

A Toolbox for Blackboard *

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SUMMARY: *Most users of web applications are aware that they are not as “nice” to use as desktop applications. They are generally slower and clunkier. This is not normally the fault of the application, but rather the browser environment in which such applications execute. Teaching staff at institutions that have deployed an online course management system such as Blackboard may be reluctant to make extensive use of it because of the overhead involved in setting up and maintaining an online presence for each course that they are involved in. This paper describes a “Blackboard Toolbox” that has been developed at the Manukau Institute of Technology. The toolbox provides a desktop interface to Blackboard and simplifies the use of most of its key functional areas. In particular it provides quick and easy access to the content areas, digital dropbox, gradebook, users, assessments and groups. The digital dropbox tool includes an additional user interface where submitted files can be easily marked, returned to individual student’s dropboxes, and the grades entered in the gradebook. The toolbox makes use of Blackboard’s Building Blocks technology.*

1 WHAT IS BLACKBOARD?

1.1 Generally

Blackboard is a so-called Virtual Learning Environment (VLE), also described as a Course Management System (CMS), or Learning Content Management System (LCMS). The company Blackboard is based in Washington DC and was founded in 1997. In 1998, Blackboard merged with another company called CourseInfo, whose main product was a small course management system. The new company was called Blackboard Inc. Its next release was called Blackboard CourseInfo, but since 2000 the product has been known simply as Blackboard. By 2005, Blackboard was probably the second most widely used commercial VLE in the world, after WebCT (Web Course Tools).

WebCT was a spinoff from the University of British Columbia in Canada, having been developed by a staff member there in 1995. WebCT was first released commercially in 1997. It was purchased by a US-based company in 1999 and grew to be probably the most widely-used commercial VLE in the world by 2005.

In February 2006, Blackboard acquired WebCT and announced that the two product lines will merge over a period of several years. The new product will be known as Blackboard.

The Blackboard software, like its previous competitor WebCT, is proprietary and closed source. This is in contrast to the open source project, Moodle (<http://moodle.org/>), which originated in Australia. Moodle has a large user-base worldwide, and some surveys claim that the number of Moodle users is even higher than the number of Blackboard and WebCT users combined (www.zacker.org/higher-ed-lms-market-penetration-moodle-vs-blackboard-vs-sakai).

1.2 Technically

Blackboard began life as a glorified collection of Perl scripts. As successive versions have been released, the application has gradually been rewritten in Java. Even in Blackboard 6 though, some of the Perl scripts remain.

Although Blackboard is closed source, since Blackboard 5 the company has provided an open architecture, called Building Blocks. Building Blocks is essentially a publication of the Blackboard API, allowing developers to make direct calls to the Blackboard code library. In version 5, the building blocks API was available as a library of Java calls. Since Blackboard 6, the API has been available in both Java and Microsoft .NET versions. Much of the

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API is documented, although some parts remain undocumented. The official explanation for this is that the undocumented calls may not be available in future releases of Blackboard, while the documented ones will.

1.3 Justification for the Toolbox

Like many web-based products, Blackboard is somewhat clunky to use. This is especially true from the tutor's point of view, where numerous tasks are highly repetitive and require multiple mouse-clicks. This can serve as a disincentive to faculty. A comprehensive study by Morgan (2003), found:

- The need for an online quizzing or assessment tool has driven some faculty to adopt a CMS. As with the gradebook, the assessment tools' lack of functionality, difficulty of use, and inflexibility caused the faculty enormous frustration (pp. 32).
- Occasionally faculty will reduce their CMS use. Sometimes this occurs in response to the frustrations of using the software (pp. 45).
- A number of faculty and staff use other tools in conjunction with a CMS. In part this use seems to stem from their frustration with the CMS tools (pp. 59).
- Frustration intensifies when faculty feels that CMS vendors are addressing bells and whistles in the upgrades rather than improving core features, especially ease of use for the gradebook and the assessment tools (pp. 78).

A document published by Unitec (Young & McSparran, 2004) includes this statement: "The process of creating the deep links is time-consuming and yet another example of the repetitive nature of the Blackboard administrative interface."

Lass et al (2003) make this point: "Our experience using a CMS is mixed: We have also found some aspects, such as its browser-centric user interface to be excessively time consuming to operate."

Foreman (2001) states: "The future CMS will entail very little wait time for any of its processes. A mouse click will produce an instant reaction, and system functions will require the absolute minimum number of clicks."

There is no doubt that providing ways to make Blackboard easier to use for faculty members would result in higher usage of the product. The Blackboard Toolbox addresses many of these issues.

2 BUILDING BLOCKS

Blackboard operates the BbDN (Blackboard Developers Network). There is more information available about the BbDN at www.blackboard.com/extend/dev/BbDN.htm. There is an annual

membership fee (currently US\$499/annum) associated with this network. Membership entitles the user to API documentation (supplied in PDF files), the right to join the BbDN forum, and a license to install a development copy of Blackboard.

In the author's experience, membership of the network is not especially worthwhile, for the following reasons:

- The supplied documentation is not particularly helpful. Almost as much information can be gained from examining the `bb-platform.jar` file (using a Java development tool such as JBuilder, Sun Studio or NetBeans) on the Blackboard server.
- Non-members have read-only access to the forum anyway.
- Many institutes have a license to install a development copy of Blackboard included in their site license.

3 THE BLACKBOARD TOOLBOX

Most Blackboard Building Blocks install a link to themselves somewhere in a course. When the user clicks on the link, the typical building block fetches information from the Blackboard database, processes it and uses HTML embedded in the Java Server Page to display it in the user's browser.

The Blackboard Toolbox is quite different, however. It consists of a desktop application (a Windows executable file written in Delphi) that interacts with the building block, presenting an alternative user interface for some of Blackboard's key functional areas. The building block itself is not visible anywhere on the web interface. The aim of the toolbox is to make it easier and faster for teaching staff to perform most of the day-to-day activities that are required to maintain an up-to-date presence for their course on Blackboard.

The primary advantage of this approach is that the user interface can be designed for maximum user convenience and ease-of-use as it is not restricted to running within the browser environment. There are two disadvantages to this approach: firstly the application must be installed on the user's computer, and secondly it can only be used on machines running Windows. The first disadvantage is not really significant as the application is relatively small and light-weight (no database is required for example). The second disadvantage may or may not be significant, depending on the computing systems in place in an institute.

A screenshot of the main form of the application is shown in figure 1.

The following sections describe the main features that are available.

