Abstract

The HERDSA 2014 sub-theme ‘embracing challenges and opportunities for higher education in a globalised world’ seeks to explore the likely challenges and opportunities for Higher Education in a globalised world and how to meet these creatively and positively and make good use of opportunities offered. This paper examines the triggers which are impacting on the 1000 year old model of the campus and what transformations will need to take place in the 21stC. It explores factors impacting on the design, planning and sustainability of university campuses, the unprecedented competition, the impact of the creative economy, cross-disciplinarity and translational research, the emergence of the flipped classroom and campus and the drive to transform the academic workplace. It concludes with the notion of a pixellated campus which can map against the virtual and mobile world we are now living in.

Keywords: Campus, transformation, mobility, internationalisation, globalisation, creative, flipped classroom, academic workplace.

The context of the transformation of university campuses in a global market

The sub-theme ‘embracing challenges and opportunities for higher education in a globalized world’ is very timely emphasised by the siting of this HERDSA Conference in Hong Kong. The key questions addressed in this paper include the sub-themes (a) what are the likely challenges and opportunities for Higher Education in a globalized world, and (b) how to meet the challenges creatively and positively and how to make good use of opportunities offered?

One way of putting this issue on context is via a 2012 paper by the Dean of the Australian Graduate School of Management (AGSM) – who was formerly Dean of the University of Sydney Business School (USBS) and, prior to that, the Director of the USA Study Centre at the University of Sydney. Prof Garret notes that:

‘The internationalisation of higher education has been one of Australia’s best success stories in the past two decades. Today, higher education exports (Australian institutions “exporting” the service of educating students from other countries) are Australia’s third largest export industry after only
iron ore and coal—valued at a high of $18 billion in 2009. But that success story today is under threat in at least three ways’ (Garrett & Gallaher, 2012).

The AGSM and USBS both compete for students and partners on a global scale and in particular with SE and East Asia. There are three trajectories for the internationalisation of Higher Education that Garrett & Gallagher (2012) examine include (1) a ‘lateral’ threat from universities taking market share from Australia in a post GFC (Global Financial Crisis) climate, with a high Australia dollar threatening Australia’s international student supply; (2) a threat from ‘above’ which sees highly branded and (usually) aggressive USA universities setting up branch campuses through this region in a form of global multinational universities and; (3) a threat from ‘below’ through online offerings via the MOOC (Massive Online Open Courseware) model by once again global players such as Coursera, Udacity and others.

The role of globalisation has a major impact on international student movement and of course on the nature and importance of campus as a place of learning as illustrated in Figure 1. Australia has been very successful in attracting and retaining international students as can be seen in Figure 2. It also has a significantly high level of international students versus local or domestic students, which has been of some concern over the past decade (see Figure 3).

But this concern is now diminishing as national university systems seek to offer students an offshore HE experience to expose them to an international and global learning process and alternative cultures. This is now working both ways with many of Australia’s international students coming from, say, the USA and Finland to complete one or two semesters of their degrees in Australia, and vice versa.

In addition to these developments in international student competition there is significant competitive pressure from global Higher Education (HE) rankings to
improve research standings with – in Australia - the University of Melbourne being a standout at no 35 Globally on some scales. With Australia recently losing one university from the Top 100 (Monash) with just Melbourne now remaining, the just announced Times HES rankings states that in relation to Great Britain:

“If other parts of the UK are to improve their performance, we need clearer incentives to collaborate, a more sensible migration regime and a careful distribution of the forthcoming quality-related and European Union research spending,” said Nick Hillman, director of the Higher Education Policy Institute” (Times HES, 2014)

Factors Impacting on the Design, Planning and Sustainability of University Campuses

Unprecedented Competition

Clearly funding is critical to university success internationally with collaboration and targeted strategies also vital. This critical stage has come about – in association with the GFC - largely through reduced government funding which has the HE sector seeking funds elsewhere eg joint ventures, international students. We now see a wide range of collaborations with industry partners, overseas HE institutions, Government agencies and others. There is significant competition in research funding bids Australian Research Council (ARC) and the National Health & Medical Research Council (NH&MRC) as growth in these funds has tightened.

