

# **Creating E-text**

High Tech Center Training Unit

**of the California Community Colleges at the  
Foothill-De Anza Community College District**

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## **Converting from Different Formats**

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The list below indicates some options of how to handle various e-text formats. For PageMaker, Quark, and EPS, you will not be able to access them without the proper programs. Sometimes, even when you have the program, scanning from scratch can be the fastest choice. In fact, if you have a high-speed scanner, you are often better off scanning than waiting for files from the publisher.

### **PageMaker**

Adobe PageMaker required for access

**PDF**

**copy and paste**

**EPS to TIFF**

### **Quark**

QuarkXPress required for access

**PDF**

**copy and paste**

**EPS to TIFF**

### **RTF**

**open through Word**

### **ASCII**

**open through Word and save in Word or RTF formats**

### **PDF**

**read with Kurzweil 1000**

**change to text with OmniPage Pro 11.0**

**change to text in Acrobat**

### **HTML**

**open through Word**

## Steps in Creating E-text

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1. Remove the binding from the text. (Check to see if your campus print shop has a "guillotine.")
2. Scan the book a chapter at a time.
3. Scan to a multipage TIFF file.
4. For Kurzweil, open the TIFF in the Kurzweil Scan/Read station and save as a KES document. Once the file is in the KES format, you can open it on any Kurzweil system.
5. For other e-text uses, such as Braille, run the TIFF through an OCR program.
6. Strip out headers and footers, but make sure to retain page numbers.
7. Delete graphics for now, but if possible, retain the captions for figures that are referenced in the text.
8. If you are doing a math or science book, don't worry if the equations get lost, you can add them later.
9. If you have a foreign language text, make sure to set the OCR program's language feature to include that language.
10. Use the OCR program's proofreading capabilities to clean up the text as much as you can.
11. Save the resulting file to Microsoft Word.
12. Use the MS Word styles to prepare the document for Duxbury or large print, etc.
13. Rebind the student's book to return to him/her.

### Step One

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Get in the habit of checking Louis and the HTCTU Alternate Media Exchange (AMX) Database before ordering e-text and before producing braille or recording a book. Someone else may already have done the work!

Louis database at [www.aph.org](http://www.aph.org)

AMX at [www.htctu.fhda.edu](http://www.htctu.fhda.edu)

## TIFF Scanning

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When you scan a black and white page, your scanner automatically creates a TIFF file, which is a graphic. The scanner works in essentially the same way that a copy machine does; in other words, the scanner takes a picture of the page. However, rather than making a hardcopy picture of the page, it makes a digital picture, a TIFF.

When you do your scanning, you can use a scanning utility (Scanning Utility 5000 comes with the Canon scanner) or a program such as Adobe PhotoShop. You can also scan directly into Kurzweil.

Scanning utilities are usually the best option for production as they can handle auto feed and multiple pages in a document. If you are scanning using Kurzweil, an excellent overview of TIFF scanning can be found at the following Web site: <http://www.indiana.edu/~iubdrh/etext/k3000prep.htm>

The ultimate use for your e-text will determine what you do with the TIFF file. If you want to use the TIFF in Kurzweil, you can open it on the Kurzweil Scan/Read station and save it as a KES format. The KES format can then be opened on any Kurzweil station.

If you are taking your file into electronic text in preparation for creating Braille or large print, you will need to extract the text from the picture by running optical character recognition on the file using an OCR program. There are a number of OCR programs on the market, but OmniPage Pro and Fine Reader are two of the best.

