User Experience Analysis: Site Content Search

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Introduction

This report examines the search engines of 10 popular Web sites. We selected the subjects based on their diversity — from academic, to media, to consumer technology. But we also sought out similarities in purpose: Each site is focused on aiding users in their tasks and goals by delivering content. We found that strategies for content search differ significantly from those for products (e-commerce), events (travel), or pure data (finance).

We investigated these content-search strategies by analyzing and scoring each site’s search engine using a number of criteria:

- user interfaces for entering queries
- layout and features of results pages
- quality of results and ranking algorithms
- how site architecture was reflected in the results set
- special features like handpicked results and search tips
- overall user experience

This data was then cut two ways: First, we took a broad look at each site. Who used it? What were users trying to do there? Could they do it? Then, we inventoried every feature of each site’s complete search experience, from the mundane to the critical.

What you’ll find

This report is divided into three sections, and each serves as a unique reference for improving the search experience on your site:

Eight steps to a better search engine

The report begins with a collection of quick wins for you to put into practice immediately. Some are more involved than others, but even if you implement only a few of them, your site’s search experience will improve. As a companion, we’ve included a wireframe of a generic search page that embodies our best practices and recommendations. Consider it a starting point — the basic recipe from which you can evolve your own solutions.

Site-by-site overview

This section highlights the strengths and weakness of each site’s search experience, providing a holistic view of how sites implement their search technology. But even more importantly, it gives you a chance to see how those technologies fit into the context of the site: That is, how the search-engine features match the business needs of the organization and the goals of the intended audience. You’ll find that the only rule in search design — and Web design in general — is “it depends.” A complex query language is appropriate for an academic audience searching the works of William Shakespeare, but it’s nearly useless at a “Give me the latest now!” site like CNN.com. What’s best for one audience may not work at all for another.

Feature-by-feature analysis

Use this inventory when developing the search experience on your site; it is intended as a reference. When implementing a feature, you can easily look up how it works across this range of sites. We’ve also included recommendations for best practices for each feature. While there is no single answer for every situation, we relate our observations about different approaches and make strong recommendations. Remember, there may not be one right answer, but there certainly are many wrong answers. This section helps you navigate the options.
Talk back

Finally, we’d like to hear from you. This report is based on years of experience in both designing search engines, and in usability research. But it’s still only the beginning. As the Web evolves, so does our understanding of how users locate information on the sites they visit. Let us know what you’ve found, what has worked for you, and what hasn’t. We’ve set up a discussion mailing list for the Adaptive Path community: our peers, our clients, and our workshop attendees. Join the conversation at: http://adaptivepath.com/lists/alum/.
About the Ratings

Each site we evaluated, and every feature we explored, has been rated based on its effectiveness. We applied scores in context; that is, not only did we consider the design and implementation of a particular feature, but we also factored in how appropriate a feature was for that site’s audience. Below is a description of each rank.

**Outstanding**

The feature exemplifies a best practice, and can be used as a model for your search implementation. This includes the ease of use, clarity of functionality, and responsiveness to a particular audience’s task.

**Satisfactory**

The feature meets the minimum requirements for usability and integration into a site’s architecture and design. The majority of users will likely have no trouble using this feature, though they may occasionally struggle with unexpected responses from the search engine.

**Needs Improvement**

These features were likely included in a site’s search experience without much thought. They represent roadblocks to successful searching, and cause frustration to much of the site's audience. Features rated Needs Improvement cast an unfavorable impression on the rest of the site.

**Unsatisfactory**

Unsatisfactory features are typically broken, which means users are unable to search. This can include interactions that inappropriately result in errors, misleading labels, and features that simply do the wrong thing. Even when a poorly executed feature works as a site owner intends, it will be reported as “broken” by users struggling with it.
Eight Quick Ways to Fix Your Search Engine
Tactical solutions that work for everyone

1. **Relevance is relative.** Ranking results based on their relevance is a subjective practice at best. Each search software package has its own algorithm for determining which documents best match which queries, but make sure the default ranking you select matches your users’ needs. A timely news site like CNN, for example, should weigh relevance by date as well as the number of keyword matches.