As these university funding models evolve with a decrease in the % of direct government funding, HE institutions are seeking greater commercialisation of intellectual property. Australia Performs around the average of OECD Countries – see Figure 4. A significant contribution to this effort is taking the form of emerging translational research centres to model a triple helix research approach and greater entrepreneurial activities through technology and science parks supporting new startups and incubator spaces.

Designs have responded with often iconic signature buildings and gateways emerging, with collocated disciplines in BioHubs and other collaborative research centres multiplying across the nation and indeed the globe. As noted hereunder there is considerable attention being given to thirdspaces and academic and student accommodation to attract and retain staff and students.
Funding bodies and industry are also seeking greater specialisation from HE. This is resulting in HE moving more towards niche portfolios and away from traditional comprehensive offers – see Figure 5. There are now differences emerging within sub sectors and within each of those sectors eg Go8 (Group of Eight), ATN (Australian Technology Network), Innovative Research and Regional Universities (Universities Australia, 2014). Competitive advantage is now critical through brand differentiation.

There is also competition regarding ATAR (Australian Tertiary Admission Ranking) scores and the brand of education being offered. This has increased growth in digital pedagogies being used in New Generation Learning and Research Environments. Tightening funding and the emerging ‘class’ of Executive Deans are supporting a more businesslike Faculty structure with new Research Institutes being designed across disciplines. Increasingly universities are being ranked through criteria around knowledge transfer and patents. There is a strong focus on community, industry and international HE partnerships. Also there is a narrower focus by the Australian Government on applied research. Campus designs are responding with needs for 24/7 collaboration across time zones eg video-conference and global studios. There is also an increased interest on global brands and alliances and global branded designs. Exemplars include South Australian Health and Medical Research Institute (SAHMRI); Woods Bagot Sydney (part of a network of 16 global studios); and global Apple Stores.

**The Creative Economy**

Florida (2002) argues we have entered the creative age having in the past two decades moved through the information, digital and knowledge economies. The latter three are now ubiquitous, and these tools enhance our ability to create new knowledge and processes in a rapidly expanding research and research-led teaching higher education sector.

Innovative practices are now the norm as pedagogies and research methods use these web-enabled tools to forge cross-disciplinary research and learning. MOOCs (Massive Online Open Courseware) are still in the alpha/beta testing phases and are yet to be fully monetised. That said, so-called course badges are being used to accredit learning and of course the data obtained through these web-enabled digital subjects enhances the power of learning analytics, the potential for crowd learning and additional opportunities provided for digital scholarship.

At the same time - in support of these virtual modalities - there are complementary physical face-to-face environments such as blended or seamless learning, geo- and place- based learning, learning through gaming, a significant return to a ‘maker’ hands-on culture, coupled with a growing citizen inquiry modality (NMC, 2013).
Design responses include agile, flexible and adaptable spaces plus a wide range of connected spaces and activities. All are highly technology enabled and transparent, with views to passers by and with excellent access for industry partners.

These innovative practices are coupled with entrepreneurial learning and research, with associated pedagogies including teamwork, collaboration with industry partners, creating, designing, making and testing all using TEAL (2014) and CDIO (2014) learning spaces.

These approaches foster seamless learning embodying hybrid and blended learning which include simultaneous face-to-face and online learning. The key question here is to what extent is the traditional campus likely to remain the focus, or will there be more satellite hubs created in hotels (Starwood hotels, 2014) global hub networks (Global Hubs, 2014) and other emerging satellites. There is a strong trend amongst non-Group of Eight (Go8) universities in Australia to develop international branch campuses (IBC’s) as illustrated in Figure 6.

**Cross Disciplinarity and Translational Research**

This is emerging as one of the major trends in research and increasingly in teaching as new knowledge crosses disciplinary boundaries. It is resulting in extensive growth of collaborative research coupled with research-led teaching. Students are taking double degrees – often through blended and hybrid teaching - and there is an increasing trend towards more generic and broad undergraduate programs followed by more discipline specific master’s courses (e.g. the Melbourne Model). Research funding continues to increase for multi disciplinary cooperative research centres whilst bio hubs and industry partnered translational research centres are also thriving globally. The design response is once again visibility and transparency, designing for shared use of services, knowledge partnerships and community engagement through galleries and display centres, with secure layering and zoning of facilities from the ground as a public zone, up through privileged/invited areas to private zones for specialised and secure activities. A recently opened world-class exemplar is the abovementioned South Australian Health and Medical Research Institute (SAHMRI).