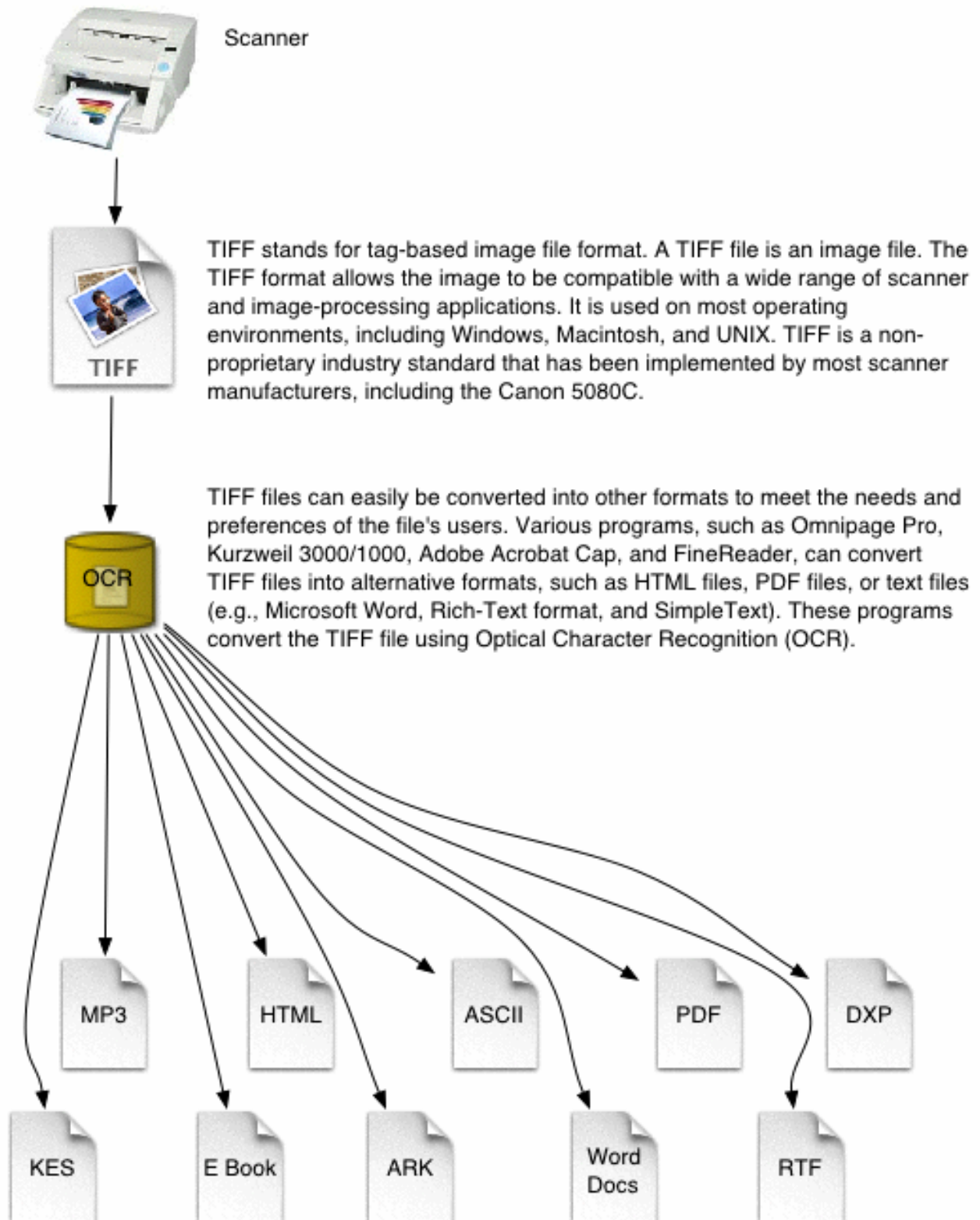
We recommend scanning first to TIFF then opening your document in the OCR program. This process is more stable than scanning directly into the OCR program. Also this process will allow you to save your TIFF file. We recommend archiving the TIFF for later conversion to a different file format.

For those of you using the Canon 5080C, we have found that the best scanning settings for keeping the graphics is Black and White ED at 400 DPI. If you open the TIFF file in Kurzweil Scan/Read, you can enhance your results by using the Kurzweil "despeckle" feature.

If you only want the text, the best setting is Black and White at 300 DPI.

## What is a TIFF file and what are some of its uses?

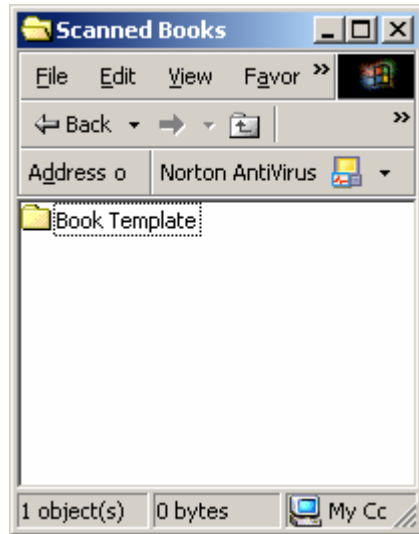
High Tech Center Training Unit



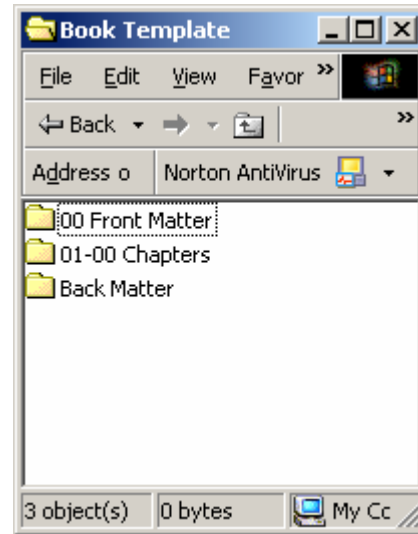
## Create Folders for Scanning

Before you begin scanning, create a folder of scanned books, and within that folder create a template that you can copy and rename every time you scan a new book. The template should have folders for front matter, chapters, and back matter within a folder that will be named for the book.

Level One



Level Two



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## OCR Processing

We recommend OmniPage Pro or Abby FineReader for your OCR processing. When you scan, you take a picture of the page. Running OCR (optical character recognition) on the scanned document means using a program that compares what it finds on the page to what it holds in memory as known shapes for text. The cleaner and clearer the copy, and the fewer the graphics and symbols in the text, the better the text recognition will be.

