

# Thoughts About On-Line Help

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## Synopsis

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Shovelware is becoming the norm in computer software documentation. Many companies no longer furnish printed books with their products, and it's usually impossible to produce (from the on-line help files) a reasonable facsimile of a coherently organized, double-sided, printed book with page numbers, running headers and footers, table of contents, glossary, and multilevel subject index.

The current sad state of affairs is epitomized by what Adobe has done to the FrameMaker user manual and on-line help. In the last release (V5.1) of FrameMaker+SGML for which Frame Technology was responsible, the printed user's manual was quite comprehensive at 900+ pages, and the on-line help was extensive, well-designed, and effective. But the Adobe-produced V5.5 user's manual (including the separate "Getting Started" manual for FM+SGML) has **300 fewer** pages, even though many new features (e.g., HTML and XML export) in V5.5 had to be covered in addition to all those features common to both releases. Not only that, but the effectiveness of the on-line help has declined precipitously.

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## 1 Printed Books are Superior in Important Ways

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*Here are some of the ways printed books are better:*

1. You can still read them when the computer is down.
2. You can conduct, away from the computer, a training, planning or problem-solving session in which all attendees have a copy of the book.
3. You can actually perform an action on the screen while you're reading the step-by-step procedure for it from the book.
4. You can annotate the pages, and highlight key information.
5. You can examine (at full size) two adjacent pages at once.
6. You can use two or more of your fingers as bookmarks, and rapidly flip back and forth between those locations, allowing up to 6 or even 8 pages (two at each location) to be examined almost simultaneously.
7. As users become familiar with a printed book's organization and content, they form a mental model of it, and their ability to find the information they seek steadily improves, even if the book is poorly organized.
8. More complex multi-column page layouts can be employed, utilizing a mixture of landscape, portrait and foldout pages to optimize the presentation of information.

9. Superior graphics, formatting,, and typography, all of which help readers to rapidly find and absorb the information they're seeking.
10. Running headers and footers, bleed tabs, multilevel indexes, tables of contents, and lists of figures and tables are proven ways to help readers quickly find what they're looking for.
11. Change bars provide an excellent way to identify information that has changed in the most recent revision. Revision information can also appear in running headers and footers.

Admittedly, items 8, 9, 10 and 11 above can be replicated when on-line documents are in PDF, but even then the identically formatted printed version is much easier to read, particularly when many pages in succession must be perused.

**Experimental results have established that reading information from a monitor reduces comprehension and retention**

It is well established that, when reading information from a monitor, both comprehension and retention are reduced (conservatively) by 30% over reading the same information in printed form.

A further secondary reduction in comprehension (figures range from 5% to a whopping 40% depending on the study) occurs when the text is formatted in the flush-left, single-space-between-paragraphs (with generic fonts and font sizes) that is almost unavoidable in HTML- and WinHelp-type documents. The main reason seems to be that, when this shovelware-type formatting is used, readers can't keep their place in the text, and end up skipping or rereading lines, which breaks their concentration and irritates them. The studies also show that comprehension worsens with multi-screen documents, which confuse readers even more.

The secondary comprehension reduction, and some portion of the primary reduction, disappear when the text is formatted according to the conventional rules of typography for printed material in whatever language and culture is involved. In other words, people understand more when the screen looks like a well-designed printed book.

Certainly, the use of a sidehead column containing thesis sentences and other cues, with ordinary text in the normal text column, has been shown over and over again to provide optimum readability. In this design, headings span both the sidehead and normal text column and the sidehead serves as a scanning column, allowing readers to rapidly locate the particular information they are seeking. Running header/footers provide additional cues. This kind of page design is difficult, if not impossible, to achieve in HTML or WinHelp.

**Our own real-world experience supports those experimental results**

Often, when we browse through long HTML or WinHelp documents, we just skim—read a couple of lines and scroll down, read a few more lines, and so on. We're not really "getting" the information this way, and we know it. Consequently, we adopt the print-before-reading habit—downloading the ones we need, formatting the text in our word processors, and printing them out. But a tremendous amount of time is wasted converting the information to a readable, printable form.

**The "paperless office" only looks good on paper**

High-tech gurus have been predicting the imminent arrival of the "paperless office" for going on ten years now. But no one in the trenches is talking about it, because they're too busy printing out almost everything of value they find on-line. Perhaps the best indication of how computer and internet use fuels demand for paper comes from the high-tech industry itself,

**If on-line help is so great, why are there so many top-selling printed books on popular software products?**

which has identified printing as one of its most promising new market opportunities. It's also apparent that the demand for paper-by-the-ream rises exponentially with increased computer use. Much to the dismay of environmentalists, the internet has failed to deliver on the paperless office prediction, and the only plausible explanation is that people still find it difficult to do any serious reading on-line, and often find it more convenient to do most heavy reading on paper.

For example, Microsoft's decision not to document its products in print has created a bonanza for technical book publishing houses. On-line help, by itself, is almost never enough.

## 2 The Advantage of On-Line Documents

*There is only one advantage: hypertext.*

**Hypertexts are nonlinear**

The structure of a printed book is designed to be coherent when its pages are read sequentially (i.e., linearly), whereas a hypertext can have any number of coherent but nonlinear paths (i.e., a sequence of hyperlinks rather than a sequence of pages) through the searchable maze. In an effective hypertext, the reader, not the author, is in the driver's seat. The user is empowered to define the sequence in which information is presented to him/her.

**To overcome the many disadvantages of on-line docs, a hypertext must provide a quicker, more reliable, more powerful way to zero in on the particular information a user is seeking**

This is the design goal of a hypertext, but achieving that goal requires much more than the haphazard deployment of few cross-reference links, or the creation of a WinHelp-style index of hypertexted keywords.