2. **Roll your own results.** Even if you can’t change your search engine’s algorithm to provide more relevant results for your users, don’t give up hope. Frankly, one of the best ways to improve your results is to choose them by hand. Get a report of the top search queries on your site. Take the top ten and find three to five pages that satisfy those queries. Then, create a simple script to place them at the top of your results page. When you have time, do the next 20 most popular. Stop when you get to 50; that will likely cover the majority of your users’ queries. Update the report once a month, adjusting the canned results as necessary.

3. **Help users avoid mistakes.** Check your search logs and you’ll find one of the top queries will inevitably be an empty submission. While we’re not sure why this happens so frequently, the fact remains that users often accidentally submit forms before filling them out. One of the simplest usability enhancements you can make to your site’s search experience can be summed up in one line of JavaScript. Make sure the search field has something in it before allowing users to submit the form.

4. **Question search engine defaults.** Few sites actually develop their own search engine software; most install pre-existing packages from companies like Inktomi, Verity, or Google. All of these solutions excel at text indexing, but none of them do an exceptionally good job at presenting results. Before turning on your search software, evaluate every option that the software provides against user needs. Do they really need the ability to hide or show the result summaries? (Tip: No, we’ve never seen anyone use this feature.) How about the relevance rating? (Another tip: No, the percentage values are meaningless and confusing.) Remove as much as you can, a simpler page will be more effective.

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**HotBot.com** The advanced search page integrates powerful features with inline help describing how to use them.
5. **Use a clean page layout.** Almost every search engine can start with this simple result-page layout:

- Put a “Search Results” headline at the top of your results page.
- Include a wide text box with the user’s search query and a submit button labeled “Search Again.”
- Beneath the text field, include any simple search-scope controls, such as category searches or date ranges.
- Include a list of matching categories, and how many results fall in each.
- Below that, show any handpicked results with the heading “Try these first.”
- Next, display a header that shows the total number of results and a control for displaying the next 10 — preferably an arrow pointing to the right.
- List 10 results with ranking numbers hanging in the column (although we have space for only four in the example at left).
- Repeat the navigation controls at the bottom of the results.
6. **Offer help for zero results.** If a query doesn't find any matches, display the following:

- A search interface that allows users to edit their query.
- Spelling alternatives, presented with the phrase, “Did you mean [alternative]?” Make the alternative a link.
- A couple of other tips as a bulleted list, such as, “Try a more general search term,” or “Try using a synonym.”
- A link to search tips or help.
- A link to your site map, if you have one.
- A link to a contact page or email address, so users can report search engine behavior that appears to be in error.

7. **Use categories if you've got them.** If your search software offers different search categories — often called catalogs or indices — use them to organize your results in a structure similar to your site’s architecture. Then, include links at the top of the results page that show how many results matched each category. This will help users narrow their search to a more manageable list.

8. **Make advanced search and help into the same thing.** If you link to a page that offers usage instructions for the many features of your search engine, include interfaces for those features so they can be used without switching back and forth. See the advanced search page at http://hotbot.com/ as an example.
Site Search Analysis
An overview of each site’s search experience
America Online's AOL@school.com is a resource for teachers and students from elementary through high school. It serves as an aggregator of screened sites deemed useful and suitable for school-age children.

Some sites have an extra seal of approval in the form of an icon that marks them as selected by the site's educator panel. The site — including the research tool we analyzed for this report — is separated by grade level (primary, elementary, middle, or high school).

This site is notable for its attention to audience. Its interface, help, and results are all packaged for school-age children without compromising the power of its search tools. Results for primary school students are even presented in a larger font size than results for older students. The relatively few results per page (five) accommodate the smaller screens and larger fonts used on school computers.

Oddly, though the search interface asks for a grade level, the results don't seem affected by the choice. Searching on a particular term will return identical results, in the same order, no matter what grade level is selected. Grade level seems only to affect what part of the site the searcher is directed to from the search results page.