Be aware that even though it might look like the Kurzweil program would be more accurate because it uses a TIFF (an exact picture), the Kurzweil, too, runs OCR on the file. The only way to get scanned text into a form for editing is through an OCR process.

To prepare a book for multi-page scanning, you will need to tear it apart. Check with your campus print shop to see if they have a guillotine for removing the spines from books. Also check to see whether they have a comb-binding system or some other binding procedure for putting the pages back together when you're finished. (Some print shops will even do the scanning for you!)

Your campus may wish to develop a policy that when you are scanning (brailleing,

enlarging), you will only do the chapters of the book required for the class. You may also wish to have a policy that you will only scan books that have not been highlighted.

## **Scanning**

Again, we recommend that you scan to TIFF using scanning software and then run optical character recognition on the scanned image.

### **Adjusting scanner values**

**manual vs. automatic (single pages or multiple pages)**

**simplex vs. duplex (single sided vs. double sided)**

(Note: It is possible to get true duplex running the Canon scanner under OmniPage Pro. If you're not getting true duplex in that program, go to Setup and try another driver. You will have at least two listed.)

### **Multiple scanners**

You can have more than one scanner hooked onto your computer so that you can do flatbed or high-speed scanning.

### **Mode**

**Black and white—for text, music, and line drawings; photos will not be rendered well**

**Grayscale—for black and white photos, text on colored background**

**Color—color drawings, graphics, or photos (only on color scanners)**

### **Resolution**

**300 dpi (dots per inch) for black and white; 400 dpi for black and white ED—**

More is not necessarily better when scanning text; for example, if you are scanning text on thin paper, scanning at high resolution may pick up bleed-through text from the back of the paper, whereas dropping the dots per inch down, maybe even to 200 dpi or 150 dpi, may result in a better scan.

### **Page thickness**

Don't mix different thicknesses of paper. If you are feeding glossy or thin paper, you may need to adjust your feeder.

### **Contrast**

Contrast is a measure of how much difference there will be between light and dark parts of an image. OCR quality depends heavily on good brightness and contrast settings. Not all scanners allow manual adjustment of contrast.

### **Brightness**

Brightness is a measure of how dark or pale a scanned image will be. OCR quality depends heavily on good brightness settings. An image where letter shapes run together is too dark. When letter shapes are thin or broken, the image is too light. Many scanners have an auto-brightness feature.

### **Colored backgrounds**

Use the grayscale setting. You may need to decrease the brightness setting of the scanner. You may also need to check the contrast.

### **Strange fonts**

In OmniPage, the IntelliTrain option allows the program to learn as you edit. It will remember the letters it did not recognize. This feature is very useful when scanning unusual fonts.

### **Different languages**

Choose all the languages that are in the document. For math, you may find it helpful to include Greek among the languages so that the OCR program is able to recognize the Greek symbols used in mathematics.

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## **Beyond the Basics in OmniPage Pro**

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### **Understanding zones**

Zones allow you to tell OmniPage where on the page you want it to recognize text and where you want it to ignore text. This process allows you to strip out headers and footers while keeping the page numbers. It also allows you to tell the program not to look for text in graphics.

You can save your zone configuration as a template, and use that template to scan a book. Setting up a template in the first place takes a bit of time, but in the long run, it will save you more time.

### **Creating a template**

We start out by scanning a few test pages using the manual setting. Once the scanning is complete, just say "No" to the save as window.

If you let OmniPage find the zones itself, it will see each block of text as a separate entity. You want it to view the text as a continuous stream.

The template will have areas for the page number on left-hand pages, the page number on right-hand pages, the main block of text, and the area where we tell the program to ignore what is in that space (the header).

When you scan the rest of the book, you load the template you have created, and the text blocks come through very cleanly with very little editing required.

## **Text Boxes**

You can bring text from OmniPage into Word in various configurations. If you ask OmniPage to retain the structure of the original text page, it will. However, in order to do so, it uses text boxes. These text boxes can be difficult to work with. A simpler option is to change the view in the text editor window to "Retain fonts and paragraphs." This option brings the text into Word as a continuous stream of text.

To check or change your settings, go to View > Text Editor View > Retain Fonts and Paragraphs.

## **Tables**

You can tell OmniPage that it is scanning a table, and it will recognize the rows and columns. Use the table controls to adjust rows and columns. When you take the document into Word, the table format is carried through.

## **Reading PDF**

OmniPage can read PDFs. It runs a virtual scan on them and recognizes the text. Once you have the text in OmniPage, you can save it as an ASCII or Word file.

## **Creating PDFs**

One of the tools that OmniPage provides is the option to schedule OCR processing. If you have Adobe Acrobat on the machine, this same tool can be used to schedule automatic conversion of documents to PDF.

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# **MS Word**

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Be aware that when you take text from OmniPage into Word, you may find that some of your text disappears. What has happened is that the spacing and font size are pushing text off a page, adjust the formatting and you will see the text again.