The ease with which readers use and comprehend hypertexts, and even their ability to locate information, depends upon the structure of the hypertext network. A hypertext must be structured so that it corresponds to the ways that readers might think about the topics. Structure also helps to create in the reader's mind the appropriate mental models of the knowledge base. Success or failure of a hypertext product depends on how well the developer deploys links.

Navigation Links

Effective hypertexts must provide users with a robust navigational system, which is the key to putting the user in the driver's seat. A good hypertext eliminates navigational cul-de-sacs. The navigation system should allow the reader to jump from any point to any other point in the searchable maze in three or fewer mouse clicks. Ideally, the navigation system is represented by a set of buttons that appear on each page. For example, a Local button would provide the user with links to other points within the current subject region, while a Global button would provide links to other regions, including table of contents, index and glossary. Ideally, clicking on one of these buttons would produce a popup menu of destinations. Unfortunately, most help systems (e.g., HTML, Winhelp, Robohelp) lack a popup link capability, but such links are implementable in FrameViewer, and XML will also provide this capability.

Information Hiding

The concept of information hiding (also known as details on demand) provides an effective way to condense information. Links give the user the option of selectively getting more detailed information about things that are mentioned in the condensed text.

## Exploration Nodes

Another technique I strongly favor is the use of what I call exploration nodes. An exploration node (often in the form of a graphic, list, or tabular array that is replete with links) provides the user with a bird's-eye view of a particular subject area or content type. Exploration nodes provide the user with "base camps" for conducting exploratory probes within a subject area. After each probe, the user can jump directly back to the base camp and make another exploratory probe down a different path. Exploration nodes also help users to form mental models of the knowledge base. The topmost level in a hypertext should always be an exploration node.

**Single-Sourcing is a False Paradigm**

The use of one set of document files as a "single source" for generating context-sensitive help, other types of hypertext documents, and printed books is, in my opinion, a false paradigm. False, that is, unless the architectural design of the "single source" document set successfully resolves the many conflicting requirements that typically arise when delivering information in different ways. Often, attempts at conflict resolution require trade-offs and compromises which are likely to have an adverse effect on the hypertext.

**PDF is one of the better ways to deliver on-line documents**

The discussion in Section 1 offers strong arguments for using PDF rather than HTML or WinHelp to deliver on-line documents. No other on-line delivery method can fully replicate the typography and multi-column page layouts of well-constructed printed books. Unlike most other browsers, Acrobat allows the reader to adjust the magnification for best readability, and provides the capability to zoom in to a high magnification on a selected point in a page. Also, the Table of Contents, in the form of bookmarks, is available on each page. Well-designed PDF documents can minimize comprehension and retention losses, and also eliminate all the hassle when users adopt the print-before-reading habit.

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### 3 How Users Think

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*To design an effective hypertext, you must first understand how adults think.*

**The mystery of how humans figure things out**

Austrian Physicist Heinz von Forster, who was Director of the Biological Computers Laboratory at the University of Illinois, sums up the process:

"...you live in a world which is inexplicable, and you yourself are inexplicable, [yet you must find a way to] worm your way through that incredible puzzle. That is magic. Magic is the art of handling situations which in principle you cannot explain."

**Adults don't think or learn the way children do, because they're experienced at "worming their way through" problems.**

- They're thrown into action; they can only understand through the effectiveness of their own actions in the world.
- They're in a world more real to them than a series of steps--a world that provides rich context for everything they do.
- They're always trying to figure things out, thinking things through, relating what they already know to what is going on around them, recovering from errors. They won't rigorously follow step-by-step procedures because they're too busy worming their way through.
- They're impatient; they want to get started quickly on something productive. They skip around in manuals, and rarely read them fully. They make mistakes, but learn most effectively by correcting them. They're best motivated when involved in **self-initiated exploration**.

**No two people think or learn alike**

Each person's thought processes evolve differently based on experience, intelligence, and attitude. Not only that, but different people react differently when they confront the exact same problem, which means their approach to finding a solution varies widely. When referring to the documentation, for example, some prefer to go immediately to procedural information, while others prefer to look first at any associated explanatory text, particularly when they are uncertain which task will produce the desired result.

**Authors must rethink how they organize and link on-line information**

Many authors who transition from producing printed documents to the production of on-line documents are reluctant to relinquish their control over the sequence in which information is presented. They think the purpose of hypertext links is to preserve their own concept of the order in which users should read their material.

But readers usually don't find things in the manner envisioned by the book's authors. Readers develop many idiosyncratic ways to find information, and those idiosyncrasies increase as they gain experience in using a manual or on-line document. A good hypertext design indulges those idiosyncrasies.

Authors also tend to forget the fact that failure is perhaps the most common result of clicking on a link or requesting context-sensitive help. By failure, I mean that the information presented by the link is not the information needed by the user.

Often, one or more attempts to find the desired nugget of information fail before hitting paydirt, or the complete picture is obtained from a composite of several widely separated but related pieces of information that are found separately along different link paths.

For example, a user attempts to perform a task by opening a dialog box. The user doesn't see quite what he/she expected, and perhaps wonders whether the correct dialog box for performing the intended task has been selected. So, the user requests help (this is perhaps the most common situation in which users request context sensitive help). Upon reading the delivered help page, the user realizes the mistake, and wants to recover by searching for the correct answer (i.e., what dialog box is associated with the task the user wants to perform, and how is that dialog box opened). But if the original context-sensitive help page does not provide navigation links that allow the user to recover from his/her mistake, the help system is at a dead end, which does not make for happy users.

Help systems that are not designed to recover from a failure to deliver the information needed by the user are not effective.



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