

## **STUDYWELL GIVING THE EDGE , STUDENTS GETTING AHEAD**

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### **ABSTRACT**

QUT Library has responsibility for central provision of learning support. Underpinned conceptually by an “integrated literacies” framework of knowledge, skills and capabilities, the undertaking consolidates support for research skills (information literacy) *and* study skills (academic literacy). It allows for learning across broad scholarly processes of planning, reading, researching and writing to be authentically connected, and for a more holistic approach to linking like-practices of academic process, such as task analysis and search strategy, or notetaking and referencing. The mandate presents the Library and QUT with new opportunities for a more cohesive provision of learning support, expanded learning collateral for students and staff and, in particular for the Library, a richer engagement in and contribution to the University’s teaching and learning. Building on QUT Library’s strategic leadership in information literacy service and innovation, the release of Studywell in 2010 signals a deepened commitment to blended support for academic and information literacy. Targeting undergraduate learners (particularly 1st year/transition), this online learning environment provides 24/7 access to academic and information literacy learning tools and resources. Studywell applies effective use of emerging technology and learning design to accommodate diverse student needs, time commitments and learning styles, and to engage students in positive experiences of learning and study self-sufficiency. Studywell’s deliberate articulation with key QUT policies assures strong alignment with the University’s objectives regarding enhanced student experience, flexible delivery and online learning. This paper describes the design and development of Studywell, and discusses implementation, and student engagement with the resource.

### **1. INTRODUCTION**

Learners change with time, which presents educational institutions with the challenge to match learning for new times and new learners. The educational ebb and flow that washes across an organisation’s academic and administrative systems and physical environments has no less impact on virtual environments which must also be adaptable to these shifting demands. Online architecture must provide

for front-end learning that is fluid, fast, flexible, and affordable [1], and established "frames" of web design, learning management and systems architecture are not necessarily a "right fit" for new frames of learning and learner engagement. Next generation technology, encompassing Web 2.0, gaming, gesture-driven functionality and multi-modal mobility, continues to pressure virtual educational environments to compete with, and compare as richly to, the informal or social online media in which students engage with information and each other. Where there is diminished contrast, students will not - and do not - engage with learning. To develop student capacity and autonomy, in place must be resources and technologies that assist students to learn the *how* to learn [2] as much as delivering the *what* to learn.

Studywell seeks to combine this *how* and *what* in a hybrid learning space which, in form, function and content, is designed to meet the challenge of new learners and new demands on teachers. Visually represented as a "contained" space, it delivers a manageable ecosystem of resources for students. Studywell's architecture seeks to apply what Oblinger describes as "discovery infrastructure" for learning in "Education 3.0" [3], and rich visual presentation encourages active engagement with content and concepts while minimising cognitive and information overload through imagery and iconography. Its design encourages interaction with content in order to cultivate greater learner autonomy, and support self-directed discovery-based learning and profitable exploration via deliberate "incidental" learning pathways.

While such aspirations are not unique within the practice of online learning, educational technology and instructional design, for QUT - and QUT Library particularly - Studywell offers a new twist on the familiar theme of online "literacy tutorials". Drawing together two critical scholastic domains of information literacy and academic literacy, Studywell moves support for learning beyond that which is typically cloistered in tertiary institutions operationally, economically and physically [4]. It is the tangible product of an expanded strategic and functional responsibility for QUT Library and a revitalised organisational focus on transition, student success and learning support, and representative of the Library's enduring commitment to client service innovation. It also emphasises the critical educational responsibility of academic libraries to contribute actively to the teaching and learning goals of the parent academy. Studywell is a paradox of complex simplicity and simple complexities.

## 2. WHAT, SIMPLY, IS STUDYWELL?

Studywell is an online repository of study and learning artefacts for students, and teaching materials for staff. The "pick your own" suite resources includes templates, activity sheets, visual and text-based guides, multimedia resources, and links to local and external web resources. Site architecture emulates a typical learning object repository within a robust pedagogical learner-centred framework, providing engaging resources for students according to learning need, style and activity, and optional "ready-to-wear" resources for staff. Conceptually, the overarching design of the site "hierarchy" is a triad - *topic / task / time*. Resources are (re)clustered according to familiar aspects of academic endeavour - (i) topic: broad activity/concept or knowledge/skill (eg: reading, writing, researching), (ii) task: specific

activity/process (eg: managing weekly readings or reading more critically) and (iii) time: academic milestones/triggers (eg: starting university and exam preparation). Underlying logic is to present resources in potential areas of scholastic difficulty in repeated yet varied ways to reflect learner preference and optimise learner satisfaction. With an architecture of (re)connecting the unique resources via multiple pathways, all information is presented as equal because there is no “right” learning route. To assure full accessibility and engagement, Studywell exists as twins - an image-dynamic “home” site and an alternate “flat-pack” text version.

