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THE 'NEW NORMAL': LEVERAGING TECHNOLOGY TO IMPROVE SERVICE PROVISION AND THE STUDENT EXPERIENCE

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Abstract

The new Library at Macquarie University has provided a unique opportunity to completely rethink our approach to service provision, to leverage technology to improve the student experience and to deliver client-centred services. The first use of an automated storage and retrieval system (ASRS) in a library in Australia has enabled us to make our physical collection accessible onsite in the most efficient way, while increasing the variety, quantity and flexibility of study spaces for students. We have leveraged technology to enhance the clients' experience of finding and accessing resources through a 'virtual bookshelf' and a resource discovery tool.

The new Library has provided the impetus for a more client-centred approach to service provision and the development of a new service model. We intend to build on what has become, as a result of this major change, the 'new normal', by continually reviewing services, responding proactively to changing client needs, and supporting the cultural change required to achieve this. This paper details the introduction of a range of technologies we have used in the new Library to improve service provision, explores the challenges we have encountered, and discusses the involvement of our clients and their response.

KEYWORDS

Automated Storage and Retrieval System, virtual bookshelf, client centred services, Macquarie University Library

BACKGROUND

Established in 1964 as Sydney's third metropolitan university, Macquarie University is recognised for its innovative curriculum and unique campus environment. Since 2006, Macquarie has focused on becoming a world-class research intensive university, aiming to be among the top eight research universities in Australia and the top 200 in the world by 2014. With a population in 2011 of 37,000 students, of which one-third are postgraduates and one-third are students of international origin, Macquarie University is unusual in Australia in having only one library for the entire university. By 2007, that Library was struggling to meet the changing needs of the student population. There was insufficient study space to meet the needs of the growing number of students, and the Library was rapidly running out of space for physical resources, with 75,000 items located in an offsite store. In that year, the University Council agreed to build a new library, with a brief for a sustainable library which would meet student needs for the next forty years. The emphasis was to be on informal learning spaces for students rather than storage for the collection. The challenge for the library management team was to provide enough learning spaces to achieve a ratio of one seat for every ten students while providing the capacity to store the entire collection onsite, all within an agreed budget. To meet this challenge, we had to move away from the traditional view of the academic library and consider how technology might support new ways of offering services while providing clear benefits for clients.

The answer to this challenge lay in warehousing technology which has been used for many years in industries such as manufacturing and wholesale distribution, but which has only been adapted for library use in the last twenty years. High-density warehousing systems for storing library items, known as Automated Storage and Retrieval Systems (ASRS), were first used in the United States in 1991 (Rapp, 2011). The system consists of metal bins stored on high industrial racking either side of aisles, with each aisle served by a robotic crane (Brodie, 2008). Items are stored in the bins and uniquely identified and tracked by barcodes. When a client orders an item through the library catalogue, the relevant bin containing the item is automatically retrieved by the crane and delivered to a workstation where a staff member selects the item from the bin. Items are then collected by clients from a service desk. More than twenty libraries worldwide have installed these systems (Rapp, 2011) but in 2007, there were no installations in Australia.

LEVERAGING TECHNOLOGY TO PROVIDE FLEXIBILITY

The implementation of an ASRS had distinct advantages for Macquarie: we would be able to store the collection on a smaller footprint, reduce the gross floor area required and therefore reduce the building costs. A smaller footprint also provided environmental benefits as less construction material is required and ongoing energy savings can be made through the reduction in lighting, heating, cooling and ventilation required (Ellis and Kealy, 2011). We would be able to store our entire collection onsite, with space for growth for an estimated fifty years, eliminating the need for offsite storage and associated costs. Despite some concerns that the design of an ASRS is based on the intention to exclude readers from the shelves (Bennett, 2006), our decision to implement an ASRS was based on minimising the environmental impact and cost while maximising access to the print collection by providing almost double the former space for the physical collection (Brodie, 2012). Macquarie's ASRS has been designed to hold up to 1.8 million items, with capacity on the Library's open shelves for a further 500,000 items. Data collected by the Library suggests that twenty per cent of our print collection satisfies eighty per cent of the usage, so the ability to store lesser used items in a system within a vault which is environmentally controlled for the optimal storage of paper items and frees up space for other uses was highly attractive. The installation of the ASRS has reduced the floor space needed for traditional open shelves at Macquarie by 38% or 11,000 square metres (Brodie, 2012). An ASRS offered the opportunity to provide more space for students - informal, flexible learning spaces and spaces where library staff can collaborate with students – and aligned with our philosophy that the purpose of a university library is 'to provide high quality scholarly information resources and services relevant to its community, not necessarily to display books' (Robins, 2008). In our new library, we wanted the focus to be on clients rather than books.

