

# CourseWeb: A Report On Using WebCT for Course Notes

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## Abstract

The author has been supplying course notes to students on the computer network for many years. These were usually developed using a word processor, but in 1999 the course notes were converted to web pages so they could be viewed by a web browser. This system, referred to as CourseWeb, allowed the use of hyperlinks to definitions and other resources available on the World Wide Web, which (hopefully) provided a richer source of course material as well as making the notes more enjoyable for the students to use.

One disadvantage of the 1999 version of the author's notes was that they were stored as files on the local network, which means they were inaccessible from outside TWP. This year, the notes have been incorporated into TWP's WebCT server, which in addition to making them available outside the Polytechnic also provides a bulletin board where students can post queries to the tutor and share ideas.

This paper provides the results of a survey which was given to the students in 1999 on the general effectiveness of CourseWeb. In addition, the paper reports the results of a survey given to the students in 2000 that assesses the effectiveness of the notes using WebCT with its extra features as well as the author's experience using WebCT.

**Keywords:** Internet delivery, online learning materials, WebCT

## 1. INTRODUCTION AND ORGANISATION

This paper describes the author's experience in making course notes available to students.

The paper is divided into the following sections:

Section 1 provides an introduction and historical background, giving the author's experience in making course notes available on computer systems through several versions.

Section 2 describes CourseWeb 1, which was the first set of notes which were organised as web pages. The general structure of the notes, problems encountered in producing CourseWeb 1, and the results of a student survey are presented.

Section 3 describes CourseWeb 2, which consists of CourseWeb reorganised and presented to the students using WebCT. As before, the general structure, problems encountered, and the results of a student survey are presented.

Section 4 describes some findings and conclusions.

Section 5 describes further work to be done on future additions of CourseWeb.

Section 6 presents references consisting of printed works and websites that can be accessed to provide material supporting this paper.

### Historical background

Since his early days teaching at the University of Waikato, the author has used a word processor to prepare slides for course notes. Students then began requesting a copy of the notes prepared as a handout. This seemed a good idea, as they could scribble their own notes in the margins and gaps of the text. Later, the author started distributing the notes files he created to students, though because of the nature of the VAX machine used at the time the author had to translate the files from MS Word format to text.

The students' reaction to this was generally positive. Students appreciated having a printed reference which was directly applicable to the course. However, students started taking this for granted, and complained when the notes were not made available to them.

When the author took a job at The Waikato Polytechnic (TWP), he continued this practice of using a word processor to prepare notes. As both the students and the

author had access to the student network server (and MS Word), a natural step was to make a copy of the files available to the students on the network. The students' reaction to this has also been generally positive. They could now make their own copy of a notes file and modify it during class time if they wish.

As the web became more and more ubiquitous, more and more of the teaching at the Polytechnic involved the use of the web for course materials. A natural step was to convert the MS Word notes into web pages so students could view them with a web browser. Not only were the notes available on line, but links to other pertinent websites can also be included right in the notes.

This process was begun at the beginning of 1999. Since then the author has been systematically converting the Word notes into HTML format and assembling them into a structure referred to as *CourseWeb*. The students' reaction to this has again been very positive.

## 2. COURSEWEB 1

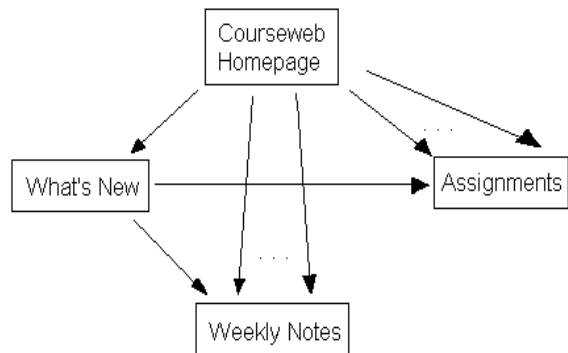
### Organisation

In the first version of the author's online notes, the files were translated from Microsoft Word to HTML. The text of the Word notes was copied and pasted into a freeware web editor called **Arachnophilia**. This package was chosen not just because of its price, but because it is effectively a text editor with special HTML tools and an internal web page viewer added. Because the HTML text is edited directly, this gives the creator complete control of the format and layout of the documents.

