DISPENSE WITH THE HYPE

Testing Technology: UQL's new BDM system.

In 2011, The University of Queensland Library (UQL) acquired two book dispensing machines (BDMs) to help provide greater access to materials for their patrons, as well as to reduce pressure in high demand loan areas. The first to trial this new technology in Australia, and for academic texts, UQL soon discovered there was no 'manual' for integrating the BDM with current systems. Everything they learned about these machines was learned on the job.

Many factors contributed to UQL's decision to purchase the BDMs. Here, we wish to share a few of our experiences, focusing on the development of the BDMs' usability and integration with our current systems, to help inform other potential library adopters.

With space currently at a premium in universities, we saw BDMs as an expedient solution for fitting more material into a smaller space. BDMs would also make material such as course textbooks and high use items more accessible. As the machines and the library management system interact in real time, if the catalogue indicates a copy is available, you are guaranteed the copy is there, and not actually in use without having being checked out.

Originally intended for our 24/7 access areas, we hoped library materials that would usually be inaccessible after the library's closing hours would now be readily accessible, although in the end, only one of the BDMs has actually ended up stationed in a 24/7 access area. Demands on staff time were also intended to be reduced, as the BDMs would replace functions such as checking in and out, and shelving, normally performed by staff.

However, auspiciously arriving at the time of the 2011 January floods, it was immediately apparent that the desired 'plug and play' functionality anticipated was not going to be possible.

The machines were originally designed to circulate standard novel-sized books. Current textbooks tend to be bigger than these dimensions, particularly in areas such as science, engineering, business and medicine. The machines' ability to dispense items is limited to 320 x 220mm, which can fit on a dispensing tray. Height and quality of the texts may also affect whether material is suitable. If a book is weakened along the spine, the weight of the pages may cause it to twist during transit, potentially causing a jam.

We also found the machines require frequent maintenance. The BDMs have approximately 1mm tolerances throughout, and as metal machines with numerous moving parts expanding and contracting in response to seasonal temperature variations, this translates into the machines requiring a recalibration once every six months. We rapidly discovered academic usage patterns were far more demanding than those for which the machines were originally designed. The increased usage led to issues such as jams occurring more frequently and parts deteriorating faster than expected.

Resolving these technological issues required close collaboration between the supplier and our IT staff. Over time, extensive improvements have been made to the machines, enabling them to cope with the increased usage requirements.

The software for the machines, particularly in terms of user interface functionality, is another aspect that required attention to create a more streamlined user experience. Patrons should (and did) expect using these machines to be intuitive, but with their original multistep procedure (reserving the book, then borrowing the book) it was not. While the original software required fewer steps, a bug was discovered which necessitated a confirmation step to be added temporarily, further complicating the process.

Once again, our supplier and IT department worked closely together to fix this issue, creating a more intuitive experience for the patron and increasing the likelihood of use. Overall, our software upgrades have resulted in a number of other improvements, including a better user interface, the addition of voice prompts, streamlined searching and simplified loan steps.

This experience has taught us that, while the supplier provided a great amount of support – including flying out technicians for major hardware changes and remote software assistance – UQL also needed to have strong in-house IT support, and trained front-end staff who were comfortable assessing and fixing issues.

Over the years, UQL has tweaked and refined aspects of the machines in areas other than software, to better meet patrons' needs, promote use of the BDMs, and improve our staff processes. Loan periods were extended from four to 24 hours (distinguishing it from the two hour high use loan). Virtual and print signage have been added to highlight the machines for student use.

Our internal processes have also been refined. Early selection and addition of high demand items has meant that the BDMs are now achieving optimal loans during the semester.

Integrating the library's other technologies to improve efficiency in semester changeover of material have also been undertaken. For example, RFID inventory wands are now used to identify items that are to be removed, making retrieval of material easier, and saving up to 75% of time required to complete this task.

A significant proportion of our IT support team's time has been invested in ensuring that the BDMs are working efficiently, minimising downtime from issues such as jams, and refining the BDM hardware and software for the academic environment. Library staff have also refined the processes for selection and addition of high demand items, which has led to increased loans from the BDMs.

At the end of 2014, the BDMs had collectively reached our target of 10,000 loans from each machine. This certainly justifies their existence as valuable additions to UQL.

TECHNICALLY SPEAKING

- Machines dimension (base unit + 1 extension): 3.2m x 1.2 m x 2.1m
- Machines require a one metre clearance space from walls and fixtures for servicing
- The main machine comes in a standard size (900 slots) with an extension option (1300 slots) and 1 slot is 25mm in height (taller items will use more than one slot)
- The base unit plus one extension can fit approximately 430-450 textbooks

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