## **Cleaning up Hyphens**

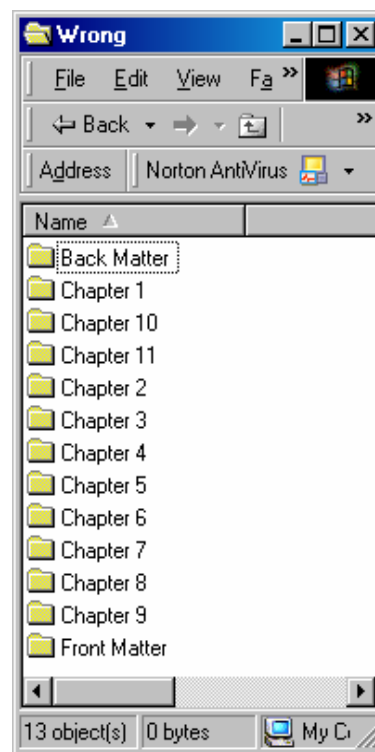
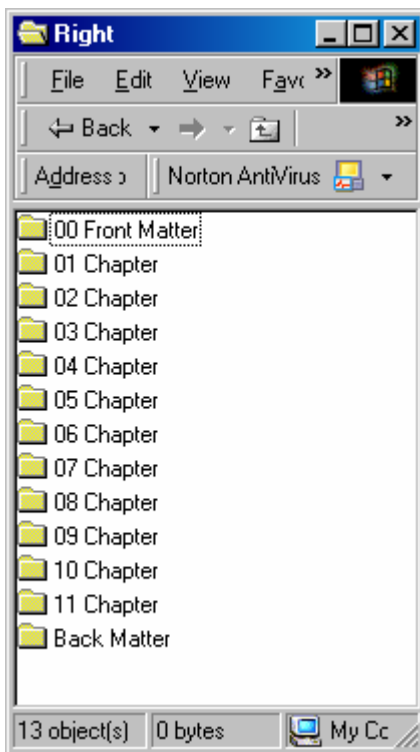
OmniPage sees the hyphens that fall at the ends of lines and includes them in the text that goes into Word. To delete these hyphens, search for "optional hyphens" (^-) and replace them with nothing.

## File Structure

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How you set up your e-text files is very important. Make sure that chapters are separated and clearly marked. Make sure that the table of contents and index are in separate files and can be found easily. The organization and naming convention used for the files and folders has an enormous impact on ease of navigation.

Remember, if you use numbers, computers would put the numbers 1, 05, 200, 30, and 3 in the following order: 05, 1, 200, 3, 30.



## Improving Accuracy

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These hints are taken from the OmniPage Pro Help menu.

### Select settings that improve accuracy in the Options dialog box.

Choose *Options* in the Tools menu then click the tab in the Options dialog box for the settings you want to change:

Adjust the Brightness and Contrast sliders in the Scanner panel.

**Brightness:** A measure of how dark or pale a scanned image will be. OCR quality depends heavily on good brightness settings. An image where letter shapes run together is too dark. When letter shapes are thin or broken, the image is too light. Many scanners have an auto-brightness feature.

**Contrast:** A measure of how much difference there will be between light and dark parts of an image. OCR quality depends heavily on good brightness and contrast settings. Not all scanners allow manual adjustment of contrast.

If your only criterion is OCR accuracy, prefer black-and-white scanning for good quality documents with crisp black text on a white background. Choose grayscale scanning if you are scanning pages with text on colored or shaded backgrounds, or for degraded documents with low or varied contrast.

Select *Automatically correct page orientation* in the Process panel. The program will then detect text direction on the page and rotate it accordingly. If a page appears the wrong way up, either rotate it manually or turn this option off before rescanning. Auto-detection may have difficulty on pages containing vertical text.

Choose OCR Method *More Accurate* in the OCR panel. This will improve OCR accuracy, but may increase processing time, because two recognition engines will run.

Select *Training File (IntelliTrain)* in the Proofing panel to use a character training file to help recognize special or stylized characters during OCR.

### **Use suitable recognition aids**

- If you have a long document, and no suitable training file, do some training on a few typical pages. Turn on IntelliTrain in the Proofing panel of the Options dialog box, then recognize three or four pages and proofread the text. Inspect the quality of the training in the Edit Training dialog box, then save it to file.
- If you are getting poor results with a training file loaded, check its contents in the Edit Training dialog box. Make sure it is appropriate for the current document. If it is not, either unload it or edit its contents to remove training from poorly formed character shapes. Unsuitable training can yield worse results than no training at all.
- If proofing is skipping too many unsuitable words and you have a user dictionary loaded, check its contents with the Edit User Dictionary dialog box. Delete any entries added in error, especially misspelled words.

### **Identify Zones Correctly**

- When processing pages manually, make sure zones are identified correctly before OCR. See *Changing Zone Properties* for more information.
- When processing automatically, be sure your original layout setting is the best one for the document. Inspect the recognition results. If there are

defects due to poor zoning on some pages, change the zone properties and/or locations and rerecognize those pages.

