

Help Users Search! Prototyping an Online Help System for OPACs

Elke Greifeneder

greifene@ibi.hu-berlin.de

Institute for Library and Information Science, Humboldt University, Berlin, Germany

Abstract

Online Public Access Catalogues (OPACs) are not self-explanatory, and help searching them should be a standard feature. Access to library information should not be an adventure game. Unfortunately that goal is far away. Many surveys show user problems. Twenty-five percent of the users already fail at the operating system level, and another 37 % get a zero results. These users need help. Helping users search should be the goal and the right software tools are essential. In the first part of this paper, we describe what online help systems are. Spelling corrections, faceted-browsing, recommender-systems, context-sensitive-help or avatars are only a few examples of the broad field. Based on an analysis of German university libraries, we show then how they are currently used. The second part of the paper explains what stands behind the concept of useware-engineering and how we can apply it to prototype a company-independent OPAC help system.

Introduction

Access to library information should not be an adventure game. Unhappily our online systems are more adventurous than straightforward. Even though the expression "Public" is already in the name, existing Online Public Access Catalogues (OPACs) forget the user. Helping users search should be the goal and the right software tools are essential. OPACs are still not self-explanatory. Instead they are crammed with technical terms like "keyword", "index search", "corporation" or "notation". One reason for this may be that current systems are not build for users but for librarians managing their collections. Users need help to get satisfactory results – in every system. They do not choose Google or Amazon because these systems are necessarily better, but because they are easier to use. The aim of this paper is first to describe what online help systems are and how they are currently used in the OPAC, and second to explain what stands behind the concept of useware-engineering and how we can apply it to prototype a company-independent OPAC help system.

Help is yet not a standard feature in OPACs. You may suppose that every OPAC offers a „help“ button, but not every button that is marked with the word „help“ offers real help for users, and not all genuine help applications are marked as such. What then is online help and what are online help systems? In an OPAC, users need help to discover that a resource exists and then help to locate it (Dempsey, 2007). Help is necessary in every critical situation, which means a situation that requires a special or sophisticated level of knowledge from the user. Thomas M. Duffy (Duffy et al., 1992), Terry Burton (Burton, 1996) and Ben Gelernter (Gelernter, 1998) lead to a definition. Based on their ideas, online help can be defined as a computerized tool in cyberspace that helps in critical situations to accomplish user tasks and/or offers contextual information. Spelling corrections, faceted-browsing, recommender-systems, context-sensitive-help, computerized virtual reference or automatic enhancement are

only a few examples of the broad field. Tutorials are not part of online help in this sense, because they do not actually help in an on-going situation. An online help system is likely to be a combination of different forms of online help. No single online help can aid during the whole discovery and location process. Users need, for example, a textual context-sensitive-help to explain technical terms before the search process, automatic enhancement for generating better results, a faceted-browsing capability to sort the results and finally a digital floor plan to locate the item. In summary, online help systems assist 1) in finding facts (help finding specific information), 2) in accomplishing tasks (help how to do something), and 3) in making a decision (assistance in finding information to choose the next task).

Background

The OPAC is one of the most discussed topics internationally in the library world. You can see this in a relatively small mailing list like „Next generation catalogs for libraries“, where between December 2006 and May 2007 contributors discussed worldwide research about OPACs in more than one thousand posts. Even if the OPAC is an established research topic in librarianship, there is little research on their associated help systems. In some cases texts for online help are still written at the reference desk between interviews. Explicit research on online help occurs in fields like computer science, communication studies and the various human-computer interactions fields (especially engineering and psychology) where scholarly research exists on the implementation, the acceptance and the benefit of online help. Looking beyond the world of librarianship is the first rule for a research on online help systems.

OPACs are the main (often the only) way to access library holdings today, but many surveys show that users encounter problems with OPACs. Twenty-five percent of all users fail already at the operating system level, and another 37 % get zero results (Berberich & Weimar, 2005 and Beyer, 2005). In the era of card catalogs, patrons went to the reference desk and asked for help. In the era of online catalogues, very few users act in the same. From their point of view, asking a real person for help may mean confessing a lack of computer knowledge. The online era brought another phenomenon: 24/7 services. For patrons it is quite normal to do searches in the evening, at night, and during the weekend -- that is, times when the library is closed. Who can the patrons ask then if they cannot deal with the OPAC? It is evident that an online help system – independent from library opening hours – is a must. Later this article discusses the various online help systems that are already implemented in university OPACs in Germany. Here, not the quantity of the implementations but their quality is the key point. Merely having an online help system is not automatically an improvement. Even though research on online help systems has existed since 1992 (Purchase & Worrill, 2002), users still complain about usability problems. In a study Usman G. Abdullahi and James L. Alty discovered that only 7 % of the interviewees found the online help systems that they examined “very helpful” and another 28 % “helpful”. In contrast to this were 65 % of the users “not sure of its value“. The interviewees “indicated their dissatisfaction with the manner in which help information is given, that it is non-procedural, imprecise and unspecific, and that in many cases, irrelevant information is displayed.“ (Abdullahi & Alty, 1998, p.7) Before prototyping a better online help, it is essential to analyse some online help systems to determine what makes them unspecific, imprecise, non-procedural and far from getting users' approval.