All of the course notes use a standard format. There is a home page containing the following features:

- Course title.
- A link to a "What's New" page (which may contain links to other pages in CourseWeb).
- The purpose of the course.
- Lecturer's name, office number, phone number, and e-mail address (including a link to send e-mail directly from the page).
- Texts used in the course.
- A syllabus for the course, including topics covered each week, links to web pages for the notes for that week, and links to assignment pages with due dates.
- A description of the method of assessment used in the course and the assignments given.

- Additional information pertaining to course organisation.



**Figure 1. CourseWeb 1 web page organisation.**

Each web page may contain links to other pages in the CourseWeb or to WWW links.

### Problems with developing CourseWeb 1

One of the main problems with this approach is the large amount of time it takes to create a web page. Though in the main the task consists of merely copying and modifying notes which have been previously written, even this is an arduous process. The text must be reformatted in HTML, which often needs to be done paragraph by paragraph. Further, if there are any images in the notes these must be converted to a GIF or JPEG file to be included in the web notes. Even more time-consuming is the process of searching the web for useful sites to link to. Two online computing dictionaries are frequently relied upon for definition of terms, FOLDOC and whatis.com (see web page URLs in Reference section below). As a rough estimate, it generally takes three to ten times as long to create web notes for a class compared with preparing notes with a Word document.

One problem with the original Word notes was font size. The notes were presented in lectures to the class as slides using an overhead projector. To make them readable as an overhead a large font size needed to be used, which kept the amount of text per page to a minimum. This proved troublesome for the students' version, as the large font was ponderous to read on a screen and took up a lot of paper if they tried to print it out. Students frequently spent (or wasted) a fair amount of time and/or paper reformatting or printing the document.

This problem had been solved in Word by defining a second document template which duplicated all the paragraph styles in the slide template, but in a smaller font. The page breaks were then removed as appropriate and this version was made available to students on the network.

The problem of large, sparse text for slides and small, dense text for online notes was present in the HTML version of the notes. To solve this, a cascading style sheet was used to redefine the standard HTML styles in a larger font on the author's machine when using Internet Explorer (but not Netscape, which allows the students' version to be viewed). The style sheet is not present on the network, so the text appears in the standard size in the students' version.

The problem of page breaks not being available in web pages is solved by selecting the text in page-sized blocks and printing each selection separately on a slide. This is somewhat problematic, as it's easy to miss some of the notes or forget to click the "Selection" button on the Print dialog box, in which case the entire document is printed by accident. At present no better way has been found.

### The First Online Survey

A survey was drawn up and given to the students in class. The survey consisted of a web page with a form for questions. Answers were generally in the form of a number, ie. 1 - disagree, 5 - agree, etc. There were also text boxes for including long answers.

Some of the notes supplied to the students were several pages long. Conventional wisdom has it that web pages shouldn't be too long as readers don't like to scroll when viewing web pages (Neilsen, 1997), although this may not matter if the topic is interesting enough and/or can't be easily compressed or broken up. Accordingly, the survey included a count of people who thought the pages were too long.

E-mail was sent to students telling them the URL and inviting them to participate in the survey. After the online form was filled out, students' answers were submitted to an ASP document and inserted as a record in an Access database.

### First Survey results

A simple Access database application was developed to assess the responses. The application produced a report of statistics on the survey, namely the number of each numerical response entered for each question, the percentage of ticks indicating the notes were too long, and a list of the written responses. Each report was generated in turn and converted to a web page.

The response to the survey was generally positive. The results are summarised in Figure 2.

Question	Answer	Author's comments
How would you rate the usefulness of the course notes for your study?	4.1 – Useful	
I have used the notes for preparation for classes.	3.24 – Often	Students may have been somewhat hampered by the notes sometimes not being made available until just before class.
I have used the notes to catch up on missed classes.	3.88 – A lot	
I have used the notes for review.	3.76 – A lot	
I have followed the weblinks provided in the notes.	3.41 – sometimes to a lot	
I have found the notes helpful.	3.29 – agree	

Figure 2. Responses from the first survey.