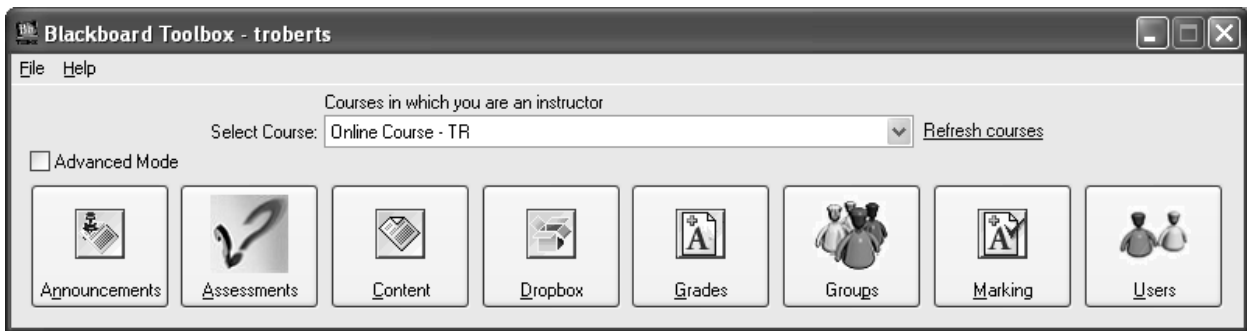


Figure 1: Blackboard Toolbox – Main Screen.

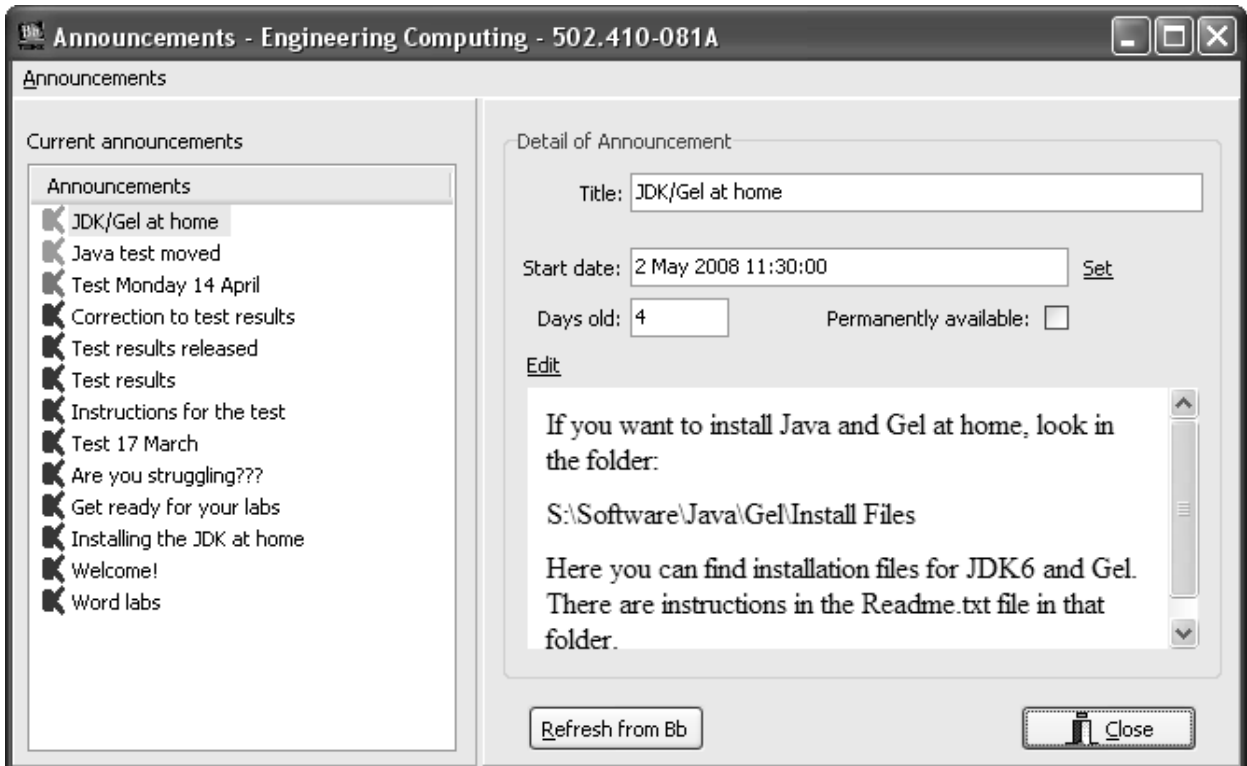


Figure 2: Blackboard Toolbox – Announcements Module.

3.1 The Announcements Module

Although it is simple and quick to create announcements in the Blackboard web interface, BBToolbox nonetheless provides an alternative means of managing announcements. Users of the announcements feature in Blackboard will know that, by default, announcements up to seven days old are displayed. Users can select another tab to view announcements up to 30 days old, or all announcements regardless of their age. In the BBToolbox module, announcements are colour-coded in the browsing pane – green for up to seven days old, orange for between seven and 30 days old and red for older than 30 days. Thus the tutor can see at a glance the visibility status of each announcement. A feature of the toolbox that is not available in Blackboard itself is the ability to set the starting date of an announcement. This is useful if an announcement has passed the seven day limit (and so disappeared from the default view) and the tutor wishes to display it

for another week. This can be done by simply setting the starting date to the current date. A screenshot is shown in figure 2.

3.2 The Assessments Module

At Manukau Institute of Technology, courses typically consist of a number of assessments that take place during the semester. If the gradebook is to be used to maintain student results, the assessments (or gradebook items) need to be created. This is achieved in Blackboard from the Gradebook page in the Control Panel by clicking the Add Item link and then entering the details of each assessment.

The Toolbox interface presents all the assessment items in a single grid, showing the maximum number of points as well as weightings. This allows the tutor to see all assessments at a glance, and easily determine whether they sum up to 100 marks.

Note that there are a couple of shortcomings in the assessments module. There is no way to set the grade

display option, and it is not possible to set course weightings initially. The grade display option can be set in Blackboard in the normal way, and if at least one course weighting is initially entered in Blackboard then the others can then be altered in the Toolbox. Blackboard have acknowledged that there are some shortcomings in the Gradebook API in version 6. (See the discussion forum at <http://forums.blackboard.com:8080/~bbdn/login> and search for "Using the Gradebook APIs"). These problems have hopefully been addressed in version 7.