Quantity is not quality: Testing online help systems

The following results base on a user-oriented analysis of the online help systems in 78 German university libraries carried out in July 2007. The choice for university libraries in Germany is due to their large number (about 80 university libraries) and their heterogeneous

user base, which, together, helps to ensure a statistically significant result in the analysis. The process examined what online help can really be found by a user in a daily search process. Assuming an average user, the analysis did the same set of queries in each OPAC and noted what online help could be discovered, regardless of library claims. The study also noted the OPAC software system that each library used with the expectation if some coherence between the company, their OPAC system and their online help. The analysis showed that this presumption was right. There were only a small number of libraries that had developed an online help for the OPAC by themselves. Most of them used the online help system inherent in their OPAC software, so that in general the quality of an online help system depended not on the university library, but on their business partner. It does not matter if the university library is in Munich or Berlin, but it does matter if the OPAC is an Aleph OPAC from Ex Libris or an InfoGuide OPAC from OCLC PICA. In the following sections, this article presents some online help systems and their appearance in German university library OPACs. The main players are Ex Libris and OCLC PICA; open source OPACs like Koha or versions based on Lucene represent less than 10 % of the market share.

The most commonly used online help is the "Help" button. Behind this button the user can generally find static text information about how to deal with the OPAC. This helps to explain the function of the OPAC. Even if the texts are in hypertext, the applications offer few of the advantages of hypertext. Patrons can jump from the table of contents to a subsection like "advanced search", they cannot get more or less information depending on their knowledge. Distinctions between beginners and experienced users are not common in OPAC systems, even if this differentiation is a key issue in online help research. Textual help tends to be very long, as is apparent, for example, in the WebOPAC of the university library of Münster (OCLC PICA). They require approximately 6700 words to explain their OPAC. If you figure on 500 words per page, this means that the "Help" button offers 14 pages of text. What kind of users read so much text and need so much information, especially when they have a concrete problem? Illustrations should also be part of every help text, which, in reality, is not the case. Specific visual help systems exist, but they are less used in OPACs. About 40 % of the OPACs use highlighting in their help system, for example highlighting the search term in the hit list. Only a small number of OPACs use integrated floor plans. Showing pictograms of the kind of media is much more common, even though this creates new problems. Creating a pictogram of a book or a CD-ROM is relatively easy and understandable between cultures. But how can a system illustrate an internet link or a link to a table of contents? The analysis showed that OPACs use pictograms for this kind of electronic information, but that they are inadequate.

Feedback is also a kind of help, if not the most important sort. Users need feedback for each of their actions to decide how to proceed. If users do not know that their search term "flu" has been automatically enlarged, they will never understand why they also get results on "influenza". A librarian at the reference desk can ask the user about a puzzling or flawed search term; a machine never furrows its brow if it does not understand the question. Feedback is of course necessary when users get zero or useless results. The study searched for "Die ZEIT" in all of the OPACs. This is the name of a very popular weekly journal in Germany. When average users search for this journal, they will not immediately try a phrase search or a search specifically for journals. They will put "Die ZEIT" right in the search box just as they do with Google. But either the word "Die" or the word "Zeit" can cause problems for the OPAC. "Die" (which means "the" in English) is a stop word and "Zeit" (which means "time") is such a vast term that the hit list seems endless (think of all historical books including the term "time" in their titles). An insufficient ranking leads to a useless result in the

eyes of the user. In many OPAC searches, the journal could not be found or could be found only with complex search specifications. Reasonable feedback about the problem, suggestions about how to proceed and an effective ranking system (i. e. putting phrase search results on top of the list) would made the online help much more efficient.