- Make sure you do not have a zone template file loaded which is unsuitable for your current pages.
- To retain handwritten text, such as a signature, identify it as a graphic zone.

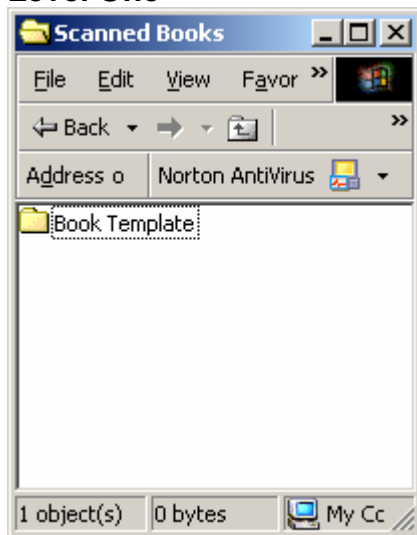
### **Use High-Quality Images**

- In general, try to use original pages when you are scanning documents. Typeset, high-quality printed page images yield the best OCR accuracy. OCR accuracy may not be as good with lesser-quality pages.
- With low-quality originals, sometimes a good-quality photocopy can yield better OCR results. This may be true on documents with low contrast or printed on thin paper. On the other hand, poor-quality photocopies with stripes, blotches or uneven brightness will usually give worse results.
- Ask senders to select *Fine* or *Best Mode* when they send you a fax.
- Page images should be free of notes, lines, or doodles. Anything that is not a printed character slows recognition, and any character distorted by a mark may be unrecognizable. Try not to include such marks in zones, or enclose them in an *Ignore zone* type.
- Text in page images should be reasonably clean and crisp. Characters should be separated from each other and not blotched together or overlapping.
- If you have influence over the styling used in documents you want to recognize, avoid having underlines used. It is difficult to recognize underlined text because the underline changes the shape of descenders on the letters q, g, y, p, and j.
- If you are getting poor results from image files, check their quality and resolution by hovering the cursor over them in the Original Image area. The ideal resolution for OCR is 300 dpi. Images with less than 200 dpi or more than 400 dpi are liable to yield far lower accuracy. If you have the documents on paper, scan them again with better settings. If not, ask the people who supply your images to use 300 dpi.

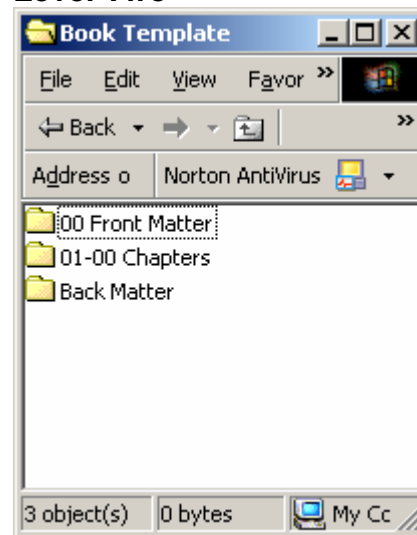
### **Create Folders for Scanning**

Create a folder of scanned books, and within that folder create a template that you can copy and rename every time you scan a new book. The template should have folders for front matter, chapters, and back matter within a folder that will be named for the book.

### Level One



### Level Two



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## MP3

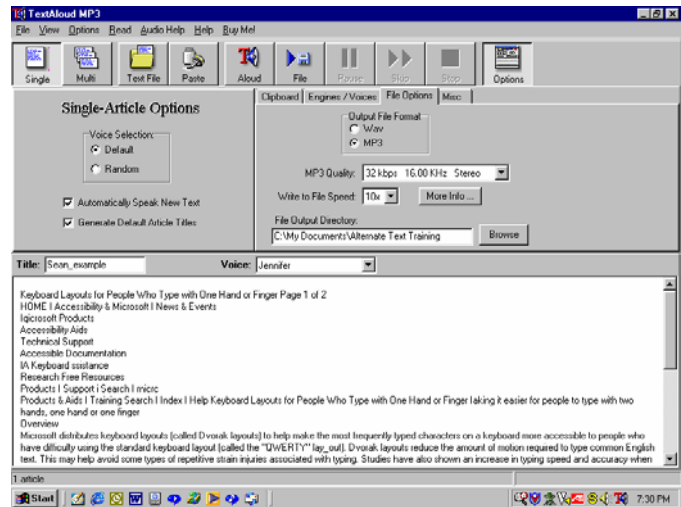
### Why use MP3?

MP3 files finally give us a way to provide audio materials that students can use in class! An MP3 player uses the same sort of indexing-by-track system that is found on CDs. With this in mind, you can create separate MP3 files for each chunk of information that students might need to access; for example, for a student in a science lab class, you might record lab procedures, equipment requirements, and theoretical discussions on separate tracks. That way, the student can easily move to the appropriate track.