### 3. COURSEWEB 2

One major disadvantage to CourseWeb 1 was that it was not available outside The Waikato Polytechnic. The student had to be onsite and logged in to the student server.

To rectify this, it was decided to integrate CourseWeb into TWP's WebCT system, which is maintained by the Polytechnic's Innovation Centre. During the integration the notes were reorganised, with material presented either by course or by topic as appropriate.

Using WebCT has the following advantages:

- The notes could be accessed from outside the Polytechnic.
- The new structure allows any course to access general notes more easily.
- WebCT also includes a bulletin board, where information can be dispersed by the lecturer and questions can be raised by students and answered in a timely manner.

#### CourseWeb 2 Organisation

In CourseWeb 2, students access the notes by using a browser to get to the WebCT website (the welcome screen is shown in the Appendix).

The URL for CourseWeb's WebCT site is given in the references.

There are three areas the student can access by clicking on the links:

**Course Content.** This is the area where the course notes are stored.

**Bulletin Board.** This is an area where the lecturer and students can share information and raise questions.

**Calendar of Course Events.** This is an online calendar where students can record important events related to their coursework.

#### Course Content Organisation

Clicking on the "Course Content" link takes you to a screen with a menu. The menu contains the following:

1. **Matt's Home Page.** This is a general page describing the information which is available on CourseWeb.
2. **PR204 (Operating Systems Programming) Notes.** Information on the BIT course PR204.

3. **IT230 (Data Structures and Algorithms) Notes.** Information on the BIT course IT230.

4. **C++ Programming notes.** Reference notes on C++ programming.

5. **Prototyping Framework.** Reference notes on prototyping methodologies.

6. **Operating Systems Framework.** Notes on operating systems.

7. **Creating command line programs.** The first few programs in the author's C++ programming courses required students to generate a command line program using Borland's C++ Builder development tool. This was a link to the instructions to do this.

Thus, CourseWeb 2 using WebCT has the following structure:

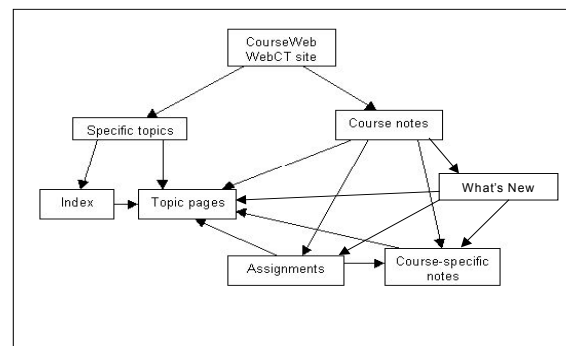


Figure 4: CourseWeb 2 structure.

At the time of writing, the WebCT implementation of CourseWeb has been accessed 1286 times so far this semester. Subtracting perhaps 200 accesses by the lecturer for maintenance, this averages to around three or four accesses per week per student in the first semester.

#### Problems with Developing CourseWeb 2

Compared with translating the course notes from Microsoft Word format to HTML, adapting them to WebCT was relatively easy. Most of the work consisted of pulling the material for specific topics out of the course notes and reorganising it. Adapting it to WebCT was mainly a matter of copying files to the WebCT server, then creating a front end (see the Appendix) for the students to access the notes easily.

However, a number of problems occurred with the setup and maintenance of CourseWeb 2 on WebCT. Firstly, there were problems with the file names, many of which contained space characters. These are allowed in Windows 95, but because WebCT is implemented on a Linux server, the Windows 95 file names with spaces could not be accessed properly. This meant changing

not just the file names, but the links in the web pages to the file names. This was a tiresome task.

There are bugs in WebCT. Most notable perhaps is that WebCT had difficulty presenting web pages with a combination of frames and cascading style sheet file references when Netscape was used. This meant that Internet Explorer had to be used when viewing the specific topic pages, which have an index in one frame and the page contents in another.

