eight University with an extensive global reach we might expect to perform much better on this indicator.

UQ's research success is not just measured in rankings, but in a more intangible contribution that is made to society generally. The environmental impact of biodegradable plastics, the increased safety of Open-cut mining through the development of UQ's GroundProbe Slope Stability Radar or the true value of a cervical cancer vaccine, cannot just be measured through the usual performance metrics. These are just some of the UQ-led innovations from which society now benefits.

Along with our research profile, UQ's student load (measured as Equivalent Full Time Student Load- EFTSL) has also grown by 15% since 2010 to exceed 40,200 in 2016 (51,071 students). Much of this growth has been in the international market, which rose by 26% over this time. International students now make up 27% of the total student load in 2016. In revenue terms, international tuition fees now comprise 35% of UQ's coursework income.

The domestic student market in which UQ operates is still heavily state based. Demographic growth in Queensland is predicted to be around 4% in the 17 – 20 year old population between 2017 and 2021[61], with a reduced cohort of school leavers entering tertiary study in 2020 as a result of the introduction of a Prep year in 2007. The introduction of demand driven funding in 2012 triggered sector wide growth in domestic undergraduate enrolments, meaning there is very little unmet demand within Australia for undergraduate tertiary study particularly among academically strong applicants. Of the 2016 university applicants who applied through the Queensland Tertiary Admissions Centre (QTAC) with an OP12 or better, only 0.71% did not receive an offer. This means that The University cannot rely on an expanding local market to grow domestic undergraduate enrolments.

In recent years, UQ has also increased the admissions requirements for undergraduate programs. In 2017, the OP cut-off for all bachelor's programs was OP 12 or better (up from OP 16 in 2014) and almost two thirds of the domestic students admitted into UQ were in the high achieving OP 1-5 band. This can put some downward pressure on enrolment numbers but ensures that the student cohort is academically strong and sufficiently prepared to manage the demands of our research led approach to teaching. However, there is some concern that demand from OP 1-5 applicants (as measured through first preferences) has softened in recent years. The introduction of specialised and advanced degrees such as Mathematics,

Advanced Finance and Economics, and the new Politics, Philosophy and Economics program has helped mitigate declining demand but this issue will continue to receive attention in the New Strategic Plan.

UQ's performance in the Quality Indicators in Learning and Teaching (QILT)[62] Student Experience Survey of undergraduates also flags a need for further investment in improving the student experience. UQ's performance within the Group of Eight is reasonably strong but we ranked below, or at best equivalent to, our major local competitors on all scales. Results for 2016 showed that UQ performed relatively well on the Quality of Teaching item. With 84% satisfaction, we ranked number one within the Group of Eight and 8th overall. However, UQ's results on some of the scales showed significant weaknesses. For example, satisfaction on the Student Support scale[63] was only 71%. That means, over a quarter (29%) of our undergraduate students were dissatisfied with the level of student support and we ranked only 26th in the country (out of 40 universities).

Student retention data also point to an area of vulnerability for The University. In 2013, the retention rate[64] among commencing domestic undergraduates dropped sharply from 84.3% to 81.9%[65]. In 2015 there was some improvement (an increase to 82.9%) but preliminary results for the 2016 commencing cohort suggest the rate has flat-lined.

The Student Strategy was developed in recognition of these issues. Improving the student experience and graduate outcomes will be a key focus in the coming years.

While our size and comprehensive nature provide great opportunities, they have also led to some inefficiencies in our operations. The findings of the 2015 Uniforum Survey concluded that UQ's transactional activities are high cost, highly devolved, heavily reliant on manual processes. It also concluded that there was scope to improve the effectiveness of The University's professional services. High cost operations impact on UQ's financial sustainability and this is further compounded by the fact that, in 2016, The University's underlying income increased 1.6% ($26.5m) but expenditure increased by 2.3% ($36.1m). UQ's 2016 underlying EBITDA[66] result was $125.6m, however the normalised accounting result was a loss of $44.7m. This latter figure is largely driven by an additional $35.5m in depreciation expense but still points to a clear need for UQ to achieve a sustainable financial base with which to pursue our strategic agenda.

THRESHOLD ISSUES: SIZE AND SHAPE

Many of the strategic discussions and consultation sessions to date have explored a series of fundamental threshold issues and questions. These include:

- **What will be the future size of The University?**
- **What will be the future shape of The University? To what extent will UQ remain broadly comprehensive and how can we best leverage our comprehensive strengths?**

The size of UQ: How big will we be?

In 2016, UQ enrolled over 51,000 students. Of these 46,498 were enrolled in coursework degrees while 4,573 students were engaged in higher degree research training. In the five years leading up to 2016, student enrolments grew by 9%.

The planning of student enrolments is an ongoing biannual process but the development of the New Strategic Plan provides an opportunity to consider UQ's future growth from a strategic perspective. UQ's size must be determined by its long term goals. Any decision around the future size and mix of UQ's student cohort will have implications for:

- the size, composition and capability of our workforce;
- infrastructure planning and capital investment;
- delivery of teaching and student support services;
- scale and volume of research; and
- UQ's revenue base as approximately 55% of UQ's revenue is generated from students - either from student fees or government funding through the Commonwealth Grant Scheme.

When planning its future size, UQ must consider its obligations to provide for the educational needs of Queenslanders and Australians, demand from international students and the external funding environment. The introduction of demand driven funding in 2012[67] and uncapping of Commonwealth Supported Places (CSPs) provided financial incentives for universities to grow their domestic undergraduate enrolments. This policy change was welcomed but the funding per student is under significant pressure. CSP funding comes from two sources: a government contribution and a student contribution. If enacted, the latest proposal under the Australian Government's Higher Education Reform policy[68] will cut these government contributions by 2.5% per year over two years. Students will also be required to pay a larger share of the funding with their contribution increasing by 7.5% over four years. These additional fees will not flow through to universities as the government contribution will be further reduced at a level commensurate to this fee increase. Overall, these funding changes will reduce UQ's CSP income by approximately $15m per year.

Additionally, university research is not fully funded. The Government's Research Block Grant Scheme is designed to cover the indirect costs of research (ie. the cost of supporting

research that is not covered by individual research grants) but the $150M that UQ receives annually through this scheme does not cover all of those costs. UQ's significant and highly successful research effort must be subsidised from the revenue we obtain through teaching. It is estimated that for every dollar we receive in research income (through competitive grants or other funding sources) we need to cross-subsidise with an additional 50c of income from teaching revenue to cover the full costs of that research.

The funding provided for CSPs (including the student contributions) includes a component to support research in recognition of the fact that scholarship and research are central to university teaching. The 2011 Higher Education Base Funding Review[69] set this at 10% but data collected through the Government's Cost of Delivery of Higher Education study found that universities were spending 85% of CSP funding on teaching and scholarship[70], presumably leaving 15% for research. However, because UQ is a research intensive university, as much as 30% of our CSP funding is directed to research. This is necessary to support the significant volume and quality of UQ's research.

To date, Australia's success in attracting significant numbers of international students has provided the higher education sector with a mechanism to buffer some of the financial pressures that arise through the government funding model. Australia's international student market was valued at $21.8b in 2016[71], and, like many Australian universities, a significant (and increasing) proportion of UQ's revenue stream is now sourced through international student fees. In 2015 the Vice Chancellor announced a strategy to increase international student numbers to bring the proportion of coursework student load that is international up to 30% by 2020. The University is well on track to meet this target. Current estimates for 2017 predict that almost 29% of the coursework load will be held by international students (up from 25% in 2016). There are early signs that demand will continue to grow in 2018.

However, UQ's international students provide more than just a revenue stream. We welcome students from all over the world because we believe that cultural diversity ensures that students are exposed to global perspectives and learn to work closely with peers who have a range of different experiences and approaches. Through international education we can build long standing relationships that will enable future endeavours in research and innovation and facilitate business linkages between Australia and the rest of the world.

