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## Library Learning Spaces in the Digital Age

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# LIBRARY LEARNING SPACES IN THE DIGITAL AGE

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### **Abstract**

Students describe the Library as being central to their learning, offering focus and inspiration, enabling access to information and technologies, and collaboration with peers. Deakin University Library's building redevelopment program has been integral to the Library's re-imagined value proposition for students learning in the digital age. The introduction of new generation library and learning spaces strengthens the University's offer to students for a brilliant education where you are and where you want to go through premium cloud and located learning experiences that are personal, engaging and relevant.

The Library's building projects are distinctive in terms of location and the built environment, as well as the characteristics of the university campus communities. Each progressive project has brought new aspirations and challenges. Through joint research with Deakin University's School of Architecture and Built Environment, the Library has developed a quality framework for planning and assessing library and learning spaces.

This paper will discuss the research findings to date on the quality framework and the need to continually review and assess indicators of quality in a highly dynamic digital environment. The Library's experiences in introducing high-end multimedia provide some insights into planning for and delivering enduring value.

The next steps in exploring the question of how library spaces assist students in achieving their learning goals are introduced.

### **Keywords:**

Library Buildings, Multimedia, Digital Media, Learning Spaces, Quality Framework, Post Occupancy Evaluation, Assessment

## Background

Deakin University, Australia, is celebrating its 40<sup>th</sup> Anniversary this year. The Library was one of the first buildings to take shape in 1974 on this new, regional campus located on the Victorian western plains. In common with all great universities, first the Library was created, around which a community of scholars was formed. In 2014, Deakin University now has four campuses stretching from urban Melbourne down the bay to Geelong and Warrnambool; a student population close to 45,000; and a comprehensive teaching and research profile.

A vibrant campus life and creative 'cloud' or online learning environments are on offer for students undertaking studies at a university that is driving the digital frontier. Deakin University Library's network includes four campus libraries, a Prime Ministerial Library named after Alfred Deakin, and partnerships with hospital libraries, health centres and technical and further education colleges enabling access to resources and services through distributed learning centres.

Globally, higher education is experiencing turbulent times and Australia is no different. Distance and online education have been popular modes of study in a country with vast distances between population centres, and a national economy that has largely grown through mining and agriculture. Deakin University, for example, has over 25% students studying off campus or in the 'cloud'. It recognises the need for work-ready graduates and curricula that address competencies necessary for global citizens in a digital economy. And in 2013, Deakin produced its first MOOC, *Humanitarian Aid*, on its own platform, *DeakinConnect*. All of these are familiar topics and trends. Universities are identifying their own strategic responses to competition from for-profits and the commercial sector, the breaking down of traditional student markets no longer constrained by geography and time, and less surety of government funding.

At the forefront of any university strategic agenda is the student experience. Many institutions continue to recognise the value students place on an enriching campus life while living a connected, online world. The Council of Australian University Librarians (CAUL) gathered data from 2006 to 2011 demonstrating that the Australian higher education sector had been investing heavily in its library buildings and new learning commons. Twenty-six universities reported total expenditure on library building projects to the value of at least A\$ 448 million dollars (Garner, Black & Dewe, 2011, p.4). The average project cost was around A\$ 6 million (Garner et al, 2011) reflecting refurbishments primarily of buildings constructed in the 1950s through to the 1980s. There are advantages in being a young nation.

Library building projects have continued in the years since this data was collected, including two major projects at Deakin. However, Australia is now entering a period of financial stringency with government policy requiring efficiencies from all sectors, including higher education. It is critical that capital investments have demonstrable value and positive outcomes for students and the communities in which universities are located. Such investments can also reinforce the enduring place of the library on the university campus.

## Assessing library and learning spaces

Libraries have a long history of gathering data for the purposes of continuous improvement and assessing performance. University data warehouses store an expanding array of metrics that are selected to better inform institutions of outcomes for students, for research, and for the bottom line. When approaching any assessment activity it is all about the right questions and the most appropriate methodology that are fit for purpose within the context of different stakeholder expectations and institutional aspirations.

