

The ExamBase Project at the University of Auckland: Electronic Provision of Past Exam Papers 2001-2005

Background

Exam papers have always been a heavily used resource in University of Auckland libraries. Prior to 2001 the library provided hard copies of exam papers in all its 15 libraries. These were heavily used at all times of the year, especially in the weeks leading up to exams. In 1996 the University Library first began to explore the possibility of providing past exam papers electronically to University students and staff. In 2001 a trial pilot project was carried out, which was successful resulting in the creation of 'ExamBase'. ExamBase (<http://examdb.auckland.ac.nz>) contains past exam papers from 2001 onwards in PDF format, searchable by course code, department and title/semester keyword. It is a popular and heavily used resource. This paper outlines the trial project, the current system, issues involved and future developments.

Objectives

Providing past exam papers electronically would improve both access to resources and service delivery as follows:

Improved Access

- Papers accessible remotely 24x7 (from lecturer's desktops, from University Computer Labs, to students working at home, to distance students).
- 100% of sat papers available (electronic papers cannot be missing or stolen)
- Able to easily and quickly search for and retrieve specific exam papers
- Single point of access for electronic exams (instead of departments putting exams on their websites)

Improved service delivery

- Papers available soon after exams sat (there were delays with hard copies being bound and processed)
- All libraries have access to all papers (not just those in their subject)
- Queuing for hard copy exams at peak times reduced
- Students save money by printing out exams from home at no charge

In addition after 3 years of providing exams electronically

- The storage space needed for hard copy exams reduced
- Staff time saved in the Arts Short Loan Collection since they no longer hold, issue, or retrieve exams.

Trial Project 2001

1. Collection of Papers

At the start of 2001 it was decided to digitise the previous 3 years worth of exams and catalogue them in a database. However within a week of this decision being made it was discovered that due to a change in the University's enrolment software all course codes were being changed as of 2001. After careful thought it was decided that rather

than have 2 different sets of course codes for exam papers it would be better to start the trial project from the current year with the new course codes.

This meant that the first set of papers to be digitised would be the 70 papers sat in Summer School in February 2001. Discussions were carried out with the Examinations Office to evaluate the most efficient way of implementing electronic exams, and to see if this could be a co-operative project. It was discovered that the Examinations Office used the new enrolment software NDeva to collect the exams (in hard copy). Chaser e-mails were sent to lecturers to remind them of deadlines for submission, and the software could print lists of exams sat (codes and titles), including campus taught at, campus examined at. Lecturers could submit papers in electronic form (Word) or hard copy. The Examination Office stored the papers in a safe and then sent them to a scanning firm to make additional copies for exams. Understandably they did not want to provide us with any papers until after the exams had been sat, and also after subsequent corrections and queries had been made.

The Examination Office were willing to co-operate by sending the library a list of all sat exams, but beyond this were not willing or able to provide any more time or help to the library. They already however provided bound hard copies of exams to each library some time after the exams were sat and were willing to continue doing this. This was frustrating for the library. We really wanted to obtain either the original electronic copies submitted by lecturers, or a set of scanned copies from the scanning firm. Scanning the bound hard copy would not be ideal for time, cost or efficiency.

Because of this we set up as a trial, direct collection from each department. We notified all departments of the trial project and arranged for departmental secretary's to have a ftp client on their desktop. We set up a central directory for exams where secretaries would only have rights to upload and then view their documents. For summer school we received 50% of the exams this way without any further reminders (the rest we obtained hard copy from the exam office). For Semester 1 we sent out reminders to departments and received 60% successfully in Word format. However this still wasn't good enough since for the ExamBase to be successful we had committed to providing a complete set of exams electronically, not patchy coverage. On contacting other Universities I found that most places had a similar relationship with their Exam Office and were only obtaining exams directly from departments that were keen. At this stage some departments had expressed concerns about exams being available electronically at all, so a survey was carried out specifically to find out:

- Why the remaining 40% had not been submitted electronically
- Why some lecturer's disagreed with electronic access
- Which departments were very pleased with planned electronic access

Of the 40% that were missing it emerged that:

10% were available and could have been supplied.

30% could not be submitted electronically because they were typed on a typewriter/paper cut and paste jobs/were in a non standard file format e.g. physics, Stats, Arabic etc. Because of this we went back to the Examinations Office and discussed again the possibility of them providing us with the copies they received. This time they agreed that they would take a hard copy of each paper received and then provide us with this loose single-side copy 2 weeks after exams were over, with a matching list in excel spreadsheet format.

2. Delivery

After assessing software available it was agreed to use the existing Endeavor Software. It was decided that rather than integrate the exams into the existing Voyager Catalogue a separate instance of the catalogue should be set up. We thought that users would want to directly search a database just of exams.

Another version of the Catalogue was configured and customised and named 'ExamBase'. It was a cut down version of the catalogue so provided users with a familiar concise search and results interface. Only 5 MARC cataloguing fields were used. Users could search or browse by course code, course title, department, semester/trimester, and year.