Strategic planning discussions have focussed on the extent to which we will continue to grow international student numbers (and in doing so perhaps moderately grow total student numbers). There have also been discussions around opportunities to grow UQ's domestic postgraduate full fee enrolments or attract more domestic undergraduate students from interstate. Through these discussions it was acknowledged that UQ should certainly do more to build interstate domestic recruitment[72] but with the uncapping of CSPs there is very little unmet demand within the domestic undergraduate market and so opportunities to significantly grow student enrolments through this strategy are limited. It was also acknowledged that more should be done to provide flexible delivery options to postgraduate students and that this would put The University in a better position to grow domestic full fee enrolments. However, the national postgraduate market is also fairly flat, excluding those cases where a professional postgraduate model of education has been introduced (e.g. The University of Melbourne and The University of Western Australia).

As UQ continues to attract more international students it will be important to manage the pace of growth, ensuring that sufficient resources and support mechanisms are in place so that the student experience is upheld and that the specific needs of a growing international student cohort are addressed. It will also be important to monitor and manage the diversity of the cohort with regards to program choice and source country. The benefits of building a globally diverse student cohort can be best achieved through a balanced mix of domestic and international students.

International students have traditionally been largely drawn to programs in business and commerce. This is true at UQ and across the whole sector and so UQ's strategy will incorporate a drive to build growth in other disciplines.

Recruiting students from a diverse range of countries is also extremely important. Concerns have recently been raised that Universities are too dependent on enrolments from the China market [74]. The reporting on this issue highlights the significant financial risks of relying too heavily on one market and the impact that would occur should this market contract. Further, when an international student cohort is heavily skewed towards one country it can also dilute the strategic objective of building cultural diversity.

In 2016, 38% of UQ's international students were from China and analysis shows that our reliance on China is currently moderate compared to similar institutions. The University is proud of the role it plays in educating students from China and values the subsequent relationships and partnerships that are built. However, we do need to be cognisant of the risks of being too reliant on any one source country. The New Strategic Plan will therefore also clearly articulate strategies to increase source country diversity among UQ's international student cohort. In this context, India and Indonesia will be two countries that may warrant a greater focus.

THRESHOLD ISSUES: SIZE AND SHAPE

The shape of UQ: Comprehensive vs Focussed

UQ is a highly comprehensive university, teaching across 54 out of 73 fields of education. The University's performance in some disciplines is extremely strong[75] but is also characterised by excellence across its full breadth of disciplines. In 2015, the Excellence in Research Assessment gave UQ an 'above world standard or better' rating to 90 out of 97 disciplines.[76] A 'well above world standard' classification was awarded to 47 of these disciplines. Similarly, the more recent Asia 100 ranking[77] which specifically rewards universities with strong performance across wide range of disciplines, ranked UQ as the number one university in Australasia and East Asia.

This breadth provides The University with a solid base upon which to respond to the teaching and research needs of our local community, global society, government and industry. However, UQ's highly comprehensive nature also brings about many strategic challenges. As a result the strategic planning process has been used as a mechanism to consider the value of our broad discipline mix.

Some of the identified challenges are as follows.

- Some disciplines may be very strong in teaching but not as strong in research (or vice versa).

- Some disciplines are not financially viable. This can occur for a number of reasons but is often due to anomalies in university funding arrangements (e.g research funding does not cover the full cost of doing research and so this needs to be subsidised from teaching income. In some disciplines such as Veterinary Science, Dentistry and Music the government's funding of teaching does not cover the costs of teaching).

- UQ operates in an environment where the vast majority of institutions are also comprehensive (particularly within Australia). This can make it difficult for UQ to differentiate itself from other Australian/Go8/international competitors who are also strong performers across multiple disciplines. Universities that specialise in a small number of fields tend to have greater visibility within those areas of specialisation.

- Discipline breadth provides students with a great deal of choice but this increases the administrative costs in managing program complexity and ensuring quality.

Despite these challenges, it is clear from the consultation to date that there is a strong commitment across the organisation for UQ to remain highly comprehensive. In an era of rapid change, expanding technological development and geopolitical uncertainty, complex global challenges will require creative solutions that draw on the expertise of multiple disciplines. UQ's strength across a broad range of disciplines ensures it is well positioned to respond to these challenges.

However, in order to effectively leverage the benefits of being comprehensive UQ will need to:

• significantly increase internal collaboration between disciplines and organisational units at UQ by breaking down silos and barriers;

• develop processes to draw upon current strengths to adapt UQ's discipline mix in response to new problems and changing expectations; and

• support mechanisms to ensure that UQ responds in an agile and coherent way when requests are made of The University to tackle problems.

Increasing internal collaboration will be a challenging strategic focus for UQ over the coming years as it is clear from the consultation to date that this is a key area of vulnerability for The University. It is imperative that barriers to cross-disciplinary collaboration are removed. In fact, the decision to remain broadly comprehensive is highly dependent upon this. In an organisation as large as UQ and with a complex structure of central portfolios, faculties, institutes, schools and research centres it can be difficult for individuals to even locate peers and colleagues in other parts of The University with shared interests/problems with whom they could collaborate. This will always be a difficult issue to resolve, but UQ needs to ensure that its systems of organisational structure, resource allocation, business processes, governance and performance recognition do not inadvertently but actively discourage people from working together. This will be a strong focus of the New Strategic Plan.

UQ's discipline mix has evolved over time and has served The University well, but as the higher education and research environment becomes more competitive it will be important to curate UQ's discipline mix in a more strategic way. Consultation to date has focussed on building an understanding of the kinds of criteria that might be used to assess a discipline's strategic value within the UQ environment. Figure 2 summarises some of the questions that were raised during this consultation. If UQ is to leverage the benefits of its discipline breadth effectively to reach its strategic goals, the contribution made by a discipline to solving local and global problems, particularly in collaboration with others, is likely to be a key criteria. However, understanding the social contribution, financial contribution and future demand will also be important.
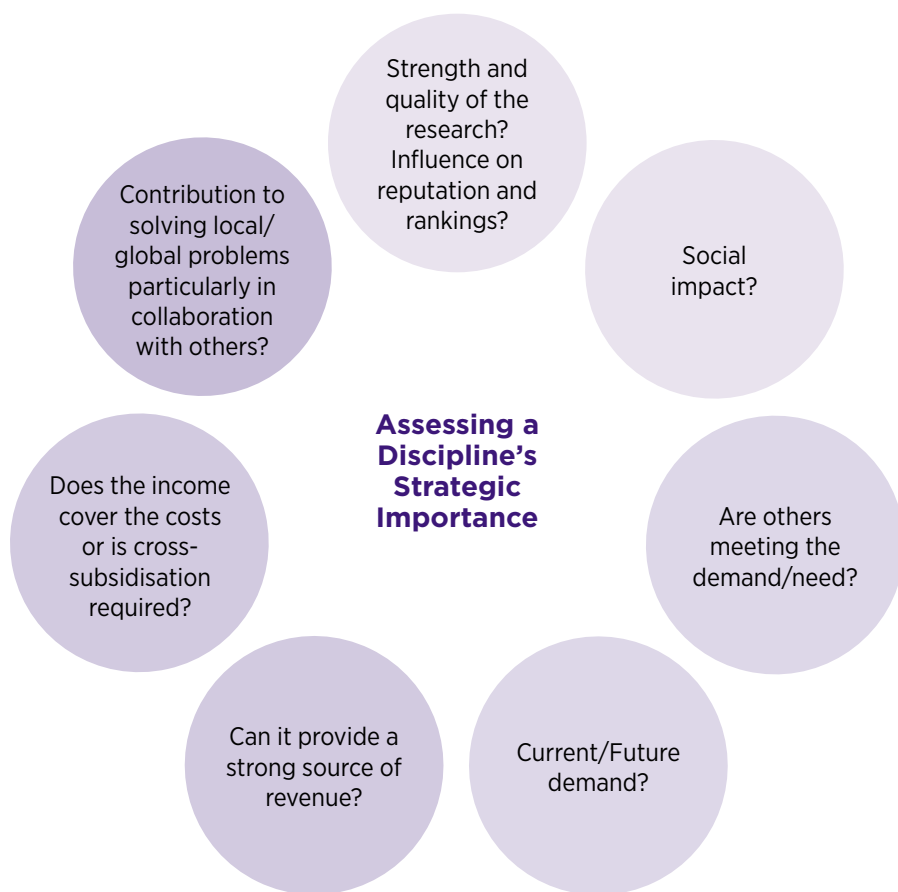