3.3 The Content Module

As a member of teaching staff, the author found that one of the most time-consuming parts of using Blackboard was uploading course materials file by file. If any alterations are made to the documents after uploading then they need to be uploaded again. Of course it is possible to zip multiple documents into a single file and upload the zip file, but there are some disadvantages to doing it this way. Firstly students need to know how to manage the zipped file; secondly students are required to download the entire package even though they may only be interested in one of the files it contains; and thirdly if any of the source documents are modified, the whole zip package needs to be rebuilt and then uploaded again.

Although this complaint is commonly aired by staff members, surprisingly there is little discussion of this issue in the literature.

The Content page of the Toolbox presents the main content areas (the names of these may vary, but are typically Course Information, Course Documents, Assignments and Labs, Books, and External Links) in a single tree view. The user can rapidly drill down to the level they are interested in. The tree view shows folders and items, while the information in the right-hand part of the screen shows details of the folder or item currently selected in the tree view. Figure 3 shows a screenshot of the content building block.

More specifically, at the top of the right-hand side of the page the title of the item or folder is shown. A dropdown colour palette allows the title's colour to be rapidly altered. Following that is a text area where the comment is displayed and can be edited. This text area contains a fully-featured DHTML formatting toolbar allowing the comment to be edited in a true WYSIWYG environment. Then comes the availability/tracking panel. From and To availability dates and times can easily be set, and the Tracking option can be chosen if required. Finally a grid shows a list of files that are attached to the item or folder.

One of the features that makes this page of the Toolbox particularly useful is that the tree view and

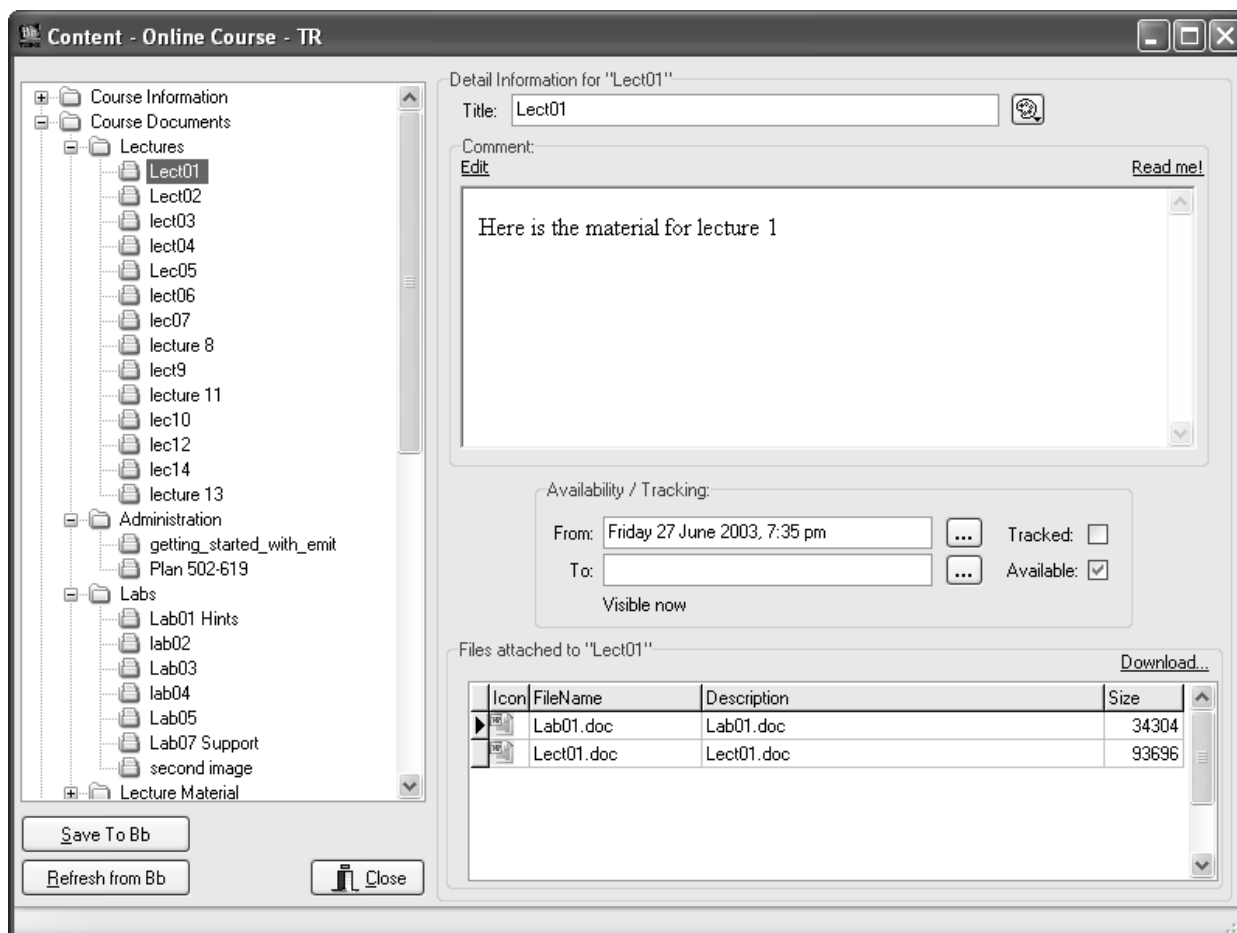


Figure 3: Blackboard Toolbox – Content.

the file list grid are drag and drop aware. It is possible to drag files from Windows Explorer and drop them onto the required folder or item (or copy and paste them). The files will be automatically added to the list of attached files, and subsequently uploaded to the Blackboard server, and links for them created in the corresponding content area.

It is also possible to drop whole folders onto the tree view, resulting in a new folder being created in the appropriate content area, with all the files inside it. The Toolbox is also aware of the date and time that a file was last modified, so that if a staff member is using it on the same PC that they created the documents, the Toolbox can automatically detect any documents that have changed since they were last uploaded, and upload them again.

3.4 The Dropbox Module

It is well-recognised that the administrative overhead associated with processing electronic submissions can be substantial. Baillie-de Byl (2004) wrote: "Many online educators shy away from electronic submission of essays and projects because of the level of technical expertise required to disseminate, open, critique and administer them." In her paper she describes in detail the tedious and time-consuming administrative process that must occur once electronic submissions have been received.

Lass et al (2003) made the following points: "Initially, with our CMS, WebCT, we found that downloading submitted homework assignment files for a single section or the entire class involved substantial effort: multiple clicks and some typing were required to download each student's program files onto a grader's local file system. It was difficult to distribute or collect student work by lab section while still providing students a common site to pick up and submit material. Once downloaded, additional commands were needed to handle files that were deposited by students that were archived, compressed or encoded (eg. .tar .gz, .uue, .zip). Care had to be taken to ensure that all files were downloaded and that the resulting file had a directory structure that made it easy to find a particular student's files."

