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Is “User Friendly” Really Possible in Library Automation?

Everyone wants to have a “user friendly” system, but no one can really define what user friendly is. A friend suggests that we should be talking about “user seductive” rather than user friendly. The person using an online catalog should perceive a natural relationship and not have to stop to think about his or her interaction with the computer. The truth of the matter is that an online catalog is so much better than a card catalog that library patrons will put up with a lot of “unfriendly” things in an automated system.

The term *user friendly* has become a buzzword. Everyone would probably agree that online library systems should be approachable. However, despite efforts to make system use easier, many first-time users still feel intimidated. The major cause of user fear may be the everyday jargon used by those persons who are the corporate keepers of the Holy Grail—i.e., automated library systems. Often the words used in discussing online systems are overly expressive and needlessly violent in tone. Even the term *user* fits this situation because it sounds drug related rather than library related.

Another example is one that probably causes Reverend Jerry Falwell consternation—i.e., “abort, retry, or ignore.” Why not use “quit, try again, or bypass” instead? Or another example is a multitasking communications program that goes into a “deadly embrace” and so informs the person at the terminal.

The key is to simplify dialogue and use everyday terminology instead of jargon. It is just as easy to say “program error” as to say “bug.” “Running” a program sounds better than “executing” it. And a “system failure,” no matter how unwelcome, is not nearly as intimidating as a

“crash” which sounds positively life threatening. Where does the computer world get so much emotionalism?

Other examples of misuse of the language are prevalent in the computer world. The response should be to promote proper usage and decry those who use meaningless or ambiguous words. A need exists to step back and not take ourselves too seriously. If this process does not occur, a large segment of library patrons will be resistant to using automated library systems effectively and efficiently.

Libraries with automated library systems have found that patrons naturally gravitate to the terminals of the online catalog because of their belief that a “computerized” catalog provides better access to the library materials that they want to use. This situation is important in a society that places value on innovation, speed, and ease of use for all services whether they be in libraries or other places. User sophistication is constantly growing through increased access to automated library systems. Expectations of ease of use are also increasing.

The online catalog should assist experienced and inexperienced users by revealing its inner working organization. A person should be able to use an online catalog without knowing its structure and without regard to age, education, experience, or sex. Minimal instruction should be required (less than fifteen minutes).

User friendliness is based on positive interaction between the computer and the terminal user. Human conversation provides the best model for this human-computer communication. The problem-solving dialogue component of conversation is particularly applicable to human-computer applications. In the problem-solving, task-sharing activities of online catalog use, something close to symbiosis between the person and the computer must be attained. A close union and a result-oriented interdependence must be established. Several properties of dialogue make it a good form of communication for human-computer activity. Stewart, in his article “Communicating with Dialogues,” reminds us that: “A dialogue is by definition a two-way process....[It] involves the sharing of knowledge by the exchange of information.” Successful dialogues according to Stewart have five requirements:

1. Both parties must be able to send and receive information without undue constraint.
2. The language chosen as the carrier of the dialogue must facilitate the expression of subtle or complex ideas.
3. Accordingly, the interpretation and understanding of the language—its symbols and rules—must be shared to the same degree by both parties.
4. Each party must be able to grasp the context of meaning of the other party and successfully follow or “keep up” when that context shifts or changes.

5. This, in turn, requires being responsive to the feedback of the other party and "modifying the communication so that it is better suited to the other party."¹

The literature contains much information about the general requirements for effective human-computer communication. Perhaps the experience with online catalogs is best explained by the observations of Hayes, et al. in an article "Breaking the Man-Machine Communication Barrier." He states:

Simply put, today's systems are not very good at communicating with their users. They often fail to understand what their users want them to do and then are unable to explain the nature of the misunderstanding to the user. In fact, it is the common experience of users of interactive systems, whether novice or experienced, infrequent user or regular, that communication with their machines is a time consuming and frustrating experience.

Why does this barrier exist? According to Hayes, the computer "lacks the basic communication skills that come so easily to almost all of us."² Mutual understanding is a necessity in good dialogue. Partners in a dialogue must be ready to repeat, simplify, or otherwise clarify the message. The timeliness of message acknowledgment and response is also important for effective dialogue as explained by Hildreth in his OCLC Technical Report "Optimal Response Times in an Online Interactive Computing Environment."³

Since language is the medium of message transfer, every effort must be made to use semantics and syntax that facilitate the dialogue between the computer and the user in terms of vocabulary, sequence, and consequences. The following things are important when considering semantics and syntax:

Semantics

1. Completeness: the set of commands provided must be capable of evoking all the functions required in the user's model of the task domain.
2. Functionality: the operational interrelationships among the commands must be flexible enough to be compatible with a variety of user activity patterns in online information retrieval.
3. Singularity: each function should be represented by only a single, distinct command, and no command should be capable of evoking multiple functions.
4. Modularity: a basic, simple subset of the language, capable of evoking the fundamental functions, should be provided for the new or occasional user. The design structure must be hierarchical, permitting the learning and use of specialized extensions to the basic subset to develop in a linear manner.