Figure 2: Criteria for assessing a discipline's strategic importance

STRATEGIC FOCUS AREAS

1 **Transforming our student experience through a flexible, integrated and partnered learning environment**

In 2016 The University released the Student Strategy. The key components of the Student Strategy will not be revisited in the development of the New Strategic Plan. Rather, we will reinforce UQ's commitment to:

- Develop **game-changing graduates** through a focus on employability and by expanding opportunities for students to develop personally and professionally both inside and outside of the classroom. These include an expansion of Work Integrated Learning (WIL) courses, as well as extracurricular experiences including global experiences, volunteering, internships, employability courses, research experiences, and support for entrepreneurship and startups;

- Create **student-centred flexibility** by extending online delivery in a way that complements on-campus active learning, unbundling courses into short modules, creating alternative program schedules (e.g trimesters, summer offerings) and building our capabilities in the area of learning analytics and e-Assessment;

- **Strengthen partnerships** between students, teachers, researchers and industry to create a more collaborative approach to teaching and learning; and

- Build a more **integrated learning environment** that ensures UQ's campuses are vibrant spaces for on-campus learning, community engagement and student life.

Within this, the New Strategic Plan will also reference a series of student focussed infrastructure projects including a new student residence and a student precinct that will incorporate a new teaching and learning building and a redevelopment of the student union complex.

Program Architecture

Program design or architecture fell outside the Student Strategy's Terms of Reference. Some universities have introduced standardised frameworks for their programs. For example, the 'Melbourne Model' includes general three year undergraduate degrees with professional specialisations at the masters level. The University of Sydney has launched a curriculum framework that differentiates between professional and research streams using masters programs as the pathway into a professional qualification or a PhD[78]. A one year Bachelor of Advanced Studies has also been introduced by The University of Sydney to complement existing three year degrees and provide students with 'multi-disciplinary and real-world problems'

UQ does not currently have a universal or standard approach to program architecture. Responsibility for program review and design lies with schools and faculties. This ensures areas can develop programs that best meet the specific needs of their disciplines. However this can make it difficult to ensure that UQ's suite of programs is meeting the broader strategic needs of The University. It also creates a complex system of program rules which creates difficulties for students as they navigate through their degree.

Over the next few years The University will need to consider the role that program architecture can play in supporting UQ's broader strategic objectives. Examples include:

- The objective to ensure we make the most of being comprehensive

- The need to improve internal collaboration

- The goal to enhance the employability of our graduates

- The objective to provide all students with an enriched learning experience that maximises their personal and academic development

- The aspiration to attract and retain high achieving students

- The objective to run a University that is more efficient and effective

Flexible Course and Program Delivery – Mode and Credentialing

UQ's partnership with edX and the recent announcement to introduce the Master of Leadership in Global Development with a MicroMasters entry pathway demonstrates UQ's commitment to explore online delivery and micro-credentialing.

The Student Strategy articulates that UQ will 'prioritise the online delivery of courses within our largest programs....and develop quality online resources to complement high value, active learning on campus'. Additionally, it makes a commitment to 'offer key components of our courses in short modules that draw on UQ's advanced digital learning resources'.

This is a new and continually evolving space for higher education.

Digital approaches to teaching delivery can support a range of strategic objectives. Some examples include:

- Online delivery of unbundled components of courses or programs can provide students with options to piece together content that meets their personal/professional needs.

- MOOCs that are delivered internationally and free of charge and MicroMasters that are low cost can be used as a marketing tool to increase UQ's reputation, support student recruitment activities and can also be used to identify exceptional talent

- Through developing MOOCs, The University can build expertise and capability in online delivery which in turn can support the delivery of online content to complement on-campus learning.

Questions

- What tensions (if any) lie between our current program architecture and the broader strategic objectives listed above? Can you provide any solutions to resolving these tensions? What issues should we tackle first?

- What are the benefits of our current approach to program design and review? Can you identify a way of creating a more standardised approach to program architecture without losing these benefits?

- What issues should we keep in mind if we pursued a path to reduce the number of courses available?

- UQ currently lacks a signature program that showcases the range and depth of knowledge across The University. Consideration is being given to developing a new three year generalist program that would combine 'breadth' courses from all faculties covering a range of disciplinary areas (e.g innovation, risk, rights, inter-cultural communication, data analytics, critical thinking, cyber security, regulation, sustainability to name just a few). Students completing this program could then specialise through a two year Master's degree.
  - What would be the pros and cons of such a model?
  - What issues would we need to consider in developing and delivering such a program?
  - What would we need to do to ensure its success?

Questions

- What strategic value should UQ focus on when developing its online offerings over the next 3-5 years?

- Is UQ moving fast enough in the digital delivery space? What issues do we need to focus on to ensure the effective roll out of these approaches?

STRATEGIC FOCUS AREAS

2 Enhancing our high quality research by improving our capacity to collaborate to achieve greater impact

The New Strategic Plan will provide a clear direction to UQ's academic community that we will value, and expect, research activity to be collaborative and high impact. The strategic plan will articulate the importance of UQ being more responsive to external needs for research and innovation.

The strategies outlined in this focus area will be firmly centred on **improving internal collaboration** and building a One UQ approach to research. UQ's strength lies in its ability to produce excellent research across an extensive range of disciplines. To effectively leverage this strength, it is vital that we bring together our discipline experts within UQ to tackle problems together. This will require us to break down barriers between disciplines and organisational units. Over time, it may also require us to adapt UQ's discipline mix in response to new problems and changing expectations. Encouraging greater internal collaboration will build UQ's capacity to address research challenges using inter-disciplinary approaches.

Strategies to **build stronger external partnerships and networks** will also form a core component of this focus area. In recent years UQ has made significant gains in attracting industry research funding[79]. Between 2012 and 2015, The University increased this funding source from $103m to $150m and is currently on track to reach its target of doubling industry income by 2020. Over the same period of time, international research funding rose from $30m to $56m. Attracting research income from industry and international sources will continue to be a major priority, particularly in an environment where government funded competitive grant schemes are becoming more limited. To support this, the New Strategic Plan will articulate strategies to make it easier for current and potential external partners to collaborate with UQ and find the research expertise that they need.

Within this, the New Strategic Plan will outline strategies or statements of commitment to:

• support the acquisition of major research infrastructure and improve research infrastructure utilisation;

• develop reward and recognition mechanisms to encourage academics to direct their focus towards collaborative and high impact research;

• continue to develop a consistent approach to UQ's higher degree research training with a focus on developing research, transferable and professional skills;

• develop systems and processes for the storage and publication of research data; and

• articulate UQ's approach to developing an international footprint that expands opportunities for international research collaboration (e.g in China or India).

Encouraging internal collaboration and breaking down silos to build interdisciplinary and high impact research

It is clear from the consultation to date that there is a strong recognition across UQ's community that we must improve researcher collaboration within UQ. This is an area of vulnerability which needs to be addressed so that UQ can leverage the benefits of being broadly comprehensive and is better placed to develop mutually beneficial external partnerships and networks that are seamless and meet external needs in an agile and coherent way. In short we must build our capacity to tackle research problems using interdisciplinary approaches in a way that is accessible to industry, government and the wider community.

Limitations in access to research infrastructure provide one example where greater internal collaboration is required. However it is also in The University's best interests to ensure that researchers from different parts of The University are encouraged to work on research problems in collaboration rather than in competition with each other. This is particularly important when trying to access external funding pools.

The New Strategic Plan will outline strategies and initiatives designed to directly encourage internal collaboration. Ideas discussed to date include:

• ensuring new buildings include spaces for academic collaboration;

• developing University wide mechanisms to bring like-minded researchers with similar interests together;

• prioritisation of strategic funds for collaborative projects;

• reviewing budget and resource allocation mechanisms to ensure they encourage collaboration; and

• adjusting academic appraisal and promotion processes to include measures of collaboration.