Although specifically discussing WebCT, very similar issues exist with Blackboard.

Foreman (2001) discussed similar issues. He stated: "The CMS of the future will have a data management system that, with a single mouse click, uploads or downloads a batch of documents and routes them directly to the desired recipients' hard drives."

The Blackboard digital dropbox presents all files that students have submitted in chronological order. It can be difficult for the tutor to locate files, particularly if the class is large, and/or the dropbox has been used for multiple assignments.

The Toolbox addresses many of these issues. The Toolbox dropbox screen presents the dropbox contents in a grid form. The grid can be easily sorted by any of its columns, and can be filtered by date and also by group. Some of the courses taught at the Manukau Institute of Technology have large numbers of students. While the students are enrolled in the same course, they are split into groups for administrative purposes, and each group is looked after by a different tutor. Using the Toolbox it is very easy to identify dropbox items that belong to a tutor (using the group filter), and within them the items that belong to a specific assessment (using the date filter).

The dropbox screen also allows the items in the dropbox to be marked from within the toolbox, or downloaded to the local file system for assessments that cannot be marked in place.

For many courses, students submit work in Word or Excel documents. These documents can be easily transferred to the marking screen (see the Marking section later in this paper). For other courses, such as programming, where the submitted files need to be downloaded to the local file system and then opened in another application, the Toolbox allows all submitted files to be downloaded in a single action. They are saved in folders named with the submitter's username so that they can be easily identified while marking is taking place. Any compressed files that have been submitted are automatically expanded during the download process.

The Toolbox also allows multiple dropbox items to be deleted in a single action. A screenshot of the dropbox building block is shown in figure 4.

3.5 Dropbox Uploader

A separate application, the Dropbox Uploader, has been created to enable students to upload material to the dropbox in a more controlled fashion than Blackboard provides. This is typically used to collect material that is submitted on campus (such as test papers). Students log in using their normal Blackboard username and password, then select the course, tutor and assessment name associated with the assessment they are submitting. They then have the option of selecting a single file, multiple files or an entire folder for submission. Whatever selection they make is compressed into a zip file and then uploaded to the dropbox of the course they have selected. The assessment name is automatically inserted in the Comments field, so it is a simple matter for the tutor to locate and download the submitted files. Because the Dropbox Module automatically unzips compressed files as they are downloaded, the tutor can, with just a few mouse clicks, download and extract every submitted file.

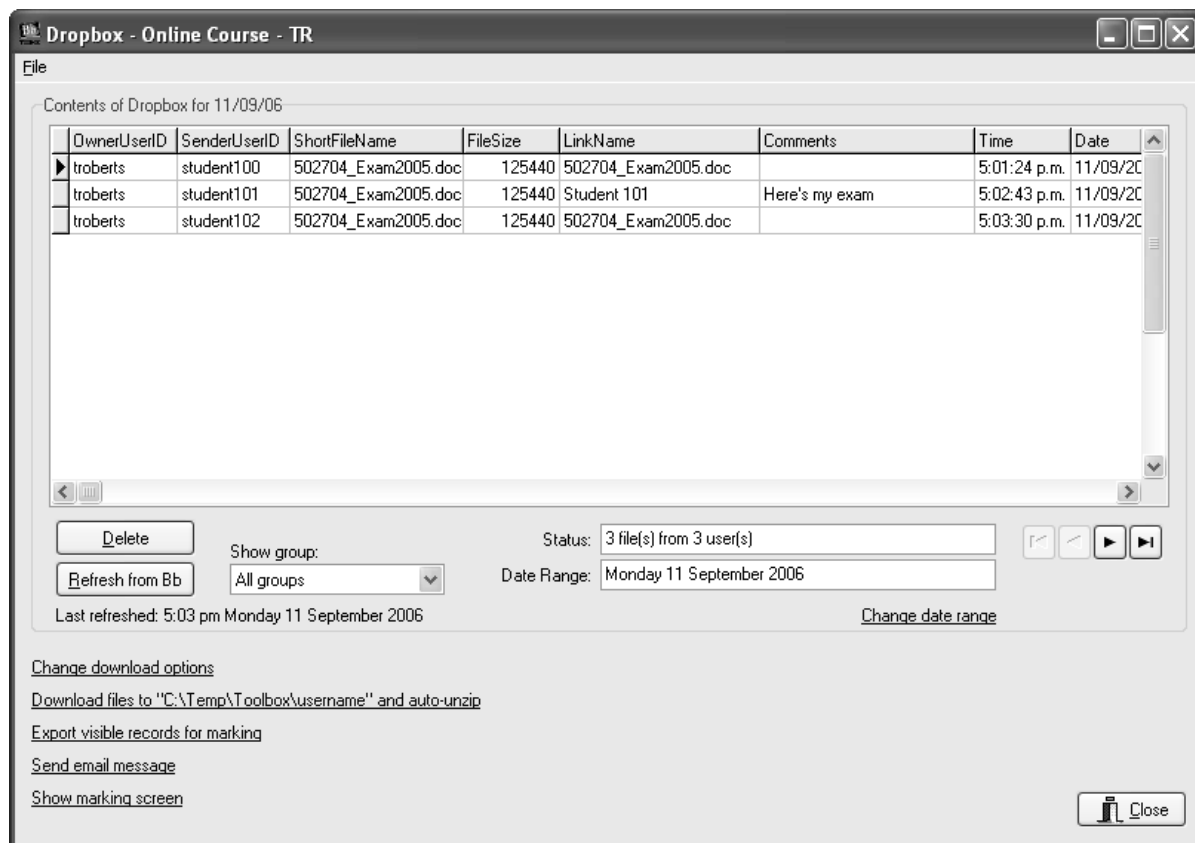


Figure 4: Blackboard Toolbox – Dropbox.

3.6 The Grades Module

The Blackboard gradebook allows both assessment items and student results to be maintained. Assessment items have already been discussed in the Assessments section of this paper. Many users dislike using the gradebook because of the time-consuming and repetitive actions required.

Foreman (2001) wrote: "The grade book is a good example of this complication. Its best and simplest component allows students to track their grades; students enjoy this feature because they like to have a record of their accumulating grades. Advanced users of the system can program it to calculate final grades and to show students their grades relative to the grades of others in the class. The problem with the component is that setting up and maintaining the system takes much more time than does a paper grade book."

The gradebook page of the Toolbox presents all grades for all students in a single spreadsheet-like grid. Staff members can rapidly enter student results, and see the current running totals as they do so. The grid can be sorted by any of its columns, allowing the user to quickly find any anomalies in the data.