There are two more kinds of online help that are worth mentioning and analyzing. These are online help systems that either restrict or enlarge the search term and/or the hit list. In the US, limiting measures like faceted browsing are common tools in the next generation OPACs. In Germany the situation looks different. A form of help called variously “browse index” (mainly OCLC PICA systems) or index search (mainly Ex Libris systems) predominates. These indexes help to find the right term. But – as noted at the beginning of this article – how should users know the meaning of the technical term “index search”? What they know from using Microsoft products like Word or Excel is a different concept of “index” than exists in the library world. The word “index” can be a search in the help register or a search in the main headings. OPACs also offer thematic searches (i.e. browse the shelves) where you can set a scan target in taxonomies. These aids are rarely integrated in the OPAC and users have to exit the OPAC and use a separate access point from the libraries homepage. In general, users have to learn on their own how to use of one of these restriction methods, which means they must know how to modify their searches to get better results. Help that enlarges searches was nearly standard in the OPACs that were analyzed, though how it is done was not standard. These forms of online help enlarge either the user's own search question or a system-initiated query. Below are some examples for different online helps. Linking subject headings is the favourite form of online help after pure text. The user gets a full title record with classified keywords linked to other items with the same keywords. Linking to thematically similar items can be very useful – if the users know how to use the results. First, users rarely know what a classified keyword means and, second, more and more libraries, at least in Germany, have stopped entering classified keywords. So the problem is clear: without classified keywords, this form of integrated help is of little use. Only four OPACs avoided the word "Schlagwort" (“keyword”), and used an expression like “search for other books in the same field”. Many OPACs also have integrated an automatic enlargement of synonyms and translations. Here again: no OPAC gives a feedback how and whether it has changed the search term. Fuzziness is another form of enlarging help. The search term is enlarged automatically with stemming methods. Now, instead of finding only the plural, some help systems also present morphologically unrelated entries. Searching for the German word “Hund” (dog in English), the enlarging help should find terms with “Hunde” (dogs), but it turned out, that some systems also found “Hundert” (hundred), which has the same stem on a linguistic level but has nothing to do with dogs. Thanks to Google users currently expect error corrections in their typing. Nevertheless only two university library OPACs offer online correction for typing errors. This is due to the technical complexity of correcting typing errors. Besides any financial reasons for not including automatic correction, the problem is that users sometimes do not know that they have misspelled their search terms and wonder about the results. Feedback like “please check your spelling” is indispensable. Finally, only very few OPACs have integrated a recommender system as part of enlarging online help, but this is a matter of time and at present shows no unbalance between quantity and quality.

Prototyping an online help system for OPACs

Knowing the quality problems of online help in OPACs is not enough. The number of systems which have changed completely after a usability test is very small. And the reason for this is that changing a system in its basic elements means creating a new system. Libraries have neither the money nor the energy to take this step. The challenge for libraries and

librarians is to influence the development process before a product is finalized, which means making demands and playing an active role in the development process, not just buying a system and then blaming the company afterwards. This requires, of course, a new working culture on both sides.

This article proposes a new method called useware-engineering to build up this mutual engagement and to create a functioning prototype of an online help system. The term useware-engineering exists since 1998 and it is analogous to terms in hard- and software-engineering. The purpose of useware-engineering is the processing and application of research-based methods to plan, design, implement and evaluate user-centered human-computer interaction. In contrast to the more established method of usability-engineering, the investigation and criteria setting is done before the product implementation, and not afterwards. That means the results of the study on OPACs would be used to prototype a complete new product and not to improve an already working system. Only if libraries change their attitude toward OPACs from being a collection management tool to being a user information provider, will they be able to create a satisfactory search system.

Useware-engineering is an interdisciplinary field. Creating a prototype applies methods from linguistics such as mental models. People often have different views and different ideas about the same thing. This means that they have different mental models in their minds. Speaking of a house, someone thinks of a small barrack overlooking the sea, another imagines a small castle and a third visualizes a single family house. The same phenomena exist when people think about computing systems. The developer likely has a different idea about a product and its functionalities than the investor. And both ideas probably disagree with the end user's mental model. Speaking of user centered design is equivalent to the consolidation of the multiple mental models. In theory this seems manageable, but in practice there is usually not just a single developer with one mental model of the product, but ten developers with different ideas and hundreds of users with their own mental models. And there are other interdisciplinary fields to consider while creating a prototype. OPACs are not for free and each add-on adds to the costs for libraries. User tests are important for cost-benefit ratio. Creating a product and then finding out whether the user likes it or not is risky. In business economics the conjoint-analysis is one way to find out how users would like a product. This paper is not the place to explain this method in detail, but the principle is as follows: A company wants to develop and sell a new product. They ask users to mark their favourite options for a new product on a multiple choice list. The list could look like this:

If you can choose your library type, which one would you prefer?