Questions

• Can you identify any key barriers that discourage research collaboration across UQ? Can you provide any solutions to breaking down these barriers?

• What opportunities could UQ provide to help staff collaborate in a way that supports research collaborations across organisational unit boundaries within UQ?

• UQ's academic appraisal and promotion processes provide an opportunity for The University to encourage and reward internal collaboration. What sort of metrics/evidence should UQ introduce to address this?

Utilisation of research infrastructure

UQ's extensive suite of research infrastructure is a major strength for the institution but this strength can only be fully realised with effective utilisation. The processes by which UQ has historically obtained and managed infrastructure have led to a number of issues:

- Access to research facilities is sometimes limited to specific parts of The University rather than being more widely available;

- there is duplication of research infrastructure across The University as procurement has been managed at the local level rather than centrally co-ordinated; and

- there is a lack of co-ordination between planning for research infrastructure and planning for physical space to house the infrastructure.

The recent appointment of a Director of Research Infrastructure and the proposal to appoint a PVC Research Partnerships and PVC Research Infrastructure demonstrates UQ's commitment to improving the way in which this infrastructure is managed.

The New Strategic Plan will articulate clear measures to ensuring that a One-UQ approach is taken to obtaining and utilising research infrastructure. Internal funding schemes such as the Research Facilities Infrastructure Grant (RFIG) and the Major Equipment Infrastructure Grants (MEI) both include selection criteria to assess how the infrastructure 'will achieve collaborative gain' and 'be utilised effectively and made available to all relevant users'. It is likely that the New Strategic Plan will include a commitment to provide strategic funding for research infrastructure only if these criteria are met.

A partnered approach to acquiring new research infrastructure

The Australian Research Council's (ARC) Linkage Infrastructure, Equipment and Facilities Scheme (LIEF) is designed to provide funding for research infrastructure in a way that fosters collaboration between universities and with industry. In recent years, the State of Queensland's success in this scheme has significantly dwindled from close to 40% in 2012 to just over 10% in 2016.

UQ's New Strategic Plan is likely to include a commitment to building a broader Queensland wide approach to infrastructure scheme bidding. Rather than competing with other local institutions for funding, it is important that we enhance our local collaborations to realise the greatest gains.

Separate to the grant schemes we may also need to broaden our approach to include partnering equipment suppliers and other like stakeholders for purchasing new equipment and in service support.

Future Research Infrastructure Needs

Research infrastructure planning is vital for ensuring The University has the infrastructure it needs to adequately support its current and future research needs. This planning must take into account, UQ's research strengths and future trajectory, trends in external demands for research and innovation and emerging technological developments. It must also consider the lifespan and maintenance needs of UQ's current suite of infrastructure.

Planning for UQ's research infrastructure must also consider the recently released 2016 National Research Infrastructure Roadmap[80] which maps nine infrastructure focus areas against nine national science and research priorities. The national infrastructure focus areas are:

- Digital data and eResearch platforms;

- Platforms for humanities, arts and social sciences;

- Characterisation of the structure, chemistry and physical properties of samples at the molecular level;

- Advanced fabrication and manufacturing;

- Advanced physics and astronomy;

- Earth and environmental systems;

- Biosecurity;

- Complex biology; and

- Therapeutic development.

The New Strategic Plan may include some priority areas for the acquisition of large scale infrastructure.

Questions

- What barriers do researchers face in accessing research infrastructure at UQ? What strategies could UQ implement to break down these barriers?

Questions

- How can we take a broader view of external partnering in relation to accessing infrastructure? Are there any barriers to this and what strategies could be implemented to break down these barriers?

Questions

- Are there any areas of major critical research infrastructure that should be addressed specifically in the New Strategic Plan? Is there a gap in UQ's infrastructure that creates a significant barrier to building UQ's research excellence? Alternatively, are there any areas in which we have over-invested?

- Under the focus of digital data and eResearch platforms, the Roadmap states that Tier 2 facilities (i.e those that are built to support specific institutions or disciplines) are the responsibility of institutions.
  - To what extent does UQ's computing infrastructure meet UQ's current research needs?
  - What are the 1) Networking connectivity 2) Computational power 3) Data capabilities that UQ should invest in over the next 3-5 years and why?

STRATEGIC FOCUS AREAS

3 Building engaged and strategic partnerships with a broad range of local and global networks

The recent appointment of the Deputy Vice-Chancellor (External Engagement) (DVCEE) demonstrates UQ's commitment to improve the way we build connections and offer value to industry, government and the wider community. The DVCEE portfolio brings together the functions of student recruitment, engagement with Indigenous communities, internal and external partnerships, marketing, communications, events, alumni relations, philanthropy, the UQ Art Museum, and UQ Press.

This strategic focus area aligns closely with the aspiration to *enhance our high quality research by improving our capacity to collaborate to achieve greater impact* but it goes beyond the research endeavour. Our external engagement activities are also strategically important because they inform and enhance our teaching, help us keep abreast of the key issues facing government, industry and society and ensure that our work remains relevant and has impact.

Encouraging internal collaboration and breaking down silos

This is a repeated theme that must be addressed broadly across The University and not only in pursuit of our research goals. Interactions with UQ must be seamless and cohesive. Partners want to deal with UQ as one organisation, not as a mixed bag of different units providing differing levels of interaction. The same applies to prospective students who want to easily access information and advice about our offerings. Improving the way we work together is vital to improving the way we interact with those external to the organisation. In doing so, our complementary capabilities across the organisation will be harnessed so that we are not only more competitive for major grant and industry related funding, but also attract philanthropic donors to support our academic endeavours.

A number of initiatives are already in train to address this issue and these will be articulated in the New Strategic Plan.

- Funding will be invested in rolling out a Client Relationship Management system across the organisation. This will provide the technological tools to support smoother external communications and interactions.

- A single creative agency has been engaged to supply advertising services across The University. This will eliminate differing approaches to advertising and ensure our representation to external partners is consistent.

- The DVCR and DVCEE are reorganising their portfolios to create clearer lines of responsibility and facilitate co-operation between the two areas and across the organisation. The DVCEE will be responsible for overseeing the engagement of new external partners and will nurture the relationship to a level of maturity at which point it will be handed over to the DVCR portfolio. Additionally, the DVCEE portfolio will bring together domestic and international student recruitment under a single area titled 'Future Students' and will also have an dedicated division focussed on UQ's enterprise initiatives, including overseeing the coordination of our entrepreneurship and innovation activities as well as our engagement effort across the globe.

Creating a clear partnership framework

External partnerships are critical to the success of our organisation, whether they be with industry, not for profit organisations, government, other education providers or the general community. To ensure we are able to concentrate our effort and deepen our relationships, we are aiming to focus on a selected number of high quality, strategic partnerships.

A tiered partnership model has been proposed as a way of determining the maturity of our relationships, indicating who is involved and at which stages of the partnership. There are three tiers in this model:

- individual/group initiated partnerships,

- cross faculty/institute level partnerships involving multiple researchers; and

- major university wide partnerships

Questions

- What additional strategies could we implement to ensure we engage with external stakeholders in a smooth, streamlined and united way, particularly with regards to major grant and industry funding? What are the current barriers to achieving this and can you provide any solutions to breaking down these barriers?

Questions

- What kinds of criteria should we take into account when deciding if a partnership has developed to a level of maturity that necessitates faculty/institute or university level support?

STRATEGIC FOCUS AREAS

4 **Committing to activities that attract, support and retain a diverse and inclusive community of high achieving staff and students**

UQ's success is dependent upon the strengths and achievements of all of our staff and students. It is imperative that UQ not only attracts high achieving staff and students but that they come from a broad mix of backgrounds. True diversity is a necessary ingredient for building a community in which our academic endeavours can be enriched through a wide variety of perspectives and experiences.