Many people, including both the author and the students, found WebCT's interface confusing. This is particularly true of the Bulletin Board, the links of which are not clearly marked as to function. For the author, it was difficult to find tools which had been used previously, as again the hierarchy of buttons can be misleading and the buttons labelled in a way that is not terribly helpful. However, this became less of a problem when familiarity with the system was gained.

One exasperating problem experienced by the author is the problem of updating files. This can be done in two ways:

- Edit the file using the WebCT editor. This is rather unpleasant, as the editing tools provided are distinctly unfriendly.
- FTP an updated file to the WebCT site. This is the preferred method, as it allows the author to use more sophisticated tools for editing, but if the files are not FTP'd correctly it can prove embarrassing in class.

However, editing and/or FTP'ing the files is only the first step! The lecturer must also remember to click the **Update Student View** button. Confusingly, the files which are in the lecturer's WebCT directory are not the pages which the students see. It is therefore necessary to click the afore-mentioned button to update the files which make up the student's view. If the student's view is not updated, it is still possible for the instructor's view to show the updated version even though the students can't see it. Further, web pages are cached at several levels: on the server machine, on the client machine, and additionally the author uses a web accelerator called **Netsonic** which maintains its own cache. Therefore, it is possible for the student's view to be updated, even

though it doesn't look like it from the instructor's machine. These multifarious complications can make maintaining a WebCT site like wandering through a hall of mirrors.

At the beginning of the year, the author carefully recorded all important dates such as assignment due dates, test dates, etc. on the WebCT calendar. Unfortunately, this information did not show up on the students' calendars, as unbeknown to the author each WebCT account comes with its own individual calendar. Another embarrassing moment in class!

Another major problem arose much later, months after CourseWeb 2 had been implemented. For some reason, whatis.com decided to change the format of their website. The result was that nearly all CourseWeb links to pages on whatis.com—which by this time number in the hundreds—are now dead. An e-mail was sent to whatis.com to complain. They expressed some sympathy, but offered no easy solution. All the links must be checked and fixed by hand.

### **The Second Online Survey**

A second survey, similar in style and content to the first, was prepared and given to the class online as a web page. The questions on this survey centred mainly on the WebCT implementation of CourseWeb. This time, students were told of the survey in class and by using the WebCT bulletin board. As before, an online form was filled out by the students and submitted to an ASP document. The survey answers were inserted as a record in an Access database as before.

### **Second Survey Results**

Rather disappointingly, the response rate to the survey was even poorer than the first, around 8% of the students answering the survey. This is perhaps an indication of how often students checked the bulletin board. The number of postings to the bulletin board was quite high in the first week or two, but dropped off dramatically after that. Perhaps the novelty wore off, or students found it was quicker and easier to ask the lecturer or other students in person than it was to post a question on the bulletin board.

Seven questions were asked to be answered on a scale from one to five. The results of these questions is as follows:

Question	Answer	Interpretation
How would you rate the usefulness of the WebCT notes for your study?	3.3 – “Sort of useful” to “Useful”	Students found CourseWeb rather useful
I have used the web links included in the notes...	3.3 – “Sometimes” to “Often”	Links to other sites were followed from time to time
For the Web links I have used, in terms of helping my understanding I would rate them...	3.0 – “OK”	The web links were reasonably helpful
Compared with last year, I have found the WebCT implementation of the course notes...	4.0 – “Somewhat better”	Students regarded WebCT as something of an improvement over HTML files on the local network
The WebCT bulletin board feature is...	3.0 – “OK”	Students were lukewarm about the bulletin board
I found accessing the WebCT notes offsite...	2.7 – “OK”	One student never tried, the others found it reasonably helpful
How much trouble I had accessing the notes offsite:	1.7 – “Never tried” to “No trouble”	One student never tried, the others had no trouble accessing the notes from offsite

**Figure 5. Table of quantitative responses**

In addition to the quantitative questions, two qualitative questions were asked regarding general comments and suggestions for improvements. To summarise briefly, one student liked the course overview page (see Appendix) because it helped with navigation. Another student complained that a lot of hunting was still required to find what they were looking for and that the user interface “leaves a lot to be desired”, though whether this referred to WebCT or the author’s notes is not clear. The third student declined to answer the qualitative questions.