There are also emerging new sciences and knowledge industries such as nanotechnology and biomechanics across disciplinary boundaries, including rapid growth in cancer and other health research. This is resulting in co-location of disciplines with a blend of hybrid labs and studios. Work related learning is also becoming increasingly popular. A strengthening in community engagement in university mission statements is seeing stronger efforts to increase town & gown relations. This is illustrated by an increased focus on knowledge transfer, a renewed concentration (especially with the new Australian Federal Government) on applied
research and the emergence of distributed e-learning hubs in response to greater online offerings in courses. The design response here is seeing more shared use facilities, some change of land use and zonings with resultant impact on residential contexts, and a need to consider urban design, landscape and traffic management for the surrounding community. There is also an increased importance in brand building with buildings becoming a key part of image, identity and offering more visible campus gateways.

**The Flipped Classroom & Campus**

Hybrid/blended environments are emerging with multiple (increasingly mobile) technologies assisting innovative pedagogical approaches. On campus time is increasingly used primarily for ACTIVE learning (not the traditional lecture theatre based passive receipt of knowledge). This means there is a significant use of online delivery of course content which is accessed outside of face-to-face class time but is work-shopped when in class on campus. The design response here includes the aforementioned TEAL and CDIO spaces, a campus wide network of distributed learning hubs and increased informal student learning thirddspaces. These are often in the form of distributed precinct and faculty learning commons and are all designed to optimise the on-campus student experience.

The future of lecture theatres and computer labs is also a highly vexed issue. Given the seeming reluctance by the current ‘baby boomer’ generation of academics to relinquish this modality there have emerged many examples of ALC (Active Learning Classrooms). These have been accompanied by quite rigorous evaluations to establish pedagogical effectiveness (Lee et al, 2011). TEAL models are also on the increase but Universities are still trying to establish a financial business model which can sustainably replace the mass lecture model so lecture theatres will be around for some time yet. With wireless mobile broadband, computer labs are now only needed for highly specialised purposes eg limited license software and high end computing power.

As the TEAL and CDIO models are still in an experimental stage in many universities and need significant evaluation studies before up scaling these are growing at a modest pace. Designs need to support significant use of interactive and video technologies, provide a range of spaces from individual quiet workspaces through small collaborative, discussion suites up to larger learning commons. The student experience and graduate attributes are also very much in focus. Much greater use of natural light and access to the outdoors is also essential

Regarding MOOCs (Massive Online Open Courseware), there is already an emerging trend towards more place-based experiences with collaborative and distributed campus wide networks of learning hubs now emerging on most university campuses. Coursera is experimenting with distributed learning hubs and ‘Lobby Learning’ is emerging as distributed learning hub in hotel lobby lounges (Starwood Hotels, 2014 and Hub Australia, 2014).

Moreover, on-campus academic libraries are rapidly converting to networks of a spoke and hub typology, with centralised and distributed learning commons seeing books making way for people with some opting for automated book storage and
retrieval to create additional spaces for students. They are effectively being re-engineering into cultural centres where campus social capital can expand (Fisher, 2001). There is an increased need for technology training and experimentation in interactive Web tools. A wide range of experimental learning settings are being trialled, including distributed, although there is little evaluation to date. Libraries form the home base for many international students who prefer the territoriality and amenity of the campus to the city proper. From a design perspective some of these spaces are being modelled on airport executive lounges with increased availability of food and beverage and 24/7 access in part to support the 24/7 globalisation of access online through videoconference and other such tools.

**The 21stC Academic Workplace**

Academic workplace pedagogies have been slow to change in universities over decades (possibly due to the legacy of the ageing baby boomer generation who may well be classed as digital immigrants (Prensky, 2005)). Studies have shown that there is a need for disciplinary-specific pedagogical and spatial models and there is an increased interest in this area in part because of the impact of technology but also because of the overhead cost of operating underutilised spaces (Harrison & Cairns, 2010).

Analytical findings indicate academic staff are very mobile and are increasingly occupying what are known as ‘third spaces’ (Fisher, 2005). Specific sets of staff activities are dependent on the balance and extent of teaching, research and also subject discipline. There is an increased casualisation of the workforce which is also having an impact on space usage. Designs are responding to an increased focus on the staff experience eg access to food and beverage (informal meetings) and lifestyle on campus together with a desire for more serendipitous collaboration. There is an increased need for videoconference meeting spaces and an increased array of workplace designs. Some argue that now the whole campus is an academic workplace.