Over the last few years interest has heightened in metrics and methods that go beyond financial performance indicators, project management review, and descriptions of architectural features. Student-centric indicators of value, and evidence that investment in new generation learning spaces have enabled students to achieve their learning goals, have become the primary questions. Capital works are costly. University Councils or Boards of Trustees are interested in how investments are contributing to the university's strategic imperatives and competitiveness.

Capital project briefs generally require an evaluation of post-project benefits, which are increasingly looking to qualitative as well as quantitative assessments of outcomes.

When to plan for assessment and who to involve are key questions. This may in part depend upon where the projects fit with the institution's progress towards a shared vision for campus learning spaces and how these interconnect. Library projects may be leading campus developments, providing innovative and engaging environments, blending the physical and the online spaces, and contributing to a changed campus environment that enriches learning. Being a leading influence brings opportunities as well as accountabilities.

At Deakin, the cycle of library building works and funding started with an external review of the University's teaching and learning performance, and an acknowledgement that

"The Library is in a good position to make a strong contribution to a collaborative strategic leap in the design of learning environments if the University chooses to go down that path." (PhillipsKPA, 2007)

Deakin University Library has experienced eight years of iterative planning, development and assessment of library and learning spaces across four campuses. The Library has developed multiple business cases, followed by post project benefits analysis, aligning with the University's strategic imperatives for teaching, learning and research. Assessment methodologies commonly used by libraries have been administered, including observations, library client satisfaction surveys and focus groups. The Library has also distributed pop polls and monitored student feedback leveraging the ubiquitous nature of social media. Close affiliation with the University's Student Union has further enabled the Library to listen to the student voice and appreciate in greater depth student responses to the ongoing changes to their learning environment.

The University, over time, has advanced its approach to post implementation review processes for capital projects. A project's success has usually been assessed on the basis of;

- delivering the architectural features and design according to the scope of the project plan
- meeting the project timelines as scheduled
- achieving acceptable variances to project costs

However, there has developed a greater emphasis on delivering the more qualitative benefits as outlined in the project brief; for example, providing a flexible fit for purpose learning environment. The lessons learned are also more fully documented and reviewed. These steps have assisted the Library when it is striving to achieve more and more with each project. At the same time, the lack of standards or criteria for evaluating the quality of academic library spaces has increasingly become an issue. As each successive project brief described architectural and space planning requirements that have become synonymous with 'flexible learning spaces', the Library became interested in determining on what basis it could claim to have met or exceeded standards or expectations. What are the criteria of quality and indicators being applied as library managers continue to develop plans, learn from others, and assess their newly refurbished or newly built library and learning spaces?