For students, resources are easily discoverable, quickly accessible and simply presented. With download options and deep linking possible at page and artefact levels, students can store or return to resources as required. For library staff and teachers, devolved resource development draws on wide intelligence and practice and spreads workload, while a delegated management team assures consistency, reliability, adaptability and accessibility of each resource. This process delivers repurpose-able objects, minimises hybridisation and maximises work efficiency and quality assurance.

### **3. WHY THE LIBRARY AND WHY STUDYWELL?**

On the international landscape, QUT Library has an established reputation for quality service provision, tipping point leadership and innovative information practice. It also boasts a singular reputation with regard to its engagement in the educational business of the parent university and, specifically, authority and practice with information literacy. Active and informed involvement in QUT’s teaching and learning over a sustained period of time has secured the high regard, confidence and satisfaction of students, faculty and administrators alike. It is this reputation which has led to a unique and logical outcome - consolidated agency of centrally-provisioned learning and study support. Fundamentally, the expanded portfolio enables a more holistic student-facing approach to the development and application of information literacy and academic literacy as complementary capabilities for successful scholarship and contemporary learning. At strategic, operational and administrative levels, Library agency consolidates academic and information literacy services and support mechanisms, aggregates accountabilities and quality assurance processes, redefines service frameworks, and broadens client communication strategies. It also establishes more coherent processes to scaffold and connect students with other support, and to drive blended curriculum approaches that allow for sequenced, iterative academic and information literacy learning [4].

Studywell is the product of three Library strategic imperatives: (1) lead innovative service provision by applying holistic strategic and operational approaches to the development of integrated scholarly literacies within the context of an outcomes-based graduate capability framework; (2) assure policies, strategies, products and services strongly reflect global learning and teaching trends and perspectives, national standards and federal educational objectives; and (3) maximise on-campus and online flexible learning environments and Information and Communications Technologies (ICTs). A key goal is to consolidated of academic and information literacy learning resources, workshops and online tutorials, including blended

access to/availability of physical resources (print materials, guides, reference tools, etc) and virtual resources (webpages, knowledge systems, learning resources and tutorials, etc). In the spirit of three, the Library's objectives and outcomes for Studywell were:

*Obj 1 | Support legislative, organisational and social justice goals and principles:* Studywell supports QUT's commitment to (i) provide outstanding learning environments that lead to excellent graduate outcomes, (ii) contribute to, and learn from, new developments in pedagogy, including those arising from technological change, and (iii) explore new opportunities for using technology to complement and enhance the campus experience [5]. Aligning with QUT's First Year Experience and transition policies and curriculum design principles [6], it applies innovative use of new technologies for learning and capitalises on both physical and virtual innovations to support new approaches in pedagogy and learning support [7]. Resources are drawn together in a conceptual "integrated literacies" framework of academic and information knowledge, skills and capabilities in a space that represents fundamental educational and design objectives and principles intelligently applied to an online learning environment. Content and access conforms with organisational, national and international standards for information literacy and web accessibility, and reflects due observance of Australian copyright law while provisioning community access for wider participation, allowing cross-institutional sharing and respecting the principle of sharing creative commons.

*Obj 2 | Address a gap in the provision of cross-disciplinary multi-purpose learning resources:* Studywell resources are project-independent, discipline-neutral and co-located. Focussing on process, resources are relevant to most students for most tasks. They can also be "discipline flavoured" by academic and professional teaching staff for course and subject contextualisation.

*Obj 3 | Assure equitable access, reliable and stable content, and an engaging learning experience:* Development and review is built into the Library's service portfolio as core business, with a dedicated team responsible for resource lifecycle (review, development, evaluation). Study resources allow for individual study needs, time commitments and learning styles. It is open access, available on a common web-based platform requiring no user-authentication. LMS independence ensures every student has 24/7 access to every resource, from anywhere, irrespective of course/program, discipline or enrolment mode. Such non-partisanship also avoids the LMS by-product of closed, transient access to "course/semester-only" resources.