5. Variety: extensions to the basic command core representing specialized and more sophisticated features should be provided for the experienced user.
6. Linearity: the structure of the basic command core and its extensions should permit the user to proceed in a left to right, top down, manner.
7. Optionality: alternative ways of expressing commands during input should be supported consistent with the syntax criteria listed later. This would include the use of abbreviations, flexible argument order, and user designation of default values for commands and parameters.
8. Simplicity: any complexity introduced should result only from the extension of the basic command core to include more powerful or refined capabilities and not from the meaning of the commands or the syntax governing their use.
9. Consistency: command words should have the same meaning in all contexts, and syntax decisions should be applied uniformly throughout the language.

Syntax

1. The structure of the command statements should be patterned on familiar, natural language phrase structures.
2. Command keywords should be short, familiar words chosen from the user's natural language and should clearly express the specific action being commanded.
3. Self-evident abbreviations should be permitted but governed by easy to remember abbreviation rules.
4. Punctuation required for command construction should be kept to a minimum and be limited to universally familiar symbols. Blank spaces should serve as delimiters.
5. The positioning of arguments following a command word should be flexible and not governed by a predefined, rigid ordering of components.
6. Command syntax should be compatible with display syntax.
7. Default states for commands and parameters, as well as the capability to set or reset them, should be provided for the user.
8. The user should not have to learn specialized keyboard techniques. The use of special function keys or control key combinations should be kept to a minimum. Entry in either upper or lowercase should be permitted.

During the past five years several research studies related to online catalogs have been completed. Most of these studies are useful in providing insight into patron attitudes about online catalogs. Virtually all of this research has shown that both users and nonusers have a positive feeling

about online catalogs. Unfortunately, these same studies do not provide a clear picture of what really constitutes a user friendly online catalog or even what causes a user to express satisfaction and be positive. No research to date has conclusively identified online system features required to "optimize" the human-computer interface.

As Hildreth states in his book *Online Public Access Catalogs: The User Interface*, online catalogs are experiencing a period of intense development and deployment. Consequently, the emphasis should be on inclusion of interface features that are generally accepted as user friendly through available evidence, if not actual consensus among designers and experienced users. Hildreth sums up his comments by stating: "The need now is to *improve* the interface, not optimize it once and for all time."⁴ From a technical point of view, online catalogs are at a stage when software development techniques must catch up and keep pace with what is known about good dialogue between persons and computers in particular and user-oriented interfaces in general. Gaines, in his article "The Technology of Interaction," reports that there is not yet agreement among software designers as to what constitutes good dialogue programming. He states: "We are in a position today in programming man-computer interaction that we were with hardware design thirty years ago and software design ten years ago."⁵

In addition to the human-computer communication, environmental considerations also affect the ease of use of an online catalog. Consideration should be given to location of terminals, tables used for terminals, and the physical characteristics of terminal design. However, experience with online library automation systems indicates that color display, graphics, touch screen, and monitor display color (amber, green, or monochrome) are of minor concern. Other important considerations are level and completeness of documentation, display of diacritics, and invisibility of hardware. The provision of comprehensive "help" modules, which are easily accessible and contact sensitive, is important to a user friendly environment. This "help" should include user requested help, system defined help, automatic response prompts, and informational messages.

In the area of user friendliness for handicapped library patrons, the University of California's Division of Library Automation has developed a "talking terminal" that enables blind and visually impaired users to use the MELVYL Online Catalog without assistance. The terminal unit incorporates a keyboard labeled with large letters and braille, a screen display that magnifies the image, and a digital voice synthesizer. The terminal responds to users by speaking, by providing a tape from a built-in cassette tape recorder, and by providing a display up to sixteen times its normal size. One drawback is the current cost—which is \$10,000—plus the cost of a braille printer if needed.

Another approach to user friendliness is to give terminal users the opportunity to communicate questions, comments, and observations. The LIAS system at Pennsylvania State University uses the OPPS command, which allows any user to enter a free-form message. These messages are periodically printed out for analysis and for appropriate reaction or response. This command can be easily used without any intervention of a staff member. One limitation is that it lacks a means of direct response to the person who initiated the command. Thus there is no way to respond to a request for information.

Based on observation and discussion with users of online catalogs, the following criteria must be considered in developing a user friendly online catalog interaction with the user:

1. Be conversational but instructional at the same time.
2. Use consistent format and terminology.
3. Use mnemonic devices whenever possible.
4. Use formats which facilitate understanding of information presented on screen.
5. Eliminate as many steps as possible.
6. Be positive in response statements.
7. Be forgiving of errors in entry.
8. Accommodate many user punctuation and spacing inputs.
9. Provide computer response time averaging three seconds or less.

The current emphasis by the whole library automation industry is to make systems more user friendly. This focus is underlying all current marketing and design efforts, whether in the area of hardware—such as terminals—or in the area of the software which runs the system. User friendliness is an ever present force in library automation today. Within the next five years, we will wonder why we ever did things in the old laborious way—i.e., keying in commands. This process will all be superseded by voice commands or by a mixture of voice and graphics. We are still some years away from one person's dreams—a truly portable terminal which can be taken out jogging.

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