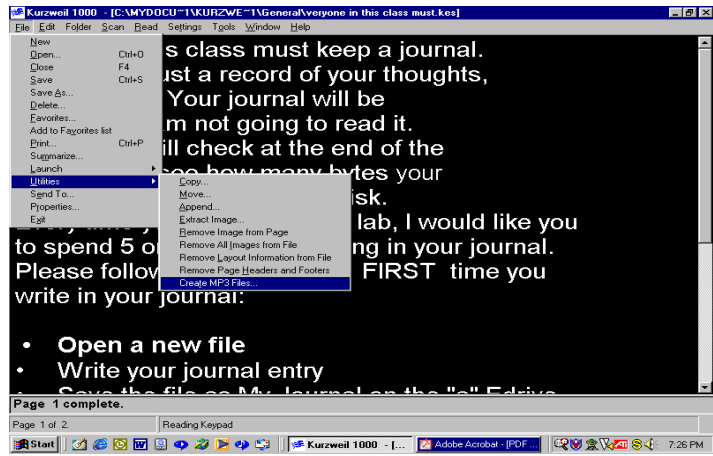
### TextAloud MP3

<http://www.textaloud.com>

<http://www.nextup.com/TextAloud/SpeechEngine/voices.html>



## Kurzweil 1000 v. 6.0



## DAISY/NISO Standards

### DAISY/NISO

<http://www.loc.gov/nls/niso/dtbook3doc.htm>

### DAISY (Digital Audio-based Information SYstem) Consortium

The Digital Talking Book 3.0 Document Type Definition (DTD) provides the means to markup the text of a published book to permit support for the combination of professional narration, and navigation into that narration. The markup tags in the book convey its content in structure, and some metadata about the book content and its structures.

**NISO (National Information Standards Organization)**  
<http://www.niso.org/commitaq.html>

Description of Standard: Currently, talking books for the visually impaired are distributed on audio cassettes. The next-generation technology for this application will be digitally based, bringing many improvements in sound quality, document navigation, and searching. The NISO Digital Talking Book (DTB) Standard will ensure compatibility among the many systems expected to be developed. The core of the standard will be the file specification, describing how the various functions of a DTB will be coded. Other portions of the standard will address the features desired in a DTB and describe the critical elements of the user interface of a DTB player.

**XML (Extensible Markup Language)**

DTB consists of three major parts: an audio file, which could be encoded in any of several standard audio codecs (compression/ decompression algorithms that allow enormous audio files to be greatly compressed); a text file (necessary for word spelling and text searches) with tags from a descriptive markup language inserted—XML (Extensible Markup Language); and a linking file that synchronizes the audio and text files, probably written in SMIL (Synchronized Multimedia Integration Language).

**NFF (National File Format)**

Publishers, individuals with print disabilities, and e-text service providers all recognize the need for a standardized format for producing electronic text. Under the auspices of the Department of Education, ANSI/NISO Z39.86-2002 DTBook has been adopted as the national file format.

The following description is taken from the CAST Web site:

<http://www.cast.org/ncac/index.cfm?i=3192>

In describing DTBook, the "pizza" metaphor has been used to clarify the use of the base tag set and additional modules. One can think of the DTBook tag set as being a basic cheese pizza, and modules as toppings that can be added as desired. The DTBook tag set contains the common elements found in textbooks and reading materials used in the K-12 arena. The over arching structures, such as front matter; headings for parts, chapters, sections, and sub-sections; rear matter, etc. are defined. Block-type elements, such as paragraphs, block quotes, lists, footnotes, sidebars, etc. are also defined. Inline items, such as emphasized text, acronyms, citations, footnote references, sentences, etc. are identified. A complete list of these can be found in the standard. The point here is that the basic types of books can normally be represented in XML using this basic cheese pizza.

Now think of separate modules that can be added, as toppings on a pizza. A poetry module that would contain the tags needed to mark up poems is under development by the Z39.86 community. The community

has also done preliminary work on a module for the markup of plays. These might be considered green peppers and onions for the pizza. The modules that can be added to the basic structure depend on the information one needs to convey.

The World Wide Web Consortium (W3C), the standards setting body for the Internet, has used this modular approach as well. One topping we may consider adopting for our pizza is the work they have done with MathML: <http://www.w3.org/Math/>

This is a module we should consider using when providing information in the field of mathematics. This is definitely meat on the pizza! The work conducted in the W3C paid close attention to the needs of persons with disabilities, but there is a lot of work, requiring significant resources, that needs to be done with accessibility tools to take advantage of math provided in XML in this way. The math work has been discussed by the Z39.86 Advisory Committee, and we have demonstrated that a MathML segment can be incorporated in a DTBook document.