The grid also supports copy and paste operations, so the data can be easily transported into another application (such as Excel), manipulated and then pasted back. Or, if assessment data is available in another application, it can be pasted into the grid.

The gradebook building block also provides potential for automated data transfer to or from other systems. At Manukau Institute of Technology, for example, we are currently investigating the linking of this building block with the campus wide student management system.

Figure 5 shows a screenshot of the Grades building block.

3.7 The Groups Module

Blackboard's group feature is useful in a number of different scenarios. At Manukau Institute of Technology, we use groups to break large classes into smaller groups, each of which may be managed by a different tutor. Lab groups can also be created this way. The dropbox feature of the Toolbox makes use of these groups.

The groups building block presents an alternative interface to group data. Students can be easily dragged and dropped onto other groups. Groups can be added and deleted. The properties for each group (ie. whether the group has access to the discussion board, virtual classroom, file exchange and email) can be set. Properties set for one group can be easily copied to other groups.

3.8 The Marking Module

From studies conducted by Preston & Shackelford (1999), the ideal online marking system would:

The screenshot shows a window titled "Grades - Online Course - TR". It contains a table with the following data:

UserID	FirstName	Surname	Exam	Test 1	Test 2	Total	Weighted Total
student100	100	Student	65	10		75	49
student101	101	Student	75	11		86	56
student102	102	Student	85	12		97	63
student103	103	Student	53	13		66	44.8
student104	104	Student	54	14		68	46.4
student105	105	Student	55	15		70	48
student106	106	Student	56	16		72	49.6
student107	107	Student	57	17		74	51.2

Below the table, there is a summary section with the following information:

Assessment	Marks	Weight	Availa
Exam	100	60	False

Summary statistics:

- Number of Students: 30
- Total Points Possible: 140
- Total Weight: 100

Additional controls include a "Report" section with a "Show group:" dropdown set to "All groups", and buttons for "Refresh from Bb", "Save to Bb", and "Close". A timestamp at the bottom left reads "Last refreshed: 5:12 pm Monday 11 September 2006".

Figure 5: Blackboard Toolbox – Grades.

- place emphasis on the student’s submitted work
- allow a holistic view of the submitted work
- provide quick and easy navigation between sections of the work
- highlight syntax to improve readability
- provide markers with a logical and consistent means of critiquing
- allow for student by student or problem by problem marking
- separate the interface of the system from the implementation
- automate grade submission and file downloading and uploading.

Unlike the other features discussed so far, the Marking module is not an alternative interface to data that Blackboard already presents. Rather it is an extra tool that is designed to assist in the marking process. It specifically addresses the last two points made by Preston & Shackelford.

The Marking module works in conjunction with the Dropbox module. A tutor can select all the dropbox items that belong to a particular assessment (as previously described in the dropbox section), and then export those items to the marking page. They will then appear in the marking grid.

The marker can click on a submitted file to open it. They can record any comments in the “Marker’s Comments” box, and assign a mark. In addition, if the submitted document is editable, (such as a Word document), the marker can write further comments within the document (probably after turning on “Highlight Changes” so that their comments are readily visible).

When complete, any updated files will be returned to each student’s dropbox, along with any comments, and the marks are automatically entered in the gradebook.

3.9 The Users Module

When Blackboard was first installed at the Manukau Institute of Technology, students were manually enrolled into Blackboard courses. This page of the Toolbox simplified this process.

Enrolment is now handled automatically, and so the users page is now read-only.

The users module also includes a reporting tool that can generate lists of all students in the course (useful as an attendance sheet for example), as well as a list of students in the groups to which they have been assigned. The attendance sheet can be printed prior to the class, taken to the session and passed around for students to sign. This provides a non-obtrusive means of recording attendance, as well as serving as a permanent record in each student’s own handwriting should the attendance register ever be challenged at a later date. A sample attendance sheet is shown in figure 6.

On returning to the office, the record of those present can be quickly and easily entered into the attendance register. A sample is shown in figure 7. Note that student names have been greyed out in both these figures. From the attendance register screen it is possible to generate a report that can be used for administrative purposes.

3.10 The Projects Module

As is common in many engineering schools, at Manukau Institute of Technology students are required to complete a semester-long project as part of their degree. The projects module was developed to enable supervisors to manage the projects they are supervising. Students meet weekly with their supervisor to discuss the progress of their project. The module allows supervisors to keep a journal of these discussions. After a journal entry is completed, it can be emailed to the student, and placed in their Blackboard dropbox. This has proved a useful means of maintaining a paper trail throughout the duration