3. File Format and Storage

At the start of the project it had been decided that:

- Files would be converted from word format into PDF, or scanned as PDF
- Files would be provided in image only PDF format
- Files would not be full text searchable
- Files would have a meaningful naming convention

It was initially thought it would only be necessary to provide the previous 3 years to students, so an archival format was not required. This had been the model for hard copies. The Library was still retaining one master set hard copy. However after 3 years it was decided that at least 5 years electronically were required in the database, possibly more. This meant in the future the archiving of the files could be an issue. PDF is not currently an archive format.

Image Server from Endeavor was assessed for use as image management and storage package but there were several major things that made it not viable and it lacked the functionality we required. Instead the Library negotiated space on a central server in the ITSS department for storage of the files (the Library at that time did not have any of its own storage servers), and with a meaningful directory structure and file naming convention files could easily be managed.

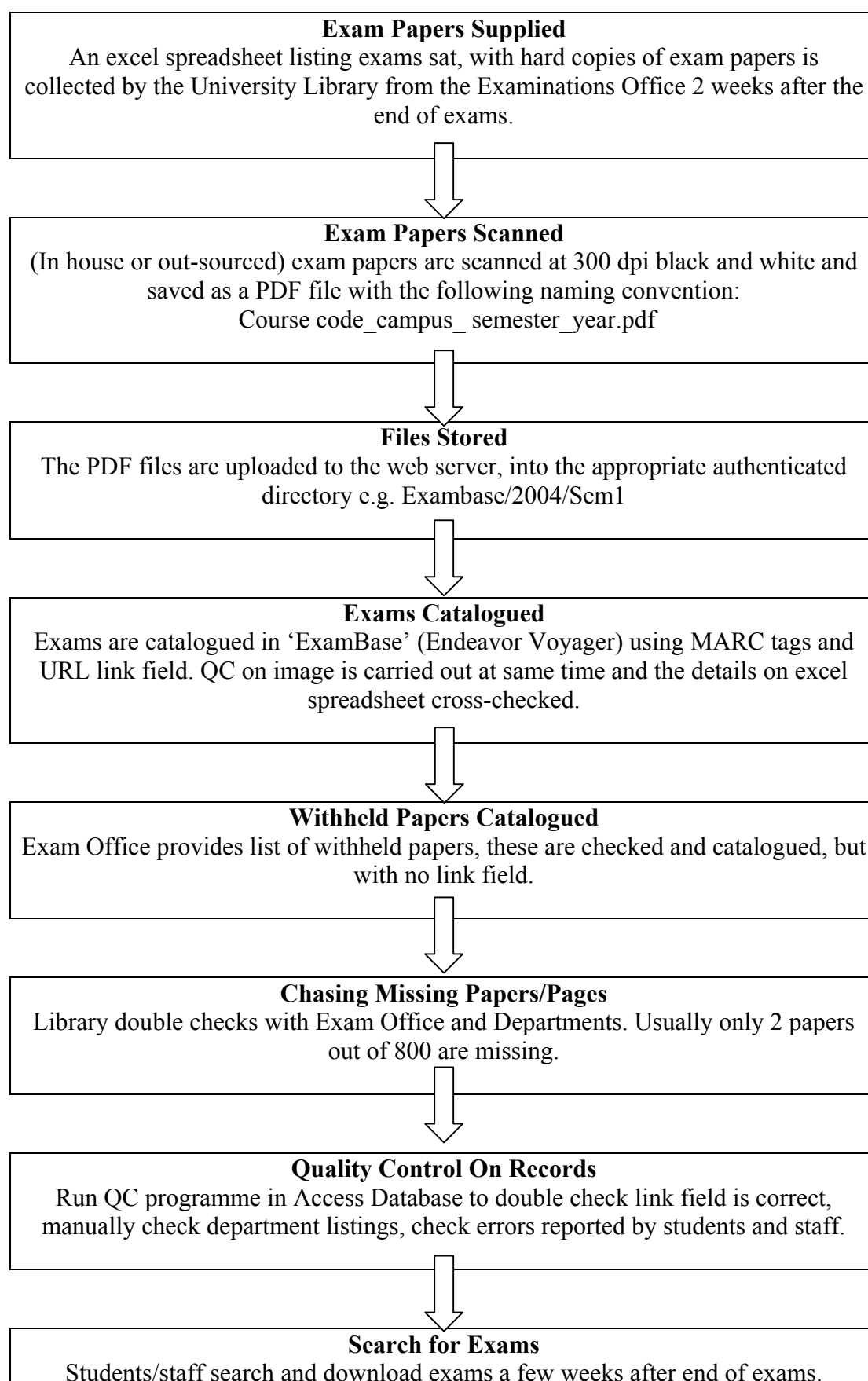
4. Results

At the end of 2001 the University Library and the Academic Board were happy with the system in place and staff and students had begun using the ExamBase. The only drawback was it only had the current year accessible and users still had to access hard copies (with entirely different course codes) for previous years. We decided to just carry on with the system and add exams for each year following that. The Examinations Office also found the ExamBase useful to check things and maintained their co-operation with the Library.