A results-based working environment (ROWE) is epitomised not by ‘where is everybody’ but ‘is the work getting done’? There is a much greater use of a range of third spaces, including home, cafes, hotel lobbies and so on. Measurement of space usage becomes more complex. Changing workplace pedagogies will require a significant rethink of the nature of the academic office. Activity-based working (ABW) is rapidly emerging in the commercial sector but is yet to impact significantly on the academic workplace with the notable exceptions including some Science, Business and Architecture Faculties.
What is evolving out of these trends is the idea of communities of learners being accommodated in learning hubs, such as biomedical, bioengineering, cancer research and other hubs. The hybrid nature of learning and research can be understood and illustrated in a variety of models, but perhaps the best approach is that illustrated in which synchronous, asynchronous, local and remote learning forms are linked in both time and space (Mitchell, 2005) as illustrated in Figure 7. Virtual communities are forming, and dissolving, rapidly.

But are these virtual communities emerging at the expense of campus-based communities? And are they as sustainable? To find out the authors carried out a study at the University of Melbourne using social network analysis (SNA). SNA can be applied within Faculties and Schools or applied across the complete campus in the context of cross-disciplinary research and to an increasing extent undergraduate teaching and learning as cross disciplinary studies emerge.

Measuring performance results over three years for research grants won, refereed journal articles, refereed conference papers, books and book chapters gained a visual insight as to the clusters of collaboration efforts in both virtual and physical terms.

These links between departments and faculties showcased the ‘social construction of knowledge’ and ‘communities of practice’, based around asynchronous and synchronous modalities in time and space.

The ‘new production of knowledge’ draws on social capital – networks of researchers – which in turn are linked to Government research priorities. It also argues for another examination of the idea of cluster theory but on campus rather than on an independent research or technology park (Gibbons et al.,1994). But what might such a clustering of activities look like? Instead of dispersing activities in a random fashion across campus we could look at a number of factors which might suggest improved key performance indicators such as an improvement in serendipitous interaction, critical mass, cross disciplinary interaction, clustered (one stop) shop fronts for student services, multi-media development, retail, professional development, flexible/collaborative learning centres, post graduate study space (coursework), casual surveillance 24/7, and industry and alumni resources and facilities.
Such a concept is evolving at the University of Pennsylvania which is organising itself virtually around campus hubs and communities, and in the physical campus around a number of centres including a technology hub and a university square (Penn State, 2014).

Such a network of hubs is now emerging over the University of Melbourne’s vast campus. Instead of 14 or so Branch libraries hidden away in schools offering reduced hours of service through lack of critical mass, these now form the basis of a network of five or six vibrant collaborative, cross-disciplinary hubs to revitalise the campus. These models are really a 21stC evolution of the learning commons which proliferated in the 1990’s throughout the worlds’ universities but were restricted to libraries. They are now reinvigorated through the increased internationalism of the HE sector providing a place to ‘meet and greet’ for all campus users.

Conclusions

The 21stC campus is undergoing far-reaching changes. It is no longer sustainable or viable for these campuses to remain as designed in the 19th and 20th centuries as our global HE sector sees major mobility in both staff, students and researchers. The increasing maze of course offerings and range of virtual and physical hybrid and blended pedagogical offerings, coupled with the increasing collocation and collaboration between research stakeholders, has heralded significant change already at the periphery of campuses.

It is now time to re-engineer the whole campus to transform the physical space to work in conjunction with the virtual and to support the mobility of the contemporary student, teacher and researcher.

Although space and place were covered to a degree in last year’s conference in Auckland, it is becoming increasingly apparent that the virtual and physical evolution in the 21stC must become a core element of future annual HERDSA deliberations.

References

CDIO - Conceive, Design, Implement and Operate www.cdio.org accessed 2014 03 07


Harrison, A. Cairns, A. (2008). The changing academic workplace. Published in 2008 as part of ‘Effective Spaces for Working in Higher and Further Education’, a research study undertaken by DEGW on behalf of the University of Strathclyde and funded by the Scottish Funding Council. Glasgow, University of Strathclyde and funded by the Scottish Funding Council. 59pp.