#### **4. WHAT, COMPLEXLY, IS STUDYWELL?**

Studywell design principles and axioms focussed on meeting the needs of the greatest proportion of students while never losing focus of the complex individuality of each learner. The design strives to connect principal components of learning environment, behavioural activities, cognitive and metacognitive activities, motivation and emotion, learner characteristics and the learner's mental model (learning outcomes) [8]. The principles of design reflect close attention to the multiplicity of visual, auditory, kinaesthetic and tactual learning styles learners bring to virtual learning environments [9].

#### 4.1. Design axioms

Studywell is a hybrid portal for learning resources to develop “foundation to excellence” concepts and skills in academic scholarship. Learner-centred design balances form and function with accessibility and usability, while allowing for individual learner preference and autonomy, student exploration and knowledge discovery/discovery-based learning, Constructivist pedagogical design supports and satisfies the needs and practices of individual learners, and enables teachers to appropriately scaffold curriculum-based learning processes and classroom integration. The enquiry-based design meets the needs of adult learners to provide a tailored learning experience, and encourages learners to build on prior knowledge, identify relationships between their current knowledge and the generation of new knowledge [10] and to search for new information and relationships based on their interests.

Front-end design and architecture allows for deep and surface level approaches to accessing and using the resources/tasks as determined by the learner. This design facilitates repurposing of materials in multiple contexts for multiple uses (eg. Blackboard sites and 1-1 consultations). Resources are presented by format as well as topic in recognition that students by directions frequently seek by format as well as or in preference to content. Studywell presents information by format to clearly allow students to associate by preferred learning style (eg: watch, read, do). Design mimicry of mobile devices replicates highly popular and/or desirable interfaces that employ rich functionality, which will facilitate future visual and mental bridging to complementary technology as further development proceeds. Giving it robust structure is observance to usability criteria of accessibility, learnability and memorability, learner control and activity, help and feedback, graphical layout, consistency, efficiency, applicability, motivation and memory load, reliability and errors and, ultimately, added value for learning [11].

#### 4.2. Design principles

In a world where consumer confidence is fragile and users are time poor, subtle design differences can influence site persistence or abandonment [12], encourage greater or lesser interaction, and foster (or not) viable learning [13,14]. Where consideration to learner preference, autonomy, motivation and experience has been given to the design of a learning environment, the greater the likelihood that learners will engage, and reengage. Laurillard [15] reminds the designer to not characterise students in terms of a “dichotomised description of learning” but to be mindful of learner responsiveness to the environment and how their interpretation of that environment affects their approach to learning.

Moshagen and Thielsch [16] identify four essential aesthetic criteria for websites as simplicity, diversity, colourfulness and craftsmanship. Simon [12] recommends other design elements such as colour, shapes and images as key influences on user perception of a site, its effectiveness as a communication medium, and the potential to affect an impact on the user. Studies have also shown high correlations between perceived aesthetics and ease of use, and colour as a significant

determinant for trust, user satisfaction and perceptions of value, and willingness to interact with the website in the future. As well as aesthetic appeal, Pace [17] identifies a number of other properties that can be influential in maintaining a user's attention. These include congruence with personal interests, novelty, credibility, correctness, currency, ease of understanding, rarity (of information/content) and emotional impact.

Independent studies by Djamasbi et al and Kalyuga [18, 19] further indicate generational preference for picture-based communication over text-based one, with a corresponding negative correlation between the number of characters on a page and visual appeal. Conversely, sites with a main large image were deemed most appealing and were more likely to be noticed in the first glances at a page. In addition, full-screen illustrations with superimposed text and embedded iconography improved learner performance in comparison with the text-only. The degree of visual complexity of welcome/entry pages also has a positive impact on user pleasure, response, recognition and performance [20]. Speaking to the importance of managing cognitive overload, Kalyuga's [19] findings also indicate that illustrations did not overload working memory. Rather, appropriate management of levels of cognitive load by using prompts, explicit representations of shared mental models (egg. dynamic concept maps and diagrams) and other scaffolding devices embedded into collaborative online learning environments may enhance acquisition of flexible knowledge and skills.

Much of the research in online learning design indicates the significance of scaffolded pathways for self-discovery. Laurillard [21] emphasises the educational importance of creating information rich environments in which the student has control in discovering knowledge, a model supported by Koper and Olivier [9] who conclude that electronic, or e-learning is a "learner-centred, nonlinear, and self-directed personalized approach to education that requires intentional learning design", demanding of educators online educational opportunities designed to consider the variability within a diverse set of learners without making assumptions regarding technological skill levels - designs that do not provide a direct pathway from the facts needed to facilitate learning are seen by learners as pointless and unnecessary. Designs need also to allow "flow", a state of consciousness that is sometimes experienced by people who are deeply involved in an enjoyable activity, regardless of level of expertise or familiarity with web environments. Curiosity and interest, according to Pace [17] play a vital role in the flow experiences of users, emphasising the importance of online resources to immediately provide a challenge of flow that matches any individual's interests and level of skill.