The decision to implement new technology in the form of the ASRS could be justified on economic and sustainability grounds, but the potential impact on our clients was an important consideration. The experiences of academic libraries which had implemented these systems showed that lack of browsing was a perceived issue for clients, who felt that an ASRS would make the collection less accessible. With the benefit of the experience of other libraries, we planned to undertake comprehensive client consultation prior to implementation. As the library would continue to have an open access collection of 500,000 items, we based our initial client consultation around the location of items: what would be placed in the ASRS as opposed to the open shelves. Our starting point was to develop Collection Storage Principles. These principles recommended that monographs which had not circulated or been acquired in the last five years, and serials more than two years old, be stored in the ASRS. Profiles of the existing print collection and its use (including number of loans, recency of loan and date of purchase) were generated and faculty liaison librarians used these profiles to conduct a series of consultations with individual academic departments. These consultations enabled us to work directly with faculty members to ensure that the items which would be located on the open shelves would meet the needs of each discipline's current teaching and research. In general, the faculties supported the application of the Collection Storage Principles. There were some requests for exceptions, with some academics identifying key items that they considered to be seminal works for their discipline that should be kept on the open shelves. Most of the requests for exceptions came from disciplines still heavily reliant on print for research and teaching such as ancient cultures and were largely able to be accommodated.

This consultation process built goodwill between the library and the faculties, and provided us with an opportunity to discuss the new retrieval system and its benefits. We were aware that, with an ASRS, we were changing the traditional image of a library with open shelves of books. We anticipated that the new facility would provoke a range of reactions from users; we surveyed overseas universities using this technology to draw on their experiences. With the benefit of others' experiences and feedback collected during our consultation process, we were able to identify the key concerns for students and academics and provide information on the client benefits of the ASRS to address concerns. These benefits include the ability to order items from the ASRS from anywhere at any time through the online catalogue; a thirty minute retrieval time during Library opening hours; a decline in the number of missing books where these may be mis-shelved or deliberately hidden by students, and the ability to more easily locate items in the open collections with duplicates and older or less relevant material removed. Equally importantly, locating lesser-used material in the ASRS allowed us to focus the open browsable collections on resources supporting Macquarie's current teaching and research to improve the student experience of the print collections. In order to avoid any negative connotations of the word 'storage', we chose to call our system the Automated Retrieval Collection, or ARC.

LEVERAGING TECHNOLOGY TO INCREASE CLIENT CHOICE

While our consultation with faculties enabled us to present the benefits of the ASRS, the issue of browsing was continually raised as the main concern clients had about the system. Some client groups expressed concern that the ARC would prevent them from browsing the open shelves and experiencing the serendipity of locating a key resource while browsing. Research undertaken by a Master of Information Studies student for her thesis allowed us to test the validity of this concern. The results of a survey of Macquarie University staff and students and their browsing habits and preferences showed that browsing library shelves is the least preferred method of identifying items for research and study. The survey revealed that browsing the collection was used by clients only 12.7% of the time to find their first item, although it increased to 33.3% for the fourth item. Browsing is of particular importance to certain discipline areas, notably the Humanities and Social Sciences (Robins, 2008). The experience of other ASRS libraries showed that concerns about lack of browsing would lessen as the clients became accustomed to the system but the perception lingered among a number of our clients that an ARC would not meet their needs, and we sought options to address this.

A potential solution to this concern was highlighted in a comment by a survey respondent in the survey on browsing habits:

'If there is to be an automated retrieval system, could there at least be a photographic representation of the surrounding books on the shelf so that the shelves could be 'virtually scanned by eye?' (Robins, 2008).