Within this, the New Strategic Plan will outline strategies to build an inclusive environment that brings together a mix of high achieving staff and students from a diverse range of backgrounds. We will:

- value the significant contribution of Aboriginal and Torres Strait Islander staff, students, communities and cultures and develop a Reconciliation Action Plan that will outline actions by which UQ will build respectful relationships, trust and opportunities between Aboriginal and Torres Strait Islander peoples and the broader Australian community;

- increase the participation of women in academia, particularly in senior positions through activities such as the national SAGE[81] pilot of the Athena SWAN program which aims to address issues of gender inequality in science, technology, engineering, mathematics and medicine (STEMM);

- improve the mechanisms by which we assess, develop, recognise and reward high performance among both academic and professional staff, ensuring we value contributions to all aspects of UQ's objectives and focus;

- diversify the student cohort to include a greater number of students from socio-economically disadvantaged backgrounds and from rural, regional and interstate locations; and

- attract and develop a high achieving cohort of students through enriched learning experiences.

Attracting and supporting excellent teachers

Quality teaching is critical to The University's core business. The largest impact on students' experience is the positive interactions they have with their teachers who are most effective when they are given the resources and time to apply student-centred approaches to learning. How UQ values and supports its teaching enterprise is fundamental to achieving our aspirational student experience.

Though UQ is a premier research intensive university, it also leads Australia in teaching excellence awards, citations, grants and fellowships. Recognising, valuing and supporting this excellence is a priority for The University – particularly as learning expectations evolve to incorporate greater use of innovative educational technologies, digital media and learning design.

As part of the Student Strategy, UQ has commenced a number of initiatives to support and reward excellent teaching. These include piloting the participation of academic and professional staff in the Higher Education Academy Fellowship scheme and drafting a professional learning framework for all UQ educators and excellence in teaching awards across all faculties.

Attracting and supporting top researchers

UQ's research performance is highly dependent upon the collective efforts of its workforce. In an increasingly global research environment competition for research talent is strong. For example, it is expected that China will boost its research and development spending to 2.5% of GDP by 2020[82] and will undoubtedly require a strong academic workforce to support this ambition. With increased external engagement may also come increased mobility among academics as they develop stronger and broader relationships with international partners, industry and government.

In this environment it is vital that UQ has strategies to mitigate against these risks. One threshold question is around the amount of investment that should be directed towards attracting and retaining 'stars' vs supporting up and coming high performers.

Questions

- Are UQ's current mechanisms for recruiting, developing and rewarding excellent teachers sufficient? If not, what other strategies should be implemented to attract, support, promote and retain high achieving teaching staff?

- Can you identify any additional skills, experiences or roles that The University should build amongst its workforce to support teaching and deliver the student strategy?

Questions

- How can UQ achieve an appropriate balance between what it invests in the highest established research performers vs what it invests in supporting up and coming researchers?

- What should UQ do to provide support to talented early and mid-career researchers? What barriers do these researchers currently face and what additional mechanisms could UQ provide to support their development?

Developing a strong, high performing professional workforce

UQ's professional workforce is made up of staff with an extensive range of skills and qualifications covering a wide variety of trades and professions. This workforce provides a vital service, ensuring that the infrastructure, operations and governance of The University support its academic endeavours.

The University endeavours to attract, support and retain high performing professional staff through competitive remuneration, conditions which exceed community standards (superannuation, parental leave), recognition and reward schemes, professional development and an attractive work environment. The performance review and development process for professional staff has been reviewed with a piloted new process strengthening the focus on performance based conversations supported by a new Professional Services Capability Framework. This framework is built upon five pillars outlining UQ's expectation that professional staff develop and demonstrate a commitment to:

- Knowing the UQ context
- Delivering client focused solutions;
- Building productive partnerships;
- Continuously improving services; and
- Achieving outcomes and results.

This approach represents a shift from a compliance based performance review culture and provides staff and supervisors with practical guides to facilitate discussions about a staff member's capabilities, performance and development needs aligned with the needs of the business unit/University.

Attracting and Supporting students from under-represented backgrounds (particularly socio-economically disadvantaged backgrounds or from rural/regional areas)

The New Strategic Plan will outline UQ's continued commitment to diversify the student cohort by providing greater opportunities and support for students from under-represented backgrounds.

In recent years, the work of the PVC (Indigenous Engagement) and the Aboriginal and Torres Strait Islander Studies Unit has resulted in significant improvement in the participation and success of Indigenous students at UQ. Between 2009 and 2015 the participation rate of this cohort rose from 0.7% to 1.01%[83] with the success rate increasing from 76.5% to 82.2%[84]. In 2016, 77 Aboriginal and Torres Strait Islander students received a UQ award – 26% more than in 2015. The New Strategic Plan will highlight UQ's commitment to continuing this work.

Additionally, a number of strategies are in place to attract and support students from socio-economically disadvantaged, rural and regional backgrounds. These include:

- the UQ Young Achievers Program;
- the Educational Access Scheme and UQ Link Scholarships of $3000 for undergraduate students who have experienced financial hardship;
- bonus point admission schemes for students from rural backgrounds applying for Medicine and Dentistry (soon to be expanded to other health programs); and
- on-campus experiences targeted at students from under-represented groups to enhance their understanding of university life.

However there is more to do in this space. UQ's participation rate of domestic undergraduate students from low socio-economic backgrounds has declined in recent years from 10.5% in 2011 to 9.7% in 2015 . The same is true for the participation of students from regional/remote backgrounds. In 2011 these students comprised 17% of UQ's domestic student cohort but this had dropped to 14.9% in 2015.[85]

Creating an inclusive environment for all staff and students regardless of their background

For UQ to support true diversity we must have an inclusive, culturally supportive environment.

UQ has committed to a number of strategies for supporting and increasing diversity and inclusion at UQ including the implementation of the Disability Action Plan, the Athena Swan program as well as the development and implementation of UQ's first Reconciliation Action Plan.

In developing its first Reconciliation Action Plan, UQ has committed to building meaningful relationships, respect and opportunities between Aboriginal and Torres Strait Islander peoples and the broader community.

Questions

- Are UQ's current mechanisms for developing and rewarding high performing professional staff sufficient? If not, what other strategies should be implemented to attract, support and retain high achieving professional staff?

Questions

- What issues should we consider when developing strategies to attract and support students from socio-economically disadvantaged, rural or regional backgrounds? Can you identify any barriers that limit success in this area and, if so, how should these be addressed?

Questions

- What other strategies and actions could we implement to create an inclusive, culturally safe environment?
- More specifically, given that UQ is developing its first Reconciliation Action Plan, what strategies could we implement to build respectful relationships between Aboriginal and Torres Strait Islander peoples and broader community?

STRATEGIC FOCUS AREAS

5 Building an agile, responsive and efficient university operation that reflects a one UQ culture

UQ's professional services provide a vital enabling factor in The University's capacity to pursue its academic endeavour. Student recruitment, enrolment and support, external engagement, research administration, IT and physical infrastructure, library services, financial management, human resources, legal services, policy and strategy development and governance are all examples of the functions provided by UQ's professional services.

This focus area will be included in the New Strategic Plan because in an environment marked by increasing competition and reduced Government funding it is vital that UQ's operations are both efficient and effective. UQ's operations and professional services must be responsive to the needs of The University but in a way that ensures costs are managed so that priority can be given to directing resources towards UQ's academic endeavours and improving the student experience. Professional services will be built upon a culture that values a commitment to customer service, a focus on outcomes and a one UQ approach.

This is a current area of vulnerability for The University as evidenced by the 2015 Uniforum Survey which concluded that UQ's transactional activities are high cost, highly devolved, heavily reliant on manual processes These findings also reflect concerns highlighted in the 2015 Staff Engagement Survey that there was excessive red-tape across the institution and high delegation levels that left staff feeling disempowered to take decisions and drive change.

In 2015, The University launched the Enhancing Systems and Services (ESS) project to address some of these issues. The recent focus of ESS has been on the design and implementation of a new service delivery model for Finance and HR services to ensure university wide consistency in position descriptions, levels and functional accountability including reporting lines through to the head of function. These organisational changes will provide the Chief Finance Officer and Director of HR with a clearer line of sight across all finance and HR services. This provides them with the oversight needed to review and improve these services in line with the needs of The University community.