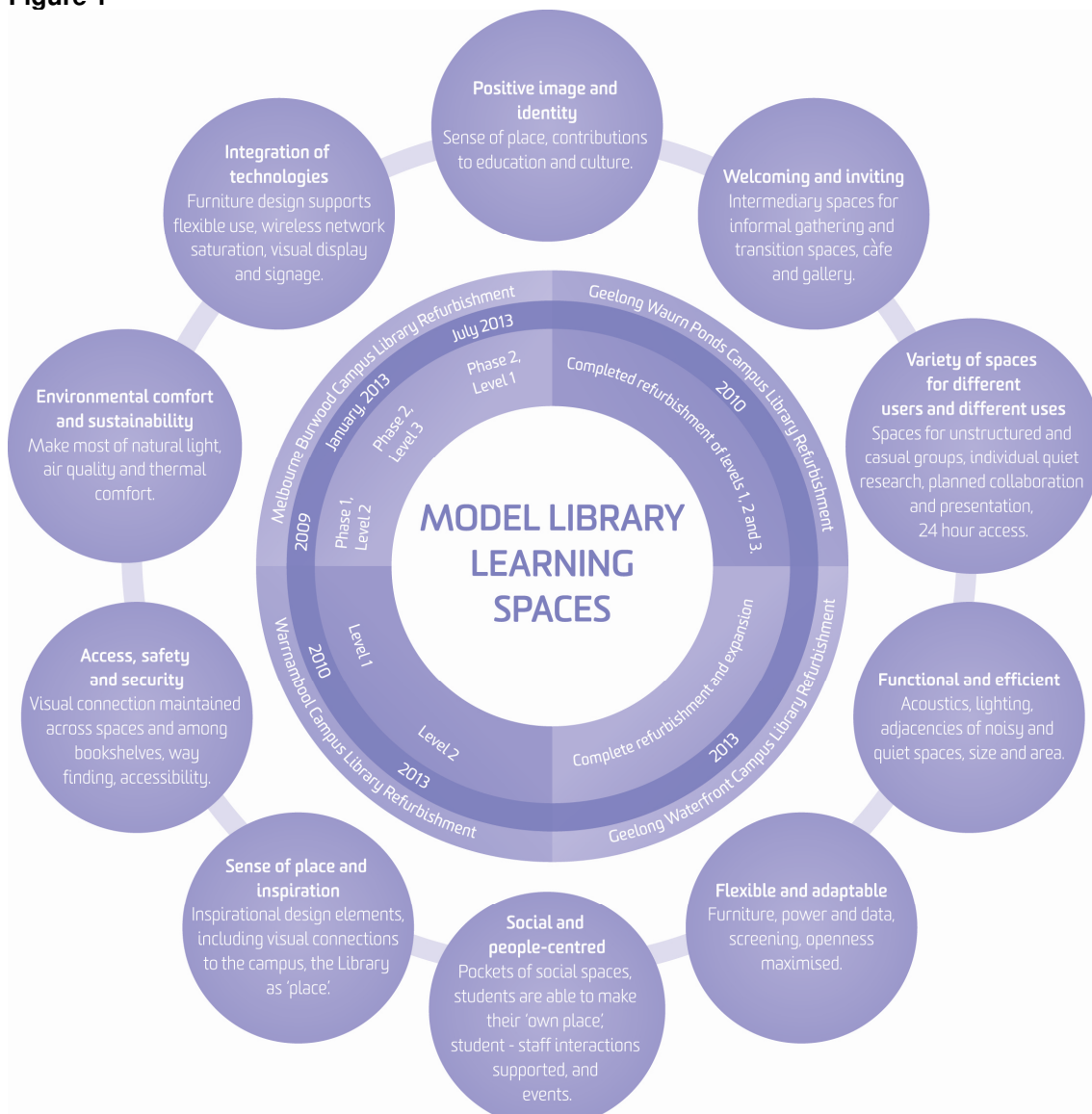
### **Quality Framework for Library Spaces**

In 2011/12, the Library undertook a joint research project with the School of Architecture and Building (now the School of Architecture and Built Environment) to establish a setting for the evaluation of academic library spaces, built upon a set of *Criteria of Quality (CoQ)* and *Quality Indicators (QI)*. The Library had completed three projects; the total refurbishment of its Geelong Waurin Ponds Campus Library, Phase 1 redevelopment of the Melbourne Burwood Campus Library introducing new generation learning spaces, and a smaller project at its Warrnambool Campus introducing a new learning space. As can be seen in Figure 1 below, further projects were in the planning. Establishing *Criteria of Quality* and *Quality Indicators* would assist in reviewing the project briefs and in developing and generally strengthening the case for continuing capital investment.

The 10 CoQ are illustrated in Figure 1 below, which also provides a representation of the iterative library building development happening at Deakin University. The CoQ have been published and presented by Abbasi, Elkadi, Horn and Owen at a number of conferences in the United States (Association of Research Libraries. Library Assessment Conference, 2012) and Australia (Measuring and Improving Library Value, 2012 & ALIA 2012: Discovery) and have been applied at different points in Deakin University Library's building program.