Other modules will be required as time goes on, such as for other scientific disciplines, dictionaries, music, and so forth. The DTBook DTD was designed to meet the majority of the markup needs in non-technical books. It was deliberately kept lean so it would be easy to learn and use. The other modules to be developed would only be used as needed, thus minimizing complexity for users. DTBook incorporates a simple XML mechanism, described in section 4.2.2 of the standard and in the DTD itself, for incorporating tags from other element sets as needed

## Sources of Free E-text

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### **Project Gutenberg**

<http://promo.net/pg/>

### **NetLibrary**

<http://www.netlibrary.com/>

### **E-Brary**

<http://www.ebrary.com/>

<http://learningnetwork.ebrary.com/>

### **MetaText Digital Textbooks**

<http://www.metatext.com/>

### **Bookshare**

<http://www.bookshare.org/>

### **University of Virginia**

<http://etext.lib.virginia.edu/>

### **National Library Services**

<http://www.loc.gov/nls/>

### **Kurzweil**

<ftp://ftp.kurzweiledu.com/pub/classicliterature/>

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## Sources to Check before Ordering Textbooks

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### **Louis Database**

[www.aph.org](http://www.aph.org)

### **AMX (Alternate Media eXchange)**

[www.htctu.fhda.edu](http://www.htctu.fhda.edu)

## **BILL NUMBER: AB 422 CHAPTERED 09/15/99**

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### CHAPTER 37

FILED WITH SECRETARY OF STATE SEPTEMBER 15, 1999

APPROVED BY GOVERNOR SEPTEMBER 15, 1999

PASSED THE ASSEMBLY AUGUST 26, 1999

PASSED THE SENATE AUGUST 23, 1999

AMENDED IN SENATE JUNE 30, 1999

AMENDED IN SENATE JUNE 16, 1999

AMENDED IN ASSEMBLY MAY 25, 1999

AMENDED IN ASSEMBLY APRIL 5, 1999

INTRODUCED BY Assembly Member Steinberg

(Coauthors: Assembly Members Aroner, Corbett, Kuehl, and Thomson)

FEBRUARY 12, 1999

An act to add Section 67302 to the Education Code, relating to instructional materials.

### LEGISLATIVE COUNSEL'S DIGEST

AB 422, Steinberg. Instructional materials: disabled students.

Under existing law, a publisher or manufacturer of instructional materials offered for adoption or sale in California is required to comply with specified requirements, including providing to the state, at no cost, the right to transcribe, reproduce, and distribute the material in braille, large print, recordings, or other accessible media for use by pupils with visual disabilities. This right includes computer diskette versions of instructional materials if made available to any other state, and those corrections and revisions as may be necessary.

This bill would require every individual, firm, partnership or corporation publishing or manufacturing printed instructional materials, as defined, for students attending the University of California, the California State University, or a California Community College to provide to the university, college, or particular campus of the university or college, for use by students at no additional cost and in a timely manner, any printed instructional material in unencrypted electronic form upon the receipt of a written request, provided that the university or college complies with certain conditions.

This bill would require that the computer files or electronic versions of printed instructional material maintain their structural integrity, as defined, be compatible with commonly used braille translation and speech synthesis software, and include corrections and revisions as may be necessary.

This bill would authorize the Chancellor of the California Community Colleges, the Chancellor of the California State University, and the President of the University of California to each establish one or more centers within their respective segments to process requests for electronic versions of instructional materials, as prescribed.

This bill would also require an individual, firm, partnership or corporation that publishes or manufactures nonprinted instructional materials for students attending the University of California, the California State University, or a California Community College to provide computer files or other electronic versions of the nonprinted instructional materials for use by students, subject to the same conditions for printed instructional materials, when technology is available to convert these nonprinted instructional materials to a format that maintains the structural integrity of the nonprinted instructional material that is compatible with braille translation and speech synthesis software.

This bill would provide that willful failure to comply with these requirements would be subject to sanctions under the law relating to full and equal access of disabled persons to public accommodations.

THE PEOPLE OF THE STATE OF CALIFORNIA DO ENACT AS FOLLOWS:

SECTION 1. Section 67302 is added to the Education Code, to read:

67302. (a) An individual, firm, partnership or corporation that publishes or manufactures printed instructional materials for students attending the University of California, the California State University, or a California Community College, shall provide to the university, college, or particular campus of the university or college, for use by students attending the University of California, the California State University, or a California Community College, any printed instructional material in an electronic format mutually agreed upon by the publisher or manufacturer and the college or campus. Computer files or electronic versions of printed instructional materials shall maintain the structural integrity of the printed instructional material, be compatible with commonly used braille translation and speech synthesis software, and include corrections and revisions as may be necessary. The computer files or electronic versions of the printed instructional material shall be provided to the university, college, or particular campus of the university or college at no additional cost and in a timely manner, upon receipt of a written request that does all of the following:

- (1) Certifies that the university, college, or particular campus of the university or college has purchased the printed instructional material for use by a student with a disability or that a student with a disability attending or registered to attend that university, college, or particular campus of the university or college has purchased the printed instructional material.
- (2) Certifies that the student has a disability that prevents him or her from using standard instructional materials.
- (3) Certifies that the printed instructional material is for use by the student in connection with a course in which he or she is registered or enrolled at the university, college, or particular campus of the university or college.
- (4) Is signed by the coordinator of services for students with disabilities at the university, college, or particular campus of the university or college or by the campus or college official responsible for monitoring compliance with the Americans with Disabilities Act of

1990 (42 U.S.C. 12101 et seq.) at the university, college, or particular campus of the university or college.