#### 4. FINDINGS AND CONCLUSIONS

The following conclusions can be drawn:

- Students like having course notes provided, as they provide an easy (and cheap, at least for them) source of course material.
- For this subject area (IT), the use of web notes is singularly appropriate. Apart from being able to tap directly into the vast resources already available on the web, the notes can actually be used to demonstrate the principles they describe. This is particularly true for a course on developing web pages. For example, in a public access course on Micro-

soft FrontPage taught recently by the author, FrontPage itself was used to create the course notes, which themselves constituted an example of what could be done with that application.

- The WebCT implementation was generally regarded as an improvement because of the greater integration and cohesion it provides to CourseWeb. Also, offsite access was appreciated by students able to take advantage of it.
- WebCT is not perfect. It can be rather awkward to maintain and use. Problems may have been exacerbated by the fact that pre-existing notes and a pre-existing process of their creation were in effect shoe-horned into the WebCT system, which caused numerous problems:
  - Awkwardness in editing the notes and FTP’ing them across to the WebCT server.
  - Incompatibility of cascading style sheets combined with Netscape when using WebCT.

At present, the author is unsure if continuing to use WebCT is the best option.

- Surprisingly, the bulletin board was not as popular as expected. Students simply prefer to use e-mail. Some instructors work around this problem by including use of the bulletin board as part of the assessment, for example Dewstow, McSporrán, and Young (2000). While this was appropriate for the topic taught by Dewstow et al., including bulletin board use as part of the final grade is not appropriate for topics which do not involve computer communication tools as part of the curriculum.
- Because of the problems with filenames and links that were encountered in CourseWeb, it was realised that a tool that viewed a website as a whole was needed. Microsoft FrontPage performs this task very nicely. Hence, the development tools used for CourseWeb are currently:
  - Microsoft FrontPage for overall web maintenance, eg. renaming and moving files. This eases the problem of having to update links by hand when renaming files.
  - Netscape Composer for making quick modifications to web pages.
  - Because FrontPage and Composer both tend to add unwanted HTML code to web pages, Arachnophilia is still used for special formatting touches as well as creating and maintaining JavaScript files. Universal formatting issues such as standard fonts and sizes are taken care of by style sheets, which customise the look of CourseWeb without causing Composer and FrontPage to add unwanted formatting tags.
- To ease maintenance, the paragraph style sheets and the format of the note page headers needs to be standardised in such a way that they can be modified quickly and universally. At the time of this writing, a new draft version of the notes is being developed which uses central JavaScript files and cascading style sheets to standardise the page headers and paragraph formats. Thus, any change in the general format of CourseWeb can be made quickly and universally by modifying these central files.
- New courses are being added to CourseWeb, including a third-year course in C++ programming and a public access course on web development using Microsoft FrontPage. Currently these exist on the draft version and are not yet part of WebCT.

## 6. REFERENCES

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## 5. FURTHER WORK

CourseWeb is very much an ongoing project. Based on experience gained and feedback from students, the next version of CourseWeb is currently under development. The following issues are being addressed:

- Because of the difficulty involved, the use of WebCT as a delivery vehicle for CourseWeb is being re-evaluated. In some ways it would be easier to use a web server without the WebCT trappings, but a number of policy issues at The Waikato Polytechnic need to be addressed before this could happen.

7. APPENDIX A: COURSEWEB 2'S WEBCT WELCOME SCREEN



Welcome to Matt's courses for Year 2000!



contents

[Course Content](#)



bulletins

[Bulletin Board](#)



calendar

[Calendar of  
Course Events](#)

**A good place to start is the Course Guide**

REMEMBER TO CLOSE YOUR BROWSER TO LOG YOURSELF OUT

This page has been accessed **01047** times.