However, there is more work to be done in exploring the question of 'how do library spaces assist students in achieving their learning goals'. The Library's value proposition to the University has always been focussed on student learning and the student experience, providing spaces that can act as change agents. The introduction of new generation library and learning spaces was taking place at a time when the benefits of learning outside of the classroom, informal peer-to-peer interactions and social networking opportunities were being recognised by the university as critical to improving learning outcomes. This need was being incorporated into university plans. The CoQ has provided a valuable framework. The TEALS project developed and tested tools to assess the student experience, including 1) an online survey of students' learning experiences, 2) an observational study list, and 3) a list of questions for staff focus group discussions (Abbasi, Elkadi, Horn & Owen, 2012, October). This paper will conclude with an introduction to how the Library will be advancing this research in 2014 with evaluative methods drawing from the social and behavioural sciences.

**Figure 1**



*CoQ applied to Deakin University Library building program*

One of the lessons learned throughout the development and application for Criteria of Quality for academic library and learning spaces, was the need for continuous improvement of the framework itself, particularly given the rapid pace of change. The most challenging criteria to pin down was *CoQ 10 Integration of Technologies*. A Pre-Conference Workshop entitled *Evaluating space to transform a library* was held in conjunction with the *Measuring and Improving Library Value* Conference in Sydney 2012. This provided an opportunity for Horn and Elkadi to review the indicators of this CoQ with representatives from ten universities across Australia. The outcome appears in Table 1 below.

**Table 1**

| <b>CoQ 10 Integration of Technologies</b> |   |
|---|---|
| 10.1                                      | Furniture design supports students' flexible use of technologies.   |
| 10.2                                      | Spaces allow for students' quick access to information.   |
| 10.3                                      | Teaching and instructional spaces promote innovative ways of learning.  |
| 10.4                                      | Wireless network saturation achieved in all learning spaces and high speed networks support student engagement with information and with peers. |
| 10.5                                      | Visual display and signage communicate and showcase information media, research and student works.  |
| 10.6                                      | Web accessibility and inclusive practice principles influence choice in technologies and supporting services.                                   |

*Deakin University Library, CoQ 10 Integration of Technologies*

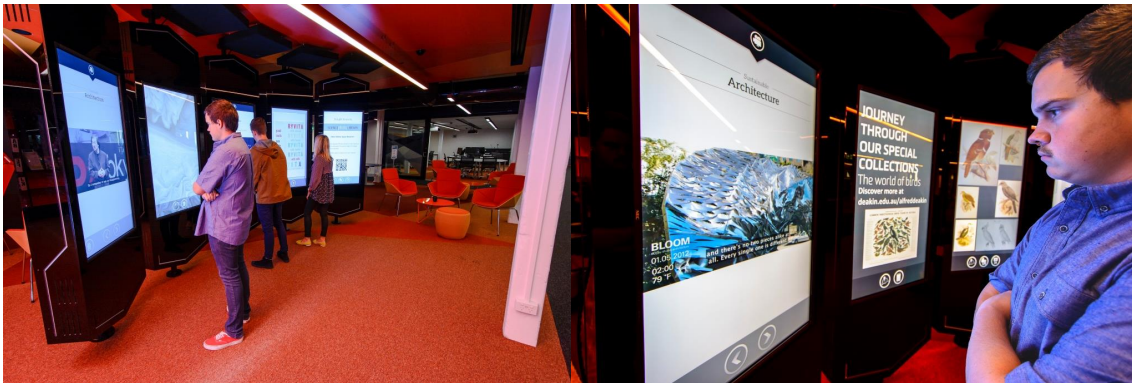
And yet within 6 months of confirming these indicators, the Library had significantly changed its project brief for its Waterfront Campus Library. In responding to a more limited footprint and a new vision of a 'Library for the Digital Age', the visual impact and interactivity of multimedia installations became critical to the scope and were designed to provide the necessary link between physical spaces and the media rich electronic resources the Library offers.

The next section of this paper reports on Deakin University Library's experiences in introducing interactive multimedia technologies and the reflections and the learnings that are so necessary for informing future development phases.