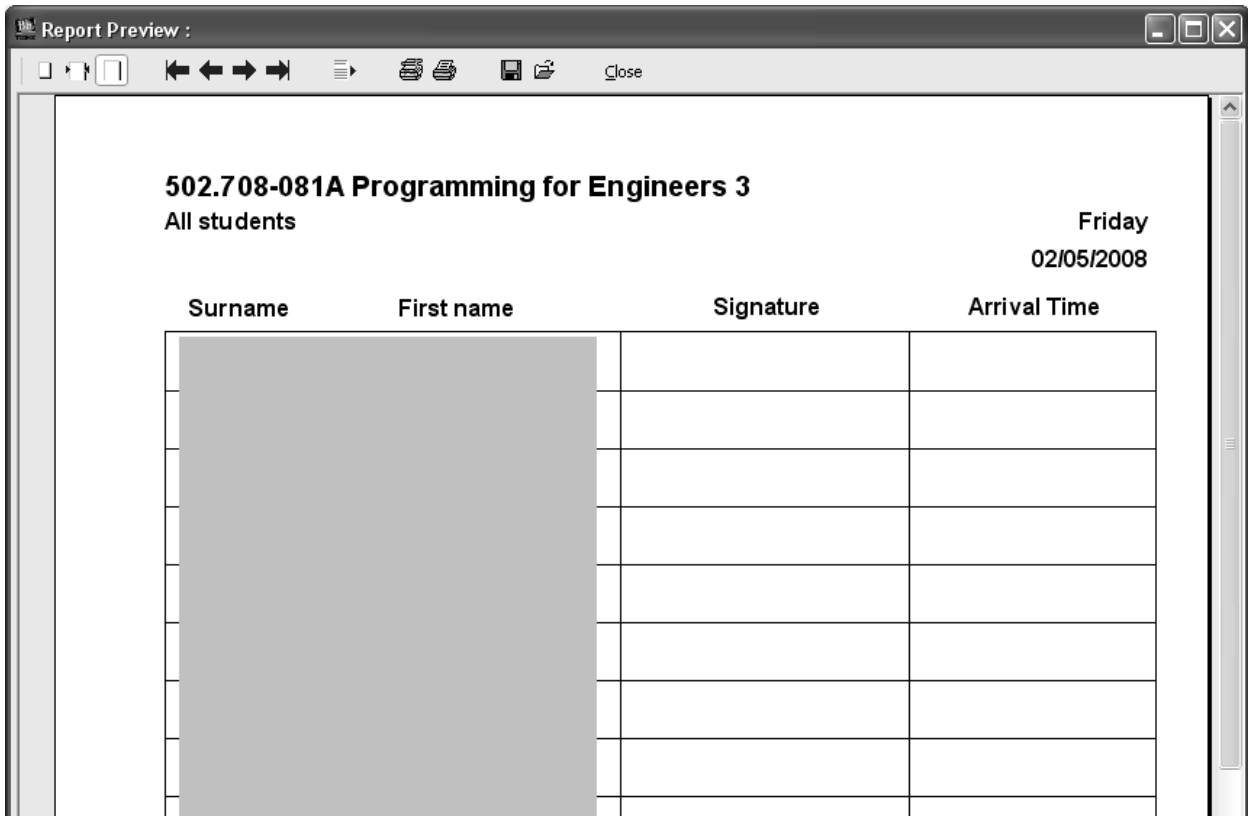


Figure 6: Blackboard Toolbox – Attendance Sheet.

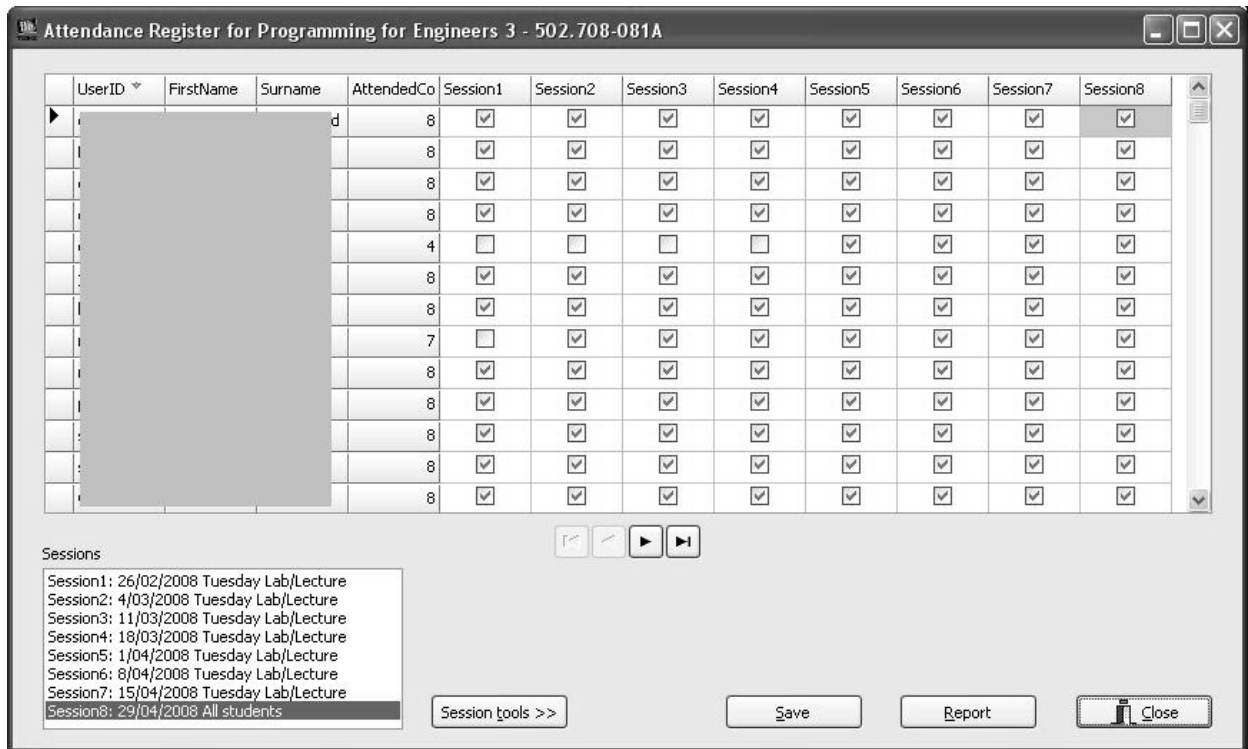


Figure 7: Blackboard Toolbox – Attendance Register.

of each project, as well as providing the student with a record of their progress and goals. For projects that result in a fail due to lack of commitment on behalf of the student, the journal can serve as evidence in examination committee meetings.

Figure 8 shows the project manager screen. From here supervisors can create project groups and assign

group members. Figure 9 shows the project journal screen.

3.11 Media Library

Manukau Institute of Technology is in the process of establishing a digital media library. This library