The strategies outlined in this focus area will build upon the work that has already occurred and will outline UQ's commitment to simplifying, streamlining and standardising ways of working across all of UQ's operations:

• Within the DVC (Academic) portfolio consideration is underway regarding the most appropriate ways to deliver effective services and supports for students in order to ensure The University can deliver on key components of the Student Strategy.

• Within the DVC (Research) and DVC (External Engagement) portfolios a consultation paper released in early 2017 proposed major structural and service changes to ensure that the two areas work closely together in managing research partnerships. The DVC (EE) portfolio will oversee development of relationships with new partners, nurturing the relationship to maturity at which point it will be handed over to the DVC (R) portfolio. A review of UQ's research management system is also underway to ensure it meets our future needs. A university-wide Client Relationship Management system will be rolled out to provide the technological tools to support smoother external communications and interactions.

• Within the Chief Operating Officer portfolio, major structural changes were recently implemented within the Information Technology Services Division. The introduction of the Chief Information Officer role will ensure a strong functional line of sight across, and accountability for, IT services across the whole University. The restructure aimed to harness economies of scale to reduce costs while also grouping together staff with complementary skillsets to improve service effectiveness. In the coming years the focus will be on building stronger IT governance, mature infrastructure and delivering systems to automate manual workflows.

In addition to this, university wide legal services are being consolidated into a central Legal Office under the leadership of the General Counsel, and reviews are underway into property and facilities management, corporate operations and occupational health and safety services.

Business Process Re-Design and Automation

As the organisational changes within HR and Finance are implemented, the re-design and automation of business processes will continue as a key component of the broader project to improve HR and Finance service delivery.

The University will also continuing streamline operations beyond those in HR & Finance. This may involve making changes to policies, business processes and IT systems.

Workforce Planning

The integration of university wide HR services will provide management with a clearer view of workforce issues across the whole organisation. This provides an opportunity to build a better understanding of UQ's current and future workforce capacity and capability needs.

UQs workforce needs are changing. With the efficiencies of process improvement and automation, many of UQ's professional roles are likely to be more focussed on work that is strategic, analytical and advisory rather than transactional. Similarly, UQ's academic workforce will need to increasingly incorporate technological and collaborative approaches to their teaching, research and engagement activities. In some instances, The University will find itself competing for skilled staff that are in short supply and will need to find ways to attract high demand skilled workers or actively develop the skills in the existing workforce

Encouraging internal collaboration and breaking down silos

To drive The University's future success it is vital that there are close inter-relationships between academic and professional staff. The Library Service provides one outstanding example of academic and professional staff working closely together to both enhance the student experience and ensure we are able to deliver excellent research outcomes

Questions

- Which processes should be improved in the short to medium term to have the greatest impact in one or more of the following domains?
  - Research management
  - Student administration/support
  - External engagement (with industry, government, community)
- To what extent does our policy framework help or hinder our operations? Can you provide specific examples?
- It has been recently proposed that a more centralised approach could developed for student misconduct and student progression processes. This would support consistency of decision making. Can you identify any other key processes that might benefit from a more centralised approach?

Questions

- What are the key strategic workforce issues should we take into account when determining and delivering the composition, capacity and capability of UQ's future academic and professional workforce?

Questions

- Where could we achieve better outcomes by improving collaboration and interconnectedness between academic and professional staff? What strategies could we introduce to support this?

STRATEGIC FOCUS AREAS

6 Diversifying our income streams and managing our resources to establish a sustainable and independent financial base

In recent years, Government funding for both teaching and research has been slowly eroded and the Australian Government's recent announcement to reform higher education funding continues this trend. In 2016, the University's expenditure increased at a higher rate than its income and there is a clear need for UQ to achieve a more sustainable financial base with which to pursue our strategic agenda.

This focus area will outline UQ's strategies to create a more sustainable and independent financial base through the diversification of income and management of resources.

A key strategy within this focus area will be to grow international coursework student enrolments and income but with an emphasis on also diversifying the range of key countries from which we recruit and the range of programs these students are recruited into. The University will commit to grow quality demand from India and a detailed strategy has been developed to progress this goal. The Indonesian market will also become a priority for UQ's student recruitment activities.

The New Strategic Plan will also commit to growing non-government research funding from industry and international sources as well as income from philanthropy. A philanthropic campaign will be launched in the second half of 2017 around three themes: empowering student success, enhancing teaching and learning and driving discovery and impact.

However, creating a more sustainable financial base is not just about increasing revenue. The University will also improve its management of costs. The strategies outlined in the focus area Building an agile, responsive and efficient university operation that reflects a one UQ culture will support this but attention will also be given to optimising the utilisation of assets and infrastructure. This includes ensuring UQ's IT infrastructure is a core enabler of our strategic priorities and broader academic endeavour.

Supporting the growth of international students

In 2015 the Vice Chancellor announced a strategy to increase international student numbers to bring the proportion of coursework student load that is international up to 30% by 2020. The University is well on track to meet this target. Current estimates for 2017 predict that almost 29% of the coursework load will be held by international students (up from 25% in 2016). There are early signs that demand will continue to grow in 2018.

In response to this growing demand, and in order to diversify and build revenue streams, The University will continue to grow its international student cohort. In doing so, it will be important to consider how we best support a shifting student cohort mix. Ensuring that academic quality is maintained and that students from all backgrounds are effectively supported will be vital to ensuring the sustainability of this model.

Building Philanthropic Support

With increased competition for public funds and a decrease in government funding, universities are relying more on private gifts from alumni, the community, and industry to bridge the gap that will support The University's teaching and research.

The University will launch an official philanthropic campaign in late 2017. One of the challenges is that, within the Australian higher education sector, a focus on philanthropy is only just emerging. As a result a change in culture both within universities and within the external community will be required. Its success will be dependent upon the efforts of the whole UQ community.

Questions

- As we continue to increase our international student numbers, what issues do we need to consider support an adjusted student cohort mix? What strategies should we implement to manage these issues?

Questions

- As we draw closer to the launch of The University's philanthropic campaign, it is important that this is seen a One UQ effort and that we create a culture whereby the importance of philanthropy is understood and valued. How do we mobilise our staff and students so that we are better able to engage with the external community in support of this campaign?

ENDNOTES

1   Croucher G. 2017 higher education reform: cuts to universities, higher fees for students. The Conversation. 2017 (May 1): Available from: https://theconversation.com/2017-higher-education-reform-cuts-to-universities-higher-fees-for-students-63185.

2   Arthur C. The history of smartphones: timeline. The Guardian. Wednesday 25 January 2012. https://www.theguardian.com/technology/2012/jan/24/smartphones-timeline.

3   Digital Australia: State of the Nation 2015-16: EY Sweeney, 2016. https://digitalaustralia.ey.com/Documents/SotN-Report-2015-16.pdf.

4   Lee Hecht Harrison. Social technologies having positive impact on workplace productivity. 2014. http://www.lhh.be/en-gb/press-room/news-items/social-technologies-have-positive-impact-on-workplace-productivity/.

5   Adams RL. 10 Powerful Examples Of Artificial Intelligence In Use Today. Forbes. January 10, 2017. https://www.forbes.com/sites/robertadams/2017/01/10/10-powerful-examples-of-artificial-intelligence-in-use-today/#27864f4a420d.

6   Foundation for Young Australians. The new work order: Ensuring young Australians have skills and experience for the jobs of the future, not the past: Foundation for Young Australians; 2015. http://www.fya.org.au/wp-content/uploads/2015/08/fya-future-of-work-report-final-lr.pdf.

7   Foundation for Young Australians. The new basics: Big data reveals the skills young people need for the New Work Order. Melbourne, Vic: Foundation for Young Australians; 2016. http://www.fya.org.au/report/the-new-basics/.

8   Den Hollander J. A brave new world of higher education. In: Committee for Economic Development of Australia. Australia's future workforce? Melbourne, Vic: Committee for Economic Development of Australia; 2015. p. 225 – 233. http://www.ceda.com.au/research-and-policy/policy-priorities/workforce.