### **Deakin Waterfront Campus Library. Interactive Multimedia Project, *The Verge***

*The Verge*, an exciting and innovative series of installations located at the Waterfront Campus Library, has been designed to connect students to the world of knowledge, and to facilitate their learning through the latest interactive technologies (Figure 2). The digital library is not constrained by physical space. As student populations grow, their research and learning needs can be accommodated by expanding collections of high-quality digital resources and media, showcased on large, digital interactive screens strategically positioned to attract and optimise student engagement.

**Figure 2**



*The Verge, Geelong Waterfront Campus Library, Deakin University*

The scope of this project within a project was to conceptualise, design and implement multiple digital screen installations welcoming students to their refurbished and extended campus library. Phase 1 of the project has recently been implemented.

The Library has captured the experiences of the multimedia team project members through a separate evaluation conducted by a research survey. This approach recognises the critical importance of capturing lessons learned before progressing to the next phase of customised development. The key challenges encountered and critical issues are outlined below, including quotes from project members. Student engagement will be captured later in 2014.

#### From vision to reality: engaging the right people with the right expertise at the right time

The interactive multimedia project was incorporated into a major university site redevelopment. This presented a number of challenges, frustrations and risks in the initial stages of business case and project development. Resourcing and timelines were set in relation to the overarching site project, lacking the tolerances required when dealing with the uncertainties that cutting edge technologies bring. Innovations requiring the alignment of technical development with industrial design elements and fabrication requirements require constant oversight and negotiation with architects, building foremen, as well as internal and contracted IT and AV services.

A significant issue arose in ensuring the right stakeholders to help conceptualise the project were at the table, including the necessary specialist IT and audio visual expertise. From within the University, expertise on the design of high-end multimedia installations, and ideas about the latest and appropriate technological solutions to achieve the vision, was limited. It was challenging to ensure non-Library colleagues developed a deeper understanding of outcomes to be realised by the project beyond the notion of a digital signage system.

Identifying and engaging the right expertise is an essential project initiation step and can take longer than anticipated. The Library engaged external multimedia consultants to assist in conceptualising and documenting the Library's "big idea". The consultants had experience with the museum sector and other cultural agencies in developing content and technical solutions for similar installations. A high-level creative brief was developed defining the student experience and a continuum of technical solutions presented to offer the best fit with budget, timelines and expertise.

A two phase project was considered the most appropriate. Phase 1 involved the rollout and implementation of a commercial software solution and hardware specified to deliver high quality visual resolution and touch screen capabilities. Planning for Phase 2 will shortly get underway and involves the creation of more sophisticated multi-touch displays and interactive capabilities, including gamification, to promote active learning.

### Harnessing innovation and developing team competencies

The project harnessed ideas from a wide variety of industries, organisations and disciplines from around the globe. The team was looking for exemplars of innovation in interactive technologies, learning design, cultural agencies, and the digital humanities and the creative arts.

“I looked to other libraries, advertisers, agencies, galleries and museums .... I also looked to market leaders in interactive technologies...”

Grouping outcomes into phases was important in allowing in-house learning and development to occur. It was important that when team members were “reaching for the stars” that this was tempered by what was feasible, which in turn required good project oversight. Celebration of the smaller achievements is just as essential for innovative projects as reporting milestones.

The team was looking for more than creativity and were keen to find projects that clearly had a post-project roadmap beyond the initial funding start up. Large scale and innovative installations across the education and cultural sector were visited, including those located at the State Library of Victoria, RMIT University, ACMI (Australian Centre for the Moving Image) and QUT (Queensland University of Technology). The team followed libraries and industry leaders from around the globe, exploring innovative applications of cutting-edge technologies and finding inspiration in contemporary library redevelopments, particularly from James B. Hunt Jr. Library at North Carolina State University (NCSU) and Taylor Family Digital Library at the University of Calgary.

The responsibility of delivering engaging experiences beyond the first flush of success was felt by the team.