- a) a "drive-through-library"
- b) a library with open-access shelving
- c) a library with closed but huge stacks

You can choose two options you would like to have/to keep in your library. Which ones would this be:

- a) open-access shelving
- b) wireless in the library
- c) a cafeteria in the library
- d) comfortable seats
- e) a blog with news

In asking these questions, the company would find out which kinds of applications are favoured. Conjoint-analysis is much more complex than is presented here, but the principle is

useful. Why not ask the users if they would prefer to have a recommender system or to tag themselves rather than have librarians do it? Users know that the librarians cannot work from 7.00 am to 22.00 pm to keep the library open, but as a survey at the University of Rochester (Studying Students, 2007) found, the students there did not need their library open at 7.00 am, but at 22.00 pm. Nevertheless asking users sometimes it means changing things that librarians like, and it means being open to critical comments. The University of Hamburg Library has a blog and the commentary was consistently positive until one day when the library had to announce that the opening hours would be reduced. User comments must always be welcome – even if they are disagreeable.

Coming back to online help systems, this means that applying the results of the online help study mentioned above and consider general advice from the online help community. „Users should not need help to get help“ (Purchase & Worrill, 2002, p. 543, see also Dwormann et al., 2004) is the first and most essential principle. Help systems must help and not become an additional barrier. Users give an online help between 30 seconds and two minutes -- then they give up (Bartsch, 2001, p. 60). A well-designed user-centered online help is necessary if users are going to give it a chance. Such requirements are easy to say: the problem is implementing them in real working systems. A system simply cannot integrate all help principles in a single online help, because they are in some ways contradictory. For example an online help should be both short but also complete. Purchase and Worril compared the main principles of online help design and asked users which of them they would prefer. These are the results:

1. Help should be easy to understand: this is whole purpose of help; will prevent frustration.
2. Help should be procedural: step-by-step instructions representing exactly what the user needs to do.
3. Help should be unobtrusive: I do not need help when I already understand; help should be able to be moved out of the way.
4. Help should be accurate, complete and consistent: help is useless without these; help should not confuse an already confused user.
5. Help should speak the user's language: users get frustrated with trying to decipher the instructions in help; incomprehensible help is useless.
6. Interesting enough, the least favourite principle was the audio help: „annoying, slow, irrelevant detail“.

Conclusion: Six practical guidelines for prototyping online helps

Beyond these relative abstract guidelines, there exist a few practical rules-of-thumb for prototyping an online help system. The first guideline is to try to understand the user. A detailed analysis of the users is essential for each (new) conception. The analysis will show the differences between the users (beginner, novice, expert) and how their mental models fit a particular system. Only if librarians know their users and their behaviour, they can anticipate their problems. The second guideline is to remember that we are dealing with humans and not only with machines. Humans do not see only ones and zeros. They see forms and colours, signs and pictures, and these abilities must be considered in editing online help systems. Explaining text is only one way to help people understand. The third guideline is redundancy. Humans can manage seven units of information at once and even then all information is first saved in the short term memory.

People need continuous revision to move the important information to the long term memory. Information that is processed via tutorials or user training is not necessarily in long term memory. The fourth guideline for prototyping is to have hot keys. Some standard hot keys

exist and these should be respected. Having rules specifically for the library world sometimes makes sense, but it does not guarantee full acceptance by the users. Think of the hot key F1. If a user pushes it during an OPAC session, maybe the automatic help of your browser will pop up, but what about online help for the OPAC? The fifth guideline is to consider the points-of-use for online helps. Users need help at the beginning of their research, help with the hit list and help when looking at the bibliographic records. During all of these steps, users want help about how to proceed. All help should, as far as possible, be context-sensitive and illustrated with examples and images. The last guideline is not to use the term “help”. Users feel guilty about not knowing something and being forced to ask. They should never be made to feel inferior!

For the library and information community, useware-engineering is a new approach to their own products. So far, the design of online catalogues has been left in the hands of private companies, and their products are often developed independently of actual users. With userware-engineering, the library and information science community could take an active role in the design process. Prototyping an online help system for OPACs is a first attempt, but there is no one-size-fits-all in online help. The finished product must consider the different environments in each library and be oriented towards these special users. Continuous tests are necessary to guarantee the quality of online help. Without a strong engagement of librarians, this cannot be done.

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