9   Norton A. Universities and the evolving graduate labour market. In: James R, French S, Kelly, P, editors. Visions for Australian tertiary Education. Melbourne, Vic: Melbourne Centre for The Study of Higher Education; 2017. p. 91- 100. http://melbourne-cshe.unimelb.edu.au/resources/tertiary-education-policy/policy-landscape/visions-for-australian-tertiary-education.

10 Ernst & Young. EY global job creation and youth entrepreneurship survey 2015: Boosting employment, inspiring youth; 2015. http://www.ey.com/Publication/vwLUAssets/EY_global_job_creation_and_youth_entrpreneurship_survey_2015/$FILE/EY-job-creation-youth-entrepreneurship-survey-2015.pdf.

11 Australian Government. The higher education reform package. Canberra. ACT: Australian Government; 2017. https://docs.education.gov.au/system/files/doc/other/ed17-0138_-_he_-_glossy_budget_report_acc.pdf.

12 QILT (Quality Indicators for Learning and Teaching). QILT; Available from: https://www.qilt.edu.au/.

13 Bentley D. How competing for students will transform universities. The Conversation. 2015 (June 3): Available from: https://theconversation.com/how-competing-for-students-will-transform-universities-40003.

14 Ross J. Regulator reports strong interest from would-be HE colleges. The Australian. 2017 May 24. http://www.theaustralian.com.au/higher-education/regulator-reports-strong-interest-from-wouldbe-he-colleges/news-story/bc7c6f567d5d50269dff687486ed41cb.

15 TEQSA. Prospective higher education providers update: for January-March 2017: Australian Government, Tertiary education Quality and Standards Agency; 2017. http://www.teqsa.gov.au/sites/default/files/ProspectiveHEPsReport-31Mar2017-final-web.pdf.

16 Department of Education and Training. Selected Higher Education Statistics – 2015 Student Data. Canberra ACT: Australian Government; 2016. Calculated from Table 2. All Students by State, Higher Education Institution and Broad Level of Course. Available from: https://www.education.gov.au/selected-higher-education-statistics-2015-student-data

17 Parliament of Australia. Higher Education and Research Reform Amendment Bill 2014. Canberra, ACT: Parliament of Australia, House of Representatives, Parliament of Australia HoR; 2014. http://www.aph.gov.au/Parliamentary_Business/Bills_Legislation/Bills_Search_Results/Result?bId=r5325.

18 StudyAssist: Information for students about government assistance for financing tertiary study. Australian government; Available from: http://studyassist.gov.au/sites/studyassist/mytertiarystudyoptions/providers/that-offer-commonwealth-assistance/pages/providers.

19 Adams Becker S, Cummions M, Davis A, Freeman A, Hall Giesinger C, Ananthanarayanan V. NMC Horizon Report: 2017 Higher education edition. Austin, Texas: The New Media Consortium; 2017. http://cdn.nmc.org/media/2017-nmc-horizon-report-he-EN.pdf.

20 edX. Available from: https://www.edx.org/

21 UDACITY. UDACITY; Available from: https://www.udacity.com/.

22 Coursera. Coursera; Available from: https://www.coursera.org/.

23 Zhenghao G, Alcorn B, Christensen G, Eriksson N, Koller D, Emanuel EJ. Who's benefiting from MOOCs and why. Harvard Business Review; September 22, 2015. https://hbr.org/2015/09/whos-benefiting-from-moocs-and-why.

24 Hare J. MicroMasters allows students to build credit inch by inch. The Australian; 2016. September 21 http://www.theaustralian.com.au/higher-education/micromasters-allows-students-to-build-credit-inch-by-inch/news-story/2849f267053b8aecf92c53e514d1cb5f.

25 Glance D. Universities are still standing:The MOOC revolution that never happened. The Conversation. 2014 (June 15): Available from: https://theconversation.com/universities-are-still-standing-the-mooc-revolution-that-never-happened-29187.

26 Harris L, Urrutia ML. Far from bust: five ways MOOCs are helping people get on in life. The Conversation. 2015 (August 25): Available from: https://theconversation.com/far-from-bust-five-ways-moocs-are-helping-people-get-on-in-life-43879.

27 Garlock S. Is small beautiful? Harvard Magazine. 2015. http://harvardmagazine.com/2015/07/is-small-beautiful.

28 Krook J. Degrees of separation: companies shed degree requirements to promote merit over qualifications. The Conversation. 2017 (April 18): Available from: https://theconversation.com/degrees-of-separation-companies-shed-degree-requirements-to-promote-merit-over-qualifications-76150.

29 Halets Y. The higher education sector: Where have we been and where are we now? In: Gutierrez R, editor. The university for the future: Evolutions, revolutions and transformations. Sydney, NSW: Lee Hecht Harrison; 2016. p. 9 – 23. http://www.lhh.com.au/Tertiary-report-launch//.

30 Hajkowica S, Reeson A, Rudd L, Bratanova A, Hodgers L, Mason C, et al. Tomorow's digitally enabled workforce: Megatrends and scenarios for jobs and employment in Australia over the coming twenty years. Brisbane, QLD: CSIRO; 2016. https://www.acs.org.au/content/dam/acs/acs-documents/16-0026_DATA61_REPORT_TomorrowsDigiallyEnabledWorkforce_WEB_160128.pdf.

31 Daugherty MK. The prospect of an "A" in STEM education. The Journal of STEM Education. 2013;14(2):10-5. http://ojs.jstem.org/index.

32 James Jacob W. Interdisciplinary trends in higher education. Palgrave Communications. 2015;1 http://www.palgrave-journals.com/articles/palcomms20151.

33 Healey M. Linking research and teaching: Exploring disciplinary spaces and the role of inquiry-based learning. In: Barnett R, editor. Reshaping the university: New relationships between research, scholarship and teaching Berkshire, UK: Open University Press; 2005. p. 67-78.

34 Davis G. Facing the zeitgeist. Griffith REVIEW Edition 52: Imagining the Future. https://griffithreview.com/articles/facing-the-zeitgeist/

35 Runciman D. How the education gap is tearing politics apart. The Guardian. 2016. https://www.theguardian.com/politics/2016/oct/05/trump-brexit-education-gap-tearing-politics-apart.

36 Saltelli A. Science in crisis: from the sugar scam to Brexit, our faith in experts is fading. The Conversation. 2016 (September 27): Available from: https://theconversation.com/science-in-crisis-from-the-sugar-scam-to-brexit-our-faith-in-experts-is-fading-65016

37 Harper C. Being more media savvy won't stop the spread of 'fake news' – here's why. The Conversation. 2017 (May 30): Available from: https://theconversation.com/being-more-media-savvy-wont-stop-the-spread-of-fake-news-heres-why-77888?sa=pg1&sq=alternative+facts&sr=5.

38 Australia Department of Education, Australia Department of Industry. Boosting the commercial returns from research. Canberra, ACT; 2014. https://submissions.education.gov.au/Forms/higher-education-research/Documents/Boosting%20Commercial%20Returns%20from%20Research%20%20-%2024102014.pdf.

39 Bradley T. Australia's shifting economy. In: Committee for Economic Development of Australia. Australia's future workforce? Melbourne, Vic: Committee for Economic Development of Australia; 2015. p. 98 – 108. http://www.ceda.com.au/research-and-policy/policy-priorities/workforce.

40 National Innovation & Science Agenda. National Innovation & Science Agenda report: Australian Government; 2015. https://www.innovation.gov.au/page/national-innovation-and-science-agenda-report.

41 OECD Science, Technology and Industry Scoreboard 2015. OECD Publishing. http://www.oecd-ilibrary.org/science-and-technology/oecd-science-technology-and-industry-scoreboard_20725345.

42 Australia Department of Education and Training. Research block grants; 2017. https://www.education.gov.au/research-block-grants.

43 Universitas 21. U21 Ranking of National Higher Education Systems 2017; 2017. http://www.universitas21.com/news/details/245/2017-u21-ranking-of-national-higher-education-systems.

44 Crossley M, Field L. Infographic: how much does Australia spend on science and research? The Conversation. 2016 (June 22): Available from: https://theconversation.com/infographic-how-much-does-australia-spend-on-science-and-research-61094.