Looking to the future and learning from technological innovations that push boundaries encourages inspiration and opens up new possibilities and new ways of thinking. Transferring new knowledge to achieving improvements in the Library’s web presence and digital footprint was identified as a benefit of the new competencies gained through project involvement.

### Setting up the team; bringing together the right stakeholders

Employing a proven approach to project management helps to maximise the potential for project success. This project was planned, organised and controlled using a PRINCE2 project management approach, in which roles and responsibilities are well documented. However, the success of breakthrough or cutting-edge innovative projects involves the more difficult task of identifying and sourcing the skills, knowledge, experience and personal characteristics needed throughout each stage of the project, and into the future, to ensure sustainability beyond the development phase. This is particularly demanding as projects also need to be flexible and adapt as a project evolves.

Such multidimensional projects require a wide range of skills. Contributions and commitment from architects, industrial designers, IT and specialist audio visual consultants and contractors, learning and graphic designers, as well as content specialists, need to be negotiated. The ability to lead innovative teams is essential.

Feedback from the core eight-member team highlighted that a key factor contributing to the project’s success was the strength of the team and approach of team members.

“Each member of the team has unique skill set that has enabled the outcomes of Phase 1 to be better than envisaged at the beginning of the project.”

“Having a strong team like we do, we were able to encourage and push ideas to their limits in terms of Phase 1. .... people who were willing to try new things and I believe the team is a strong one.”

“The level of creativity is high within the team. Everyone is learning.”



Phase 1 has allowed the project team to build its knowledge and skills base. Phase 2 of the project will involve a much higher level of sophistication and require increased resources. Demands on existing staff within the project team will escalate. The capacity to grow exists but project success over the long term may well require further external contributions.

#### Content is critical, but the message is “king”

At the heart of this project lies content. Media and digital information resources as well as information about library services, relevant to students’ study and research interests, have been selectively and creatively showcased in high-resolution, interactive presentation screens. As critical as selecting the right content is, how the content is visualised, the messages conveyed and how the content speaks to the target audience underpins the achievement of project outcomes and success.

Key project aims to connect students with global information resources, to excite and engage learners and to facilitate learning through interactivity were uppermost in thinking when developing and displaying a schedule of themed shows.

Feedback from library clients about the shows is extremely positive. High-quality and high-resolution images appeal to students, as does animated movement and sound. To build on this success and to achieve the next level of interactivity and engagement with rich media, a start has been made on reviewing and assessing students’ interactions in *The Verge*. The next phase will focus on ensuring sustainability of content development, recognising that:

“...content is a challenge. It is working well but we need to ensure momentum and that ideas are fresh, and that our staff don’t get tired...”

We are well positioned for the development of the next stage of the project. The team are “looking forward to Phase 2... with the right people, lessons learned and time we can achieve even better things: strength to strength”.

#### **Conclusion and next steps**

*The Verge* is a high-end multimedia installation and projects of this nature present particular challenges in how cutting-edge technologies can be accommodated within building projects. There are significant difficulties in trying to keep pace with rapid advances in technology. Long lead times for building projects can result in audio-visual components being out of date long before installation. Conceptualising multiple screen displays, and industrial design and fabrication is new to most embarking on library refurbishments. Prototyping is recommended where feasible and the project brief needs to reflect these challenges in the schedule. Shared experiences will certainly assist as more and more libraries introduce these exciting and highly engaging interactive digital displays.

Establishing a quality framework through the development Criteria of Quality and Quality Indicators has been of value in planning and evaluating library building projects at Deakin. One of the lessons learned has been the need for continuous improvement of the framework, particularly given rapid technological change and a highly dynamic higher education environment.

Further, there is need for more research exploring the question of how library spaces assist students in achieving their learning goals. In the second half of 2014, Deakin University Library will undertake research that will translate the criteria of quality from an architectural perspective to a social and behavioural understanding of how these new generation library and learning spaces meet quality criteria and learning needs. The results of this research will contribute to a wider understanding of the impact of library and learning spaces on learning behaviour, and how new student-centred spaces, and their use, can influence an institution’s strategic thinking and directions.

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