(b) An individual, firm, partnership or corporation specified in subdivision (a) may also require that, in addition to the conditions enumerated above, the request shall include a statement signed by the student agreeing to both of the following:

(1) He or she will use the electronic copy of the printed instructional material in specialized format solely for his or her own educational purposes.

(2) He or she will not copy or duplicate the printed instructional material for use by others.

(c) If a college or university permits a student to directly use the electronic version of an instructional material, the disk or file shall be copy-protected or the college or university shall take other reasonable precautions to ensure that students do not copy or distribute electronic versions of instructional materials in violation of the Copyright Revisions Act of 1976, as amended (17 U.S.C. Sec. 101 et seq.).

(d) An individual, firm, partnership or corporation that publishes or manufactures nonprinted instructional materials for students attending the University of California, the California State University, or a California Community College shall provide computer files or other electronic versions of the nonprinted instructional materials for use by students attending the University of California, the California State University, or a California Community College, subject to the same conditions set forth in subdivisions (a) and (b) for printed instructional materials, when technology is available to convert these nonprinted instructional materials to a format that maintains the structural integrity of the nonprinted instructional materials that is compatible with braille translation and speech synthesis software.

(e) For purposes of this section:

(1) "Instructional material or materials" means textbooks and other materials written and published primarily for use by students in postsecondary instruction that are required or essential to a student's success in a course of study in which a student with a disability is enrolled. The determination of which materials are "required or essential to student success" shall be made by the instructor of the course in consultation with the official making the request pursuant to paragraph (4) of subdivision (a) in accordance with guidelines issued pursuant to subdivision (i). "Instructional material or materials" does not include nontextual mathematics and science materials until the time software becomes commercially available that permits the conversion of existing electronic files of the materials into a format that is compatible with braille translation software or alternative media for students with disabilities.

(2) "Printed instructional material or materials" means instructional material or materials in book or other printed form.

(3) "Nonprinted instructional materials" means instructional materials in formats other than print, and includes instructional materials that require the availability of electronic

equipment in order to be used as a learning resource, including, but not necessarily limited to, software programs, video disks, and video and audio tapes.

(4) "Structural integrity" means all of the printed instructional material, including, but not limited to, the text of the material, sidebars, the table of contents, chapter headings and subheadings, footnotes, indexes, glossaries, and bibliographies. "Structural integrity" need not include nontextual elements such as pictures, illustrations, graphs, or charts. If good faith efforts fail to produce an agreement pursuant to subdivision (a) between the publisher or manufacturer and the university, college, or particular campus of the university or college, as to an electronic format that will preserve the structural integrity of the printed instructional material, the publisher or manufacturer shall provide the instructional material in ASCII text and shall preserve as much of the structural integrity of the printed instructional material as possible.

(5) "Specialized format" means braille, audio, or digital text that is exclusively for use by blind or other persons with disabilities.

(f) Nothing in this section shall be construed to prohibit a university, college, or particular campus of the university or college from assisting a student with a disability by using the electronic version of printed instructional material provided pursuant to this section solely to transcribe or arrange for the transcription of the printed instructional material into braille. In the event a transcription is made, the campus or college shall have the right to share the braille copy of the printed instructional material with other students with disabilities.

(g) The Chancellor of the California Community Colleges, the Chancellor of the California State University, and the President of the University of California may each establish one or more centers within their respective segments to process requests for electronic versions of instructional materials pursuant to this section. If a segment establishes a center or centers, each of the following shall apply:

(1) The colleges or campuses designated as within the jurisdiction of a center shall submit requests for instructional material made pursuant to paragraph (4) of subdivision (a) to the center, which shall transmit the request to the publisher or manufacturer.

(2) If there is more than one center, each center shall make every effort to coordinate requests within its segment.

(3) The publisher or manufacturer of instructional material shall be required to honor and respond to only those requests submitted through a designated center.

(4) If a publisher or manufacturer has responded to a request for instructional materials by a center, or on behalf of all the centers within a segment, all subsequent requests for these instructional materials shall be satisfied by the center to which the request is made.

(h) Nothing in this section shall be deemed to authorize any use of instructional materials that would constitute an infringement of copyright under the Copyright Revision Act of 1976, as amended (17 U.S.C. Sec. 101 et seq.).

(i) The governing boards of the California Community Colleges, the California State University, and the University of California shall each adopt guidelines consistent with this section for its implementation and administration. At a minimum, the guidelines shall address all of the following:

- (1) The designation of materials deemed "required or essential to student success."
  - (2) The determination of the availability of technology for the conversion of nonprinted materials pursuant to subdivision (d) and the conversion of mathematics and science materials pursuant to paragraph (4) of subdivision (e).
  - (3) The procedures and standards relating to distribution of files and materials pursuant to subdivisions (a) and (b).
  - (4) Other matters as are deemed necessary or appropriate to carry out the purposes of this section.
- (j) Failure to comply with the requirements of this section shall be a violation of Section 54.1 of the Civil Code.