45 Universities Australia. The facts on university funding: Universities Australia; 2017. https://www.universitiesaustralia.edu.au/Media-and-Events/submissions-and-reports/The-facts-on-university-funding.

46 Norton A. The cash nexus: how teaching funds research in Australian universities: Grattan Institute; 2015. https://grattan.edu.au/report/the-cash-nexus-how-teaching-funds-research-in-australian-universities/.

47 Australian Government. The higher education reform package. Canberra. ACT: Australian Government; 2017. https://docs.education.gov.au/system/files/doc/other/ed17-0138_-_he_-_glossy_budget_report_acc.pdf.

48 Phillips N. A close look at China's rise. Nature. [Nature Index]. 2017 May 25; 545(7655):S39-S. https://www.nature.com/nature/journal/v545/n7655_supp/full/545S39a.html

49 Patton D. China's spending on R&D rises to 2.07 percent of GDP. Reuters. 2016. http://www.reuters.com/article/us-china-r-d-idUSKBN13G1NG.

50 Ross J. China experts warn of funding shock to research. The Australian. 2017 June 14. Available From: http://www.theaustralian.com.au/higher-education/china-experts-warn-of-funding-shock-to-research/news-story/2ad6b533eae04b2d909dc904f5c45b67

51 Stapleton K. Inside the world's largest higher education boom. The Conversation. 2017 (April 10): Available from: https://theconversation.com/inside-the-worlds-largest-higher-education-boom-74789.

52 Zhang Z, Tobias S. The rise of China: a threat or opportunity for Australian universities? The Conversation. 2015 (November 10): Available from: https://theconversation.com/the-rise-of-china-a-threat-or-opportunity-for-australian-universities-49145.

53 Shanghai Ranking Consultancy. Academic Ranking of World Universities 2016; Available from: http://www.shanghairanking.com.

54 Times Higher Education. World University Rankings 2016-2017; Available from: https://www.timeshigereducation.com/world-university-rankings.

55 QS World University Rankings. QS World University Rankings 2018; Available from: https://www.topuniversities.com/qs-world-university-rankings.

56 National Taiwan University. NTU ranking: Performance ranking of scientific papers for world universities 2016; Available from: http://nturanking.lis.ntu.edu.tw/.

57 U.S. News. Best global universities rankings 2017; Available from: https://www.usnews.com/education/best-global-universities/rankings.

58 Australian Research Council. State of Australian university research 2015-16 : Volume 1 : ERA national report. Canberra, ACT; 2016. http://era2015.arc.gov.au/.

59 Shanghai Ranking Consultancy. Academic Ranking of World Universities 2016; Available from: http://www.shanghairanking.com.

60 Barlow T. Asia 100: Benchmarking University Research in Asia and Oceania; 2016. http://www.barlowadvisory.com/asia-100.html.

61 Queensland Government's Statisticians Office. Projected population, by single year of age (males, females and persons), Queensland, 2011 to 2061. Available from: http://www.qgso.qld.gov.au/products/tables/proj-pop-age-sex-qld/index.php

62 QILT (Quality Indicators for Learning and Teaching). QILT; Available from: https://www.qilt.edu.au/.

63 The student support scale measures satisfaction with a range of services including enrolment/admissions processes, administrative staff/systems, careers/academic/learning advisors, counselling and health services as well as English language support. https://www.qilt.edu.au/about-this-site/student-experience.

64 Retention is calculated by tracking a student's enrolment from one year to the next using their student ID. If the student re-enrols at the University in the second year they are counted as 'retained' even if they change programs.

65 Department of Education and Training. Selected Higher Education Statistics – 2015 Student Data. Canberra ACT: Australian Government; 2016. Appendix 4.7: Retention Rate for domestic commencing bachelor students by State and Higher Education Institution, 2001-2014. Available from: https://www.education.gov.au/selected-higher-education-statistics-2015-student-data

66 Earnings before interest, tax, depreciation and amortisation

67 Australia Department of Education and Training. Report of the Review of the Demand Driven Funding System; 2014. https://www.education.gov.au/report-review-demand-driven-funding-system.

68 Australia Department of Education and Training. Higher Education Reform package: Australia Department of Education and Training; 2017. https://docs.education.gov.au/node/43521.

69 Australia Department of Education Employment and Workplace Relations. Higher education base funding review: final report [Lomax-Smith Review]. Canberra, ACT; 2011. http://hdl.voced.edu.au/10707/191943.

70 Australian Government. The higher education reform package. Canberra. ACT: Australian Government; 2017. https://docs.education.gov.au/system/files/doc/other/ed17-0138_-_he_-_glossy_budget_report_acc.pdf.

71 Australian Bureau of Statistics. International Trade in Goods and Services, Australia, Dec 2016; ABS publication 5368.0. Available From: http://www.abs.gov.au/AUSSTATS/abs@.nsf/DetailsPage/5368.0Dec%202016?OpenDocument

72 In 2015 only 2.6% of domestic students starting a bachelor's degree in 2015 came from outside Queensland or North Eastern New South Wales.

73 Ross J. Research Unis Rely on Chinese Fees. The Australian. 2017 June 21. Available From: http://www.theaustralian.com.au/higher-education/research-unis-rely-on-chinese-fees/news-story/ba330001d697fa9c54325d8c824c4569

74 Ross J. China experts warn of funding shock to research. The Australian. 2017 June 14. Available From: http://www.theaustralian.com.au/higher-education/china-experts-warn-of-funding-shock-to-research/news-story/2ad6b533eae04b2d909dc904f5c45b67

75 The 2016 National Taiwan University Performance Ranking of Scientific Papers placed UQ as 3rd in the world for Environment/Ecology, 7th in the world for Agriculture, 14th in the world for Civil Engineering and 19th in the world for Plant Science.

76 Australian Research Council. State of Australian university research 2015-16 : Volume 1 : ERA national report. Canberra, ACT; 2016. http://era2015.arc.gov.au/.

77 Barlow T. Asia 100: Benchmarking University Research in Asia and Oceania; 2016. http://www.barlowadvisory.com/asia-100.html.

78 University of Sydney. 2016-20 strategic plan. Sydney, NSW: University of Sydney; 2016. http://sydney.edu.au/dam/intranet/documents/strategy-and-planning/strategic-plan-2016-20.pdf.

79 UQ defines industry-sourced income as including partner organisation cash support for ARC Linkage Projects, industry funding of Cooperative Research Centres, industry research contracts (national and international) and philanthropic support.

80 Australian Government. 2016 National Research Infrastructure Roadmap. Canberra, ACT; 2017. https://docs.education.gov.au/system/files/doc/other/ed16-0269_national_research_infrastructure_roadmap_report_internals_acc.pdf.

81 SAGE. Science in Australia Gender Equity. SAGE; Available from: https://www.sciencegenderequity.org.au/.

82 Patton D. China's spending on R&D rises to 2.07 percent of GDP. Reuters. 2016. http://www.reuters.com/article/us-china-r-d-idUSKBN13G1NG.

83 Department of Education and Training. Selected Higher Education Statistics – 2015 Student Data. Canberra ACT: Australian Government; 2016. Appendix 5.4: Equity - Participation Rates for Domestic Students at Table A and B Institutions(a), 2009 to 2015. Available from: https://www.education.gov.au/selected-higher-education-statistics-2015-student-data

84 Department of Education and Training. Selected Higher Education Statistics – 2015 Student Data. Canberra ACT: Australian Government; 2016. Appendix 5.8: Equity - Participation Rates for Domestic Students at Table A and B Institutions(a), 2009 to 2015. Available from: https://www.education.gov.au/selected-higher-education-statistics-2015-student-data

85 Department of Education and Training. Selected Higher Education Statistics – 2015 Student Data. Canberra ACT: Australian Government; 2016. Appendix 5.4: Equity - Participation Rates for Domestic Students at Table A and B Institutions(a), 2009 to 2015. Available from: https://www.education.gov.au/selected-higher-education-statistics-2015-student-data