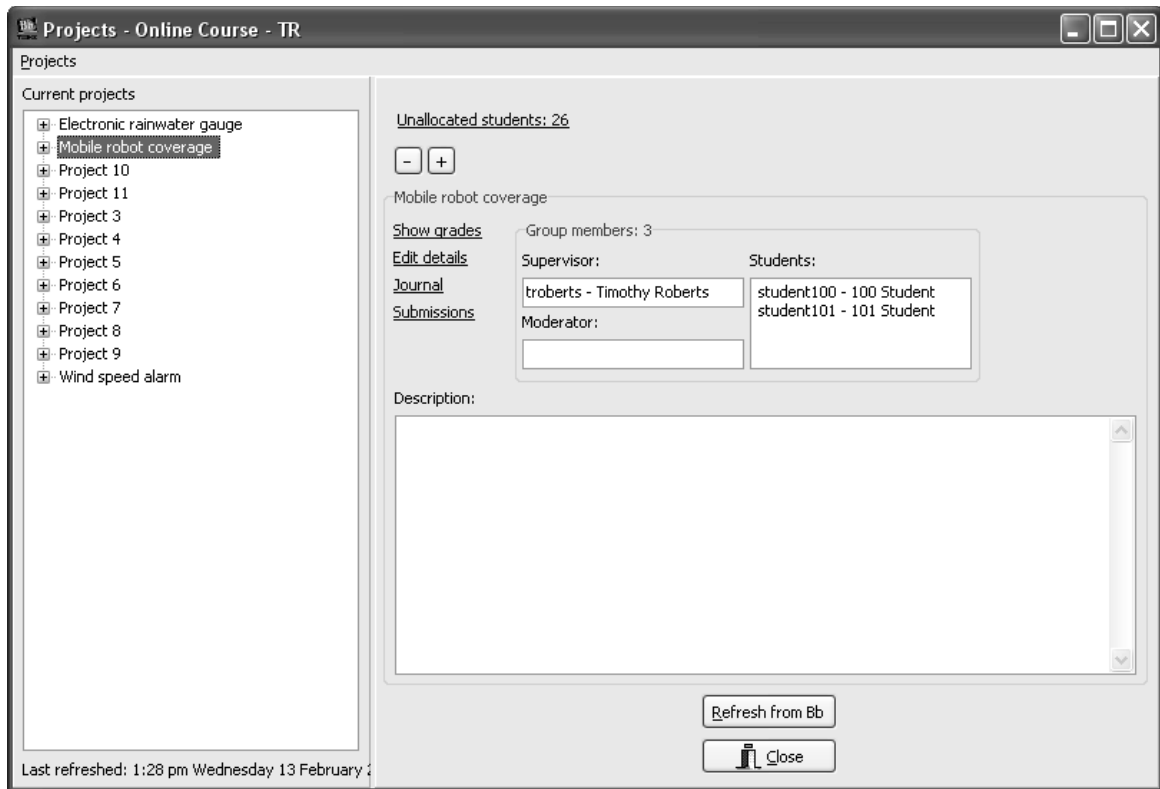


Figure 8: Blackboard Toolbox – Project Manager.

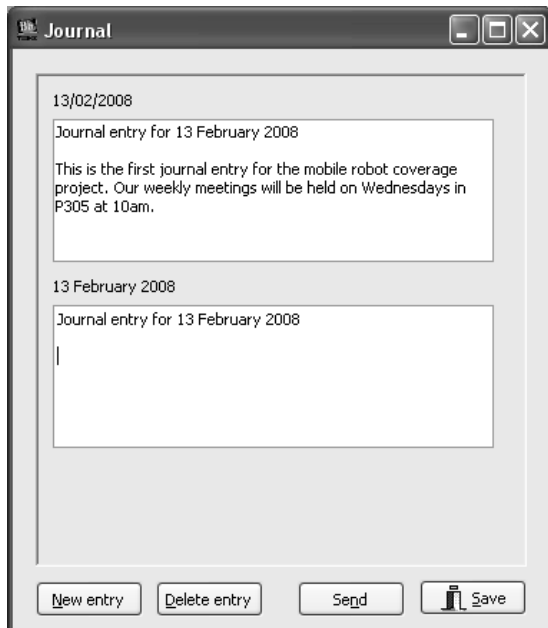


Figure 9: Blackboard Toolbox – Project Journal.

has many potential applications, but will probably initially be used mainly to distribute streaming video and audio resources to staff and students. The Toolbox has a link on the Content page that enables the library to be searched. Once the required resource is located, a tutor can place a link to it from the appropriate Blackboard content area. On clicking this link, students will be able to view the resource in a suitable player (such as QuickTime). Staff will also be able to play the videos in the classroom via the datashow projector.

Although it is certainly possible for individual staff to upload digital media into the content area for their course, this results in potentially large files being stored on the Blackboard server. Even worse, every time the course is rolled over into a subsequent semester, the resource files are copied, resulting in multiple copies of the same (probably large) media files. The media library overcomes this issue as the course contains only a link to the object, not the object itself.

4 INSTALLATION DETAILS

BBToolbox will run with Blackboard versions 6 and 7. It is deployed as two main files along with a small number of dll files. The main files are:

- *ToolboxPlugin.war* is a Java web archive file that contains the building block. This is the file that is installed on the Blackboard server. Installation of a building block is normally something that is carried out by the person or team in your institution who run and maintain the Blackboard server. They may be reluctant to install the building block in a live environment without having first tested it in a development environment. Most institutes that use Blackboard will have a development server running that can be used to test upgrades and building blocks without affecting the live server, so you may need to run it in this environment for some time. Note that the building block is useless unless tutors are given access to the BBToolbox.exe file. This

is a point that can work in your favour if you are trying to persuade the system administrator to install the building block for you.

- *BBToolbox.exe* is a Windows executable. It provides the front-end to the building block. It can be distributed in two ways. It can be installed on a file server and individual users can run it from the server, or it can be distributed to users for installation on their own machines. For on-campus use, installation on a file server is the preferred option because it gives the administrator more control over the configuration options and also makes it easier to install updates. If, however, you want to allow users to run it without a connection to the institute's file server, it can be installed on a user's local hard drive.

Full installation details can be found in Roberts (2008).

Most of BBToolbox will run with a standard installation of Blackboard. There are, however, two features that will not, and those are the Media Library and the Attendance Register. These features require a connection to an Oracle database. The author can supply more information if required.

5 CONCLUSION

5.1 Usage statistics

The Blackboard Toolbox is in use by a growing number of staff at Manukau Institute of Technology. In addition, students use the Dropbox Uploader Module to submit assessments. In total, over 300 distinct users logged in at Manukau Institute of Technology over the 2007 academic year. The toolbox collects usage statistics, and these are presented in figure 10.

As can be seen, the Announcements module has the lowest usage, at 2%. This is to be expected as the Blackboard web interface for announcements is simple and easy to use.

The user report is also listed at 2%. This is a fairly recent feature of the Toolbox and has not been promoted among staff. It is envisaged that eventually administrative staff will monitor attendance rates through the Toolbox, and at this point all staff will be required to make use of it.

The Blackboard gradebook (represented by the scores rating in the chart) is not used much at Manukau Institute of Technology because staff are required to use the student management system maintained separately by the institute for record-keeping. Ultimately it would be desirable to integrate this system with the Blackboard gradebook.

The Courses module does not have a front-end and is used internally to present tutors with a list of courses they are teaching. Most tutors will only update this once a semester, so the usage is low at 4%.

The Assessments module (used to set up the list of assessments for a course) at 5% is underused. This is partly due to the fact that most staff do not use the gradebook.

The Projects module is used by staff in the Engineering School only at this stage and is listed at 8%.

Quite a number of staff utilise the Users module to track attendance and as can be seen it accounts for 12% of activity.

The Blackboard Groups feature is widely used and BBToolbox provides a much improved interface to it, so it is not surprising that it makes up 15% of the usage statistics.