This solution was appealing, as it would allow clients to 'browse' across all physical items as if they were arranged on a shelf, overcoming the concerns about browsing and placing items out of sight in the ARC. It would also provide a means of promoting and integrating our electronic resources, enabling clients to browse physical and electronic resources at the same time. Macquarie University Library spends seventy-nine per cent of its collection budget on electronic resources. Since 2010 we have been adding call numbers to electronic resources so that they can be retrieved through the call number search function in the library catalogue. We had been seeking improved ways to highlight electronic resources, as clients browsing the shelves may not be aware that they are looking at only a portion of the collection. An application developed by Maccabee Levine from the University of Wisconsin (UW), Oshkosh (Blumenstein, 2010) provides a 'virtual bookshelf' within our catalogue, enabling us to display all our resources in call number order. The virtual bookshelf displays cover images for titles either side of a selected catalogue record so that all items, irrespective of whether they are print or electronic, out on loan, or stored in the ASRS are displayed in the virtual bookshelf, allowing our clients to 'virtually' browse our collections. Feedback about the virtual bookshelf has been very positive and has won over some of the academics who were most concerned about the loss of browsing with the ARC (Burton and Kattau, 2012).

To further allay concerns about browsing, we sought to improve the discovery and exposure of library resources by simplifying the number of access points and interfaces that clients were required to negotiate to discover resources. The Primo Discovery System, a search and discovery tool provided by Ex Libris, allows clients to search our catalogue, electronic reserve and open access repository together with pre-harvested metadata from many of our full-text databases and abstracting and indexing databases. While Primo is not a total solution for the research needs of our clients, it provides one point of entry for the initial information needs of the majority of our clients, in particular our undergraduates, as well as increasing the exposure of our resources (Burton and Kattau, 2012).

One change implemented in the new library involved no technology but did simplify access to our print resources. To further improve browsing of the 500,000 items placed on the open access shelves, we limited the number of physical locations that clients need to search. All items, with the exception of maps and curriculum resources which support the teaching of education, are now located on the open shelves in one run. Monographs, reference volumes and print serials are now interfiled so that all resources in a particular subject area are available in the one location within the shelves.

REDEFINING SERVICES: A CLIENT-CENTRED APPROACH TO SERVICE PROVISION

The implementation of the ASRS provided an opportunity to rethink our approach to collection management and discovery; the new Library provided an opportunity to rethink our approach to service provision. Our challenge was to develop services to meet changing client needs and expectations, to review and rethink not only what we were providing and how we were providing it but why. We had previously organised and delivered services in a library-centric manner; we now began to group services in a way that made sense from the clients' point of view. This signalled a subtle yet important change: while we had been very client-focused, we now needed to be client-centred. The library adopted succinct service principles to underpin and inform the development and delivery of services: a client-centred and holistic approach to service provision, seamless self-service, ease of access to physical and electronic resources and excellence in quality and innovation.

In order to articulate services from the clients' viewpoint, we attempted to frame services in terms of what needs and expectations would be met by each service offering. This process became known internally as 'I can' statements. A statement was constructed for each activity students and academics undertook in their learning, teaching and research; we then identified what services they needed, and how and when they might want these services. Some 'I can' statements were quite straightforward e.g. 'I can find a printer and print my unit outline'. Others had several layers. The statement 'I can access Library resources' led to a number of different

service offerings, such as 'I can access electronic resources from the library during library opening hours/my office during office hours/my home at any time'. Each of these statements was then translated into a service which supported this need or activity, and the scope of potential services was developed.

The development of the 'I can' statements highlighted the touch points between related library services, identifying where we could coordinate and simplify services and ensure seamless service provision. The statements informed our development of service zones for the new library, built on principles of seamless physical and virtual service provision and providing services where the client needs them. Reference services and general queries, such as loans and document supply, are all offered from the one zone so that a client can have the majority of their needs met in one place. A virtual service centre offers support via phone, email and chat to extend and improve our online support for clients. We have developed partnerships with other student support services on campus, notably the learning support and disability support units, which now both have service outlets in the new Library and contribute to providing integrated service for clients.