The principles of multiple pathways, interest, flow, trust and cognitive load are evident in Studywell's design. Overall, it reflects Laurillard's schema [21] of forming an information rich environment in which the student has control in discovering knowledge. The rich presentation of Studywell seeks to attract attention, then establish user trust, maximise user perception of the worth of the resource to their learning, assure and increase interaction and persistence with the tool. While recognising the individuality of visual association with meaning, conscious use of imagery and colour as subliminal stimuli or "signposts" represents the knowledge or task associated with each resource, and links

resources to major concepts or related topics. The application of theme criterion intends to further attract, motivate and immerse learners in the environment [22] Studywell's "discovery" is scaffolded by functionality which minimises time and effort and maximises success rates, and aspects such as a "3 click max" are deliberate minimises user frustration and facilitates quick access to materials.

### **4.3. Logistics and technicalities**

Initiated by the Library's Leadership team, design, content development and technical build commenced in June 2009, through to first release in Week 1 Semester 1 2010. The project was base funded using the Library's significant ALTC awards pool, supplemented by the Director's discretionary budget. The project team consisted of specialised library staff including skills advisers, librarians and a learning designer with significant expertise in visual and multimedia design. The learning designer also undertook a lead project management role, drawing together concept design, content/resource development, visual communications design, website architecture, editing, and promotion. Additional Flash programming was outsourced, and review/feedback was provided at critical milestones by the University's eLearning Services team. This collective contribution has assured the input and expertise necessary to deliver a high quality student-focussed resource.

Studywell is housed on a central university server using QUT cascading style sheets, java-scripted with additional Flash-based sub-elements (dynamic site only). Screen resolution is optimised for display at resolutions of 1024x768px and higher. Core functionality has been tested for cross-browser compatibility in a range of browsers, such as Internet Explorer 7, Firefox 3 and Safari 4; a JavaScript cookies-enabled browser is recommended for viewing, disabling pop-ups and a minimum 56k modem is recommended for optimal use of the site. The text-based version is fully accessible according to QUT Web Standards and WC3 Web Content Accessibility Guidelines 2.0, as is the primary interface (excluding flash components). All resources are likewise accessibility compliant, with both versions tested for JAWS/screen-readability. Typography, colours, image layers and screen/resource layout enhance readability and maximise comprehension. Studywell (accessible version) and all resources display on mobile devices, with the exception of Adobe Flash aspects (dynamic version) which, due to Apple restrictions, are currently not viewable on Apple devices (eg: iPhones). Access is open and does not require QUT authentication. Studywell hosts approximately 60 files for downloading with links to external sites, resources and the library catalogue.

## **5. NOW WE'VE BUILT IT, DO THEY COME?**

The answer is a resounding yes. In the first 5 months of life, Studywell has experienced over 17 000 visits and 66,300 pageviews by 3 600 absolutely unique visitors. Average pageviews per visit increased during the semester, from a low in March of 2.2 to a high in June of 5.4. The number of pageviews doubled in April to 26,800 views, ten thousand of which occurred over two days. Approximately 46% of visitors used the site more than 15 times, or at least once a week, during semester, and 16% of traffic was referred from Blackboard, indicating a high linkage presence on unit pages. More than 200 pages on the site were viewed at least once during the semester with the top fifteen pages receiving 59% of the traffic [23]. Preliminary findings of formal usability testing indicate positive responses to the quality and content of resources, the use of colour and the contemporary look'n'feel, meaningful language and "online signage" and site navigation. Studywell has received excellent feedback from students and staff, as well as

substantial support from expert practitioners in the areas of teaching, learning, learning/instructional design, visual design and learning in online environments. From two academics with no mutual professional connection, the phrase “It’s a cracker” suggests a unique level of satisfaction, but it is the voices of students that say it all:

- *Just wanted to say how bloody helpful all your study well stuff is... if I had all this available at the beginning of uni I think I would've done a lot better... I think all the lecturers just assume we all know it.*
- *I've not seen such a helpful resource before. I really like the visual simplicity ... In the coming weeks I will look at this resource again and again, whenever essay-panic threatens to erupt.*
- *Great resource! ... Studywell is a fantastic.... I have just completed half a degree at another university before coming to QUT and wish I had something like this earlier on. Congratulations!*