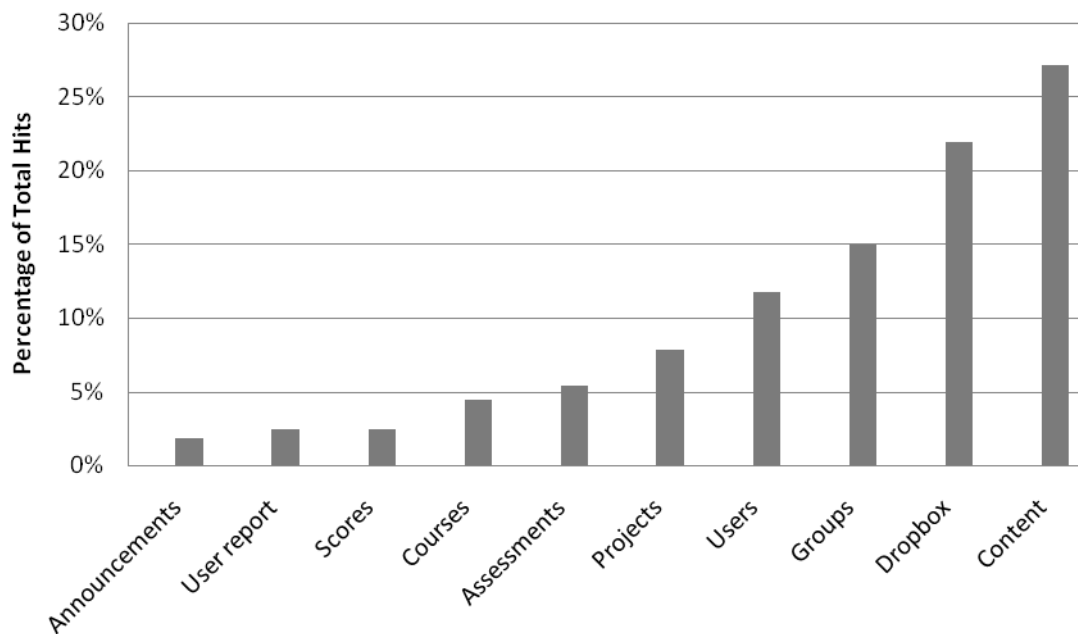


Figure 10: BBToolbox usage statistics.

The Dropbox module also provides a significantly more useful front-end to the digital dropbox than the standard Blackboard interface. Use of the Dropbox Uploader makes it simpler for students to submit tests and other assessments to the dropbox. As can be seen the Dropbox module is the second most heavily used feature of the toolbox at 22%.

Finally the Content module is the most used feature at 27%. Staff appreciate being able to drop multiple files simultaneously, and also automatically update files in the content area when the source file has changed.

5.2 Comments from users

The Blackboard Toolbox is currently in use by a growing number of staff at Manukau Institute of Technology in Auckland, as well as at a small number of other institutes elsewhere in the world. Feedback from the current user base has been very positive, and staff at the institute's Learning Technology Centre have been very supportive. Once the Toolbox is in more general use it will be possible to conduct some research into whether it has been effective in making Blackboard easier to use. In the meantime, however, the staff who have been using it have been asked for their comments. Some of their responses are:

"The toolbox has a number of very important functions that have aided and assisted tutors immensely at Manukau Institute of Technology in manipulating material in their Blackboard courses.

It has allowed tutors to easily add/remove content in courses and has been a particularly helpful and invaluable tool – one feature in particular being the dropbox function. This function is particularly useful and effective with our tutors who are marking assessments off-site allowing everything to be centralised and easy to find.

We currently have approximately 40 tutors who have access to this toolbox. The feedback has been very positive and has not only made using Blackboard easier, but it has made marking of assessment material a lot easier."

– Lisa Ranson (Manukau Institute of Technology Learning Technology Centre).

"The BB Toolbox has made a major contribution to both assessment recording, attendance monitoring, student project progress and student resources.

I use the assessment recording (in conjunction with exam manager) to mark assessments and then automatically upload them to eMIT – no errors. When marking a practical lab I can select the group of lab students (multiple labs in a single course) and enter their results quickly and conveniently. I can also print out results by selected groups and thus compare statistics for each group.

The printing of attendance registers for all students or selected groups is very convenient and the

automatic generation of attendance sessions for later recording enables student attendance to be monitored by the administration staff without the need for constant paper updates.

Student project work with the regular supervisor meetings can be tracked easily by Program Directors and students get a written summary of every meeting by email recording progress, issues and suggestions.

Finally student resources – the ease of adding resources together with the automatic monitoring for new versions of these resources makes this task a breeze - no more out of date information on eMIT!

In summary an excellent set of tools packaged together with the academic user in mind."

– Don Alford (Lecturer, Manukau Institute of Technology)

"I have been using BBToolbox for more than a year and find it very useful and user friendly. The uploading of documents to eMIT is now much, much easier. I also use the tool for writing announcements, managing students, printing class lists, writing and marking exams and tests, updating grades. Because it is now much easier to manage eMIT contents I provide more material for students. So students are also winners. My favourite feature is Project Supervision – particularly the Journal part. My research students find a summary of our meetings after each meeting very useful."

– Snjezana Soltic (Lecturer, Manukau Institute of Technology)

"I utilise the dropbox feature in BBToolbox most frequently for downloading and collecting assessment pieces from students who submit their work through Blackboard. I then correct the work using my computer's inking facility and return the work to students also using the Dropbox facility. I have not even come close to exploring all the features I could use given the short space of time we have been using the program at my campus. I am keen to explore its other facilities further."

– Claire Charles (Teacher, Geelong Grammar School)

"The BbToolbox has made the use of BlackBoard far more efficient for instructors when using the digital toolbox. Instructors can now reliably sort and exchange files with students. One of our campuses has no email or external internet site access and the digital dropbox is the preferred tool for exchanging electronic documents. Without the toolbox, it could not be used. The toolbox has also allowed instructors to more readily access and add content within their courses. A valuable tool all round."

– Brad Walter (Database Administrator, Geelong Grammar School)

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TIM ROBERTS

Tim Roberts graduated with a Masters degree in Engineering from the University of Auckland in 1991 and was employed to create a computer simulation of an electrical machines laboratory. This was his first taste of engineering education. Following the completion of that project, he worked for an engineering consultancy for five years, largely in the fields of process control and industrial automation.

In 1997 Tim joined the Manukau Institute of Technology, where he lectures in the School of Electrical and Computer Engineering. He is one of a number of members in the department who are active in the field of engineering education, and developed an interest in Blackboard in 2004. Since that time the Blackboard Toolbox has steadily grown, both in terms of usage and of the number of features offered. Tim presented an earlier version of this paper at the AAEE Conference in 2006.