Current ExamBase System

The current system in place works well. Modifications have been made to the trial project and the existing workflow is as outlined below.

ExamBase Workflow Process



Staffing and cost

The Digital Projects Librarian manages the ExamBase project and employs a casual member of staff 3 times a year for scanning and cataloguing exams. Exams may be scanned in house or outsourced. At present there is no difference in cost. Budget required for the year to include scanning, file naming, cataloguing and quality control of approximately 1800 exams is \$5000.

Usage

The ExamBase now contains 6660 papers from the last 4 years. It is in constant use with peak times being June and October one month before exams commence. Webalizer statistics show just over a million hits for 2004 (1067,923). This is 4 times higher than the usage in 2002 (224067). Heaviest used papers are those for first year foundation courses that have large enrolments e.g. Biosci101 and Psych101.

Summary of the Main Issues

Over the last 4 years several issues have cropped up (some repeatedly) relating to provision of past exam papers electronically. These are some of the main ones with our current resolutions.

Who's Responsibility?

The University Library believes that it has the infrastructure in place to be the single point of access for University Exam Papers. This was already the case with paper copies. However this had to be demonstrated for electronic copies. When the project began some departments were already providing their own papers electronically via websites and Cecil (the University Course Management System). It was also feasible that the Examination Office should deliver past papers since it collects them. However the Exam Office are only concerned with providing copies for current exams and have no role in archiving exam papers. The library holds this role.

Changes of Course Code

We have decided not to digitise retrospectively because prior to 2001 course codes were different and current students have no knowledge of previous course codes. We were unable to obtain an index of both. Future amalgamation of other institutes with different codes may be an issue in the future. Registration need to have a system in place to inform the library if codes change.

Loss of revenue

This was part of the reason why providing electronic copies was held off for so long. Income generation from photocopying exams used to be very high and has dropped since they are available electronically. However it is an improvement in service delivery that students can now print exams at home for no cost.

Holding Hard Copy and Electronic Copies

There have been very mixed opinions from librarians, academics and students on whether to retain both, reduce some, or stop hard copies completely. For the first two years both hard copy and electronic were held in all libraries, the third year only the largest library held hard copies of the last 3 years, the fourth year all hard copies were removed on the basis that all libraries had electronic access to the past 3 years of exams. However there was a dramatic increase in requests from students for exams prior to 3 years (which were now in storage), presumably because it was so easy to

obtain the last 3 years electronically students now wanted to go back further. Academics had mixed feelings on this.

The Electronic Backfile

Has not been decided yet. Originally it was to be 3 years, now raised to 5 years. PDF is not an archival format.

Authentication

Hard copy exams were always available to anyone to access, including the public, but academics were not widely aware of this. Initially electronic exams were also available to anyone and not authenticated. However due to academic pressure this was changed so that the whole of ExamBase was authenticated and could not be accessed by anyone except currently registered students and staff. This decision was later reviewed since some departments especially the Business School did want public access, and were therefore providing exam papers electronically from their own website as well. We wanted to ensure that the University Library was the single point of access for electronic exams. Currently the ExamBase is accessible and searchable to anyone, and only the PDF's are authenticated.

Withheld Exams

Some departments simply did not want exams available electronically, but it was agreed at the Academic Board that all exams would be included in ExamBase as they had been in hard copy unless the paper was a purchased Multiple Choice Question Paper that would be re-used in subsequent years. This mainly applied to the faculty of Medical and Health Sciences. In these cases the withheld exams would be catalogued into the ExamBase but with a note saying that they were withheld. As new papers were purchased the old papers would then be submitted into the ExamBase.

Co-operation Between the Examinations Office and the University Library

A memorandum of understanding has been written and signed. Without the cooperation of the Exam Office the ExamBase project would not be possible.

The Future

The ExamBase project has been extremely successful and is one of the most straightforward and cost effective digital projects the University Library has completed. As the volume of exams in the database increases it becomes even more heavily used. It is hard to imagine that what is now viewed as an essential resource by both students and academics was ever a point of concern and uncertainty for some departments. The system is a streamlined process and there are only a few things which may need to be addressed in the future:

- Improve the process with the Examinations Office, resulting in provision of electronic copies via NDeva, or from the scanning firm rather than the University Library scanning the hard copies.
- Moving of files from ITSS storage server to a Library Storage Device (has not happened yet since URL links in database are hard coded).
- Possible compression of files in future.
- Possible change of format of files to allow for digital preservation.
- Integration of exams with planned Course Material Project Database (includes short loan articles, recommended reading etc).

Rose Holley
Digital Projects Librarian
Digital Services
r.holley@auckland.ac.nz
26 January 2005