## **6. LESSONS PAST AND PATHS AHEAD**

Hindsight is only valuable when it helps forge positive ways forward, and much hindsight will be applied to ongoing development of Studywell. Ongoing work will be scoped with longer timeframes and larger contingencies, to accommodate unanticipated enterprise-wide site freezes, site approvals, staff illness, and organisational demands and priorities. Project members will be taken offline to avoid excessive workload and stress, and longer recruitment lead times will be initiated for contracted staff. Gaps in workforce capabilities that may threaten successful completion and/or project outcomes (eg: Flash programming) will be identified earlier to assure smooth process to product, and access to recurrent funding will assure sustainability, quality and effective project-to-service transition strategies and outcomes. Studywell forms the knowledge and resource base for the Library’s services and goals for learning support. Review and maintenance is paramount to assuring its continued value to QUT’s students and teachers. Development of new individual resources will continue, and expand beyond the format and function of current resources to include more interactive resources, guided, as always, by client satisfaction, feedback and usability testing.

A critical challenge is finding a suitable balance between web governance standards and online learning objectives - in educational organisations, these aspects exist in a fragile state of philosophical tension. Pragmatically, educators must be cognisant and respectful of governance while continuing to question and challenge where there is a potential conflict in outcomes. As Davis et al [24] found in their research that investigated student engagement with online learning at QUT, “lumbering” systems and web governance can restrict unique and experimental pedagogy which may significantly impact on students’ engagement with their learning, and make it difficult “to keep pace with the rate of change and variety of options that students are becoming used to” (sic). It is to the ultimate benefit of students that organisations strive to balance standards with appropriate solutions, and for educators to measure wisely the relative merits of bending the rules when the balance seems pedagogically lightweight. For organisations and individuals, Green reminds us that the challenge and opportunity is to “think of things as if they could be

otherwise" [25].

## 7. CONCLUSION

Studywell breaks new ground. It is the tangible product of an organisational goal to consolidate two core literacies in one blended service model with single agency for strategic governance, operationalisation and quality management of student-facing support. It represents fundamental educational and design objectives and principles applied intelligently to an online learning environment to give students 24/7 access to academic and information literacy learning tools and resources. Academic staff have access to adaptable tools and templates in multiple formats for classroom use, student guidance, and unit/course/discipline integration. Library staff and other support teams have tools and templates for Helpdesk mediation, student-staff consultations, classroom use, and course/discipline integration.

Studywell design reflects increasing demands of and by users and developers to maximise the technology for more effective learning. Learning is a highly individual experience involving discovery, self-determination and discrimination. It is, fundamentally, a 3D iterative process of accessing and creating knowledge access, acquisition, understanding and application. If once they did, two dimensional information-laden learning spaces no longer, nor will in the future, deliver the necessary richness demanded of new generation learners. Information presented online in the absence of pedagogy will not assure learning. In the face of the next generation technologies (such as Web 2.0, social networking, gaming and multi-modal mobility eg: iPhones), our virtual learning environments must be comparatively as rich as the non-study online environments in which our students engage with information and each other. As a learning resource on a web platform, Studywell necessarily diverges in purpose, design and construction from familiar information, commercial and marketing websites. Studywell design reflects increasing demands of and by users and developers to maximise the technology for more effective learning. Universities - as communities for learning - must deliver systems and processes that provide educators with opportunities to create learning environments which connect the affective, cognitive, and behavioural domains of students' learning [27].

Studywell provides a whole-of learning model for facilitating greater capability, conceptual understanding and informed application of academic and information knowledge and skills. emphasises the Library's sincere commitment to high quality, student-focussed learning and study support. It articulates with QUT's strategic objectives regarding First Year Experience, curriculum design, enhancing the student experience, retention and transition, flexible delivery and blended learning. Design follows researched and evidence-based principles and practice for online learning to accommodate diverse student needs, time commitments and learning styles, and engage students in positive experiences of learning self-sufficiency.

Libraries must reshape themselves to remain viable into the future. For QUT, Studywell represents a new chapter for learning support, and signals a new dimension QUT Library as a vital and valuable contributor to the University's educational aspirations. In the world of rapid technological growth and online learning development, Studywell is an infant with much technical room to grow. With the potential of gesture-based

computing yet to be fully realised, the nature of gesture-based computing will very likely lead to new kinds of kinaesthetic online learning and teaching [26]. Combined with increasing telecommunications mobility with an expanding range of productivity and learning applications, the future for Studywell looks bright.

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