The 'I can' statements also raised the issue: but what if I can't? What if a service doesn't operate as planned or no-one can answer my query? To support seamless and consistent service delivery, the library introduced a 'shift supervisor' or service coordinator position. The service coordinator position oversees the team working in the service zones of the library during each shift, taking on the role of team leader in the service zones during their shifts. In this capacity, they are able to direct staff working in these zones as well as security staff and building support staff such as cleaning staff. Any issues which disrupt service provision are dealt with swiftly and a short-term resolution for each issue is identified, while recurring issues are identified as problems and escalated by the service coordinator using a modified IT Infrastructure Library (ITIL) approach (www.itil-officialsite.com). The use of this modified ITIL framework to log incidents and identify ongoing problems early in their development has resulted in the majority of issues being dealt with swiftly. When a problem is identified, 'problem resolution' teams are formed, with input from library support areas such as IT, building management and training and development, to identify and implement solutions

LEVERAGING TECHNOLOGY TO SUPPORT SERVICES

A key principle of our service model was to take the service to the client. The size of the new library made this a challenge. Our service zones are located on the main entrance level of the building, but equipment and study spaces are located over five floors of the building. The two main floors are each over one hundred metres in length, making it difficult for clients to seek support if they are remote from the main service zone area. To overcome this, we have introduced a roving service where library staff move around the building to answer general questions, provide basic support to find library resources and help students with equipment.

It became obvious soon after our move into the new library that, in order to enable staff to be mobile and take services to the client, we needed to be able communicate quickly and effectively. We needed a mobile device that did not have to be carried, as they were too easy to put down and lose. The device had to be robust and reliable, use the existing wireless network, and have the ability to communicate with staff anywhere in the library via another mobile device or fixed phone without needing to remember relevant phone numbers or specific names.

Other libraries had trialed the use of a hands-free, voice activated wireless communication system with varying degrees of success (Forsyth, 2008; Hodel, 2009; Gregory, 2010). After reviewing the market place for options which would meet our requirements, we selected and implemented a solution based on the Vocera Voice Communication system (www.vocera.com/index.php/voice). This system enables hands-free, voice-controlled wireless voice communication using the campus wireless network. A 'badge' is worn around the neck; staff members wearing the badge are able to communicate with another staff member, a group of staff (for example, rovers) and fixed telephone extensions, allowing us to communicate with each other no matter where we are in the building. The devices are now used by all library staff on shifts, including rovers and service coordinators, and by library IT support staff, building maintenance and cleaning staff and first aid staff. Once initial teething problems with the

wireless network were overcome, the experience has been overwhelmingly positive for staff and for clients. Service provision is becoming seamless; staff can quickly call appropriate personnel to deal with a client's need – whether it is malfunctioning equipment, a reference query or a coffee spill - from wherever they may be in the building. The use of Vocera, or VoiceLink as we have now named our local installation, is critical to the success of our service model.

THE 'NEW NORMAL'

While the preparation for the move of our collection and services into a new library building was years in the planning, the actual establishment of new services happened relatively quickly. After many years of incremental improvements in library services, within six months we had substantially changed the way we deliver services. We have integrated the Automated Retrieval Collection into service delivery, changed our service model and implemented new technology to support seamless service provision. After several months in the new building we had embraced the changes in technology and the service model to the point where our new mode of operation had become the 'new normal' – just the way we do things now. This 'new normal' means teams working together, with clients at the centre of all our services, continually reviewing why we are doing what we are doing, how it might be done differently to improve the student experience and how technology might be used to enhance our services and provide more choice for our clients.

The scope of change at Macquarie University Library, precipitated by the development of a new building and the introduction of new technology, provided the impetus for a new approach to service delivery and impacted on the culture of the organisation. Partridge et al (2010) identified that library professionals in the Web 2.0 world require a different mindset and attitude to service provision. We are encouraging that shift in mindset and attitude, developing frameworks and strategies which will support cultural change and allow us to effectively plan and implement a shared vision for library services with our staff and clients. We will continue to take calculated risks, leverage technology to improve service provision and identify new ways of delivering services, challenging ourselves to 'think outside the square' to improve the students' experience of library services.

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