The problem is mitigated by the fact that each result is clearly labeled with the grade levels for which the content is suitable. Granted, a high-school student might find something worthwhile in a site aimed at primary school students and vice-versa, but the results should at least be sorted by grade level.

Yet despite the occasional minor shortcoming, the site excels at meeting the needs of its users. It clearly defines its audience, provides well-labeled interfaces for them, and provides a search experience that is nearly transparent.

**Organization type:** Internet portal

**Audience:** Students in grades 1–12 and educators

**Content searched:** A set of preselected external sites deemed useful for homework research for students in grades 1–12

**Strengths:** Flexible search tools, high-value results, audience-appropriate text and presentation

**Weaknesses:** The engine seems to deliver the same results no matter what grade level is selected

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**Research a Topic**

The interface asks for a search term and the student's grade level before allowing students to enter a search query.
Search Results The results page presents clear, short descriptions of pre-selected sites that match the query, plus links to the site's browsable categories on related topics. A special icon calls out sites that are recommended by AOL's panel of educators.
Apple Computer Support
www.info.apple.com

Apple’s support site must cater to a broad variety of users, from complete novices to developers. It accomplishes this by making search only one of many quick ways to satisfy user goals. Apple Support search offers extremely useful index pages, with the most important links in various categories available from the top level. Many of the results pages also provide prominent links to overviews and FAQs, which offer preselected collections of useful information on popular products and topics.

Apple’s brand denotes clean presentation and ease of use. The search results, however, are of mixed quality. Apple’s brand denotes clean presentation and ease of use and its search engine reflects these qualities. The interface has a clean structure and is thoughtfully organized. Ultimately, however, the site fails the most basic test of search efficacy, a useful ranking algorithm. A query of “airport for ibook” returned useful results on choosing, using, and installing AirPort features in iBooks, plus a link to general iBook and AirPort information. But a search for “Apple support plans” returns no useful results, only a miscellaneous array of links that happen to use the three words in any order.

Apple also offers a feature called Guided Search. It’s essentially a Yahoo-like directory of knowledge-base documents, which it calls “perfect for beginning computer users.” The Guided Search feature is available from the main Apple Support submenu and from the search help page, but can’t be found on the body of the main support page or from

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<th>Rating</th>
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<td>Needs Improvement</td>
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Organization type: Technology company

Audience: Product users and developers

Content searched: Knowledgebase, downloads, product manuals, discussion boards

Strengths: Overview and FAQ results offer quick links to the most useful information, clean interface, standard (far-right) location of additional display and search options

Weaknesses: Mixed-quality results, no ability to search through all resources from the main search interface; somewhat cryptic result titles and abstracts; Guided Search is difficult to find
search results. The lack of obvious links makes it much harder to find for those seeking additional search help.

Apple hides other useful search features, too. Users must select among document databases — articles, downloads, manuals, and discussion — at the top search level, rather than being able to query all categories in the main interface. Users have easy access to results in all categories from the search results page by clicking the “categorize results” option. The selected category is saved as a cookie once chosen, but the search feature should default to the broader set rather than the narrower.

Clean Layout, Questionable Relevance Apple’s results page is perhaps the most readable of any in the group, with a clear listing of the search term and number of results at the top. Additional search tools in the right-hand column are a little too out of the way, but easily accessible once you know about them. Highlighted links to overviews and FAQs often provide high-value first links. The results themselves, however, can be wildly off base.
Centers for Disease Control and Prevention
www.cdc.gov

This site is a massive repository of health information. It serves diverse audiences, from casual browsers interested in the latest news on SARS to health authorities in under-developed countries. Its search engine is powerful, with generous error-handling features like automatic query on alternate spellings.

Its strengths, though, are buried by a central weakness: It offers an avalanche of undifferentiated data in response to user queries. Such a large library requires categorization or metadata to make it a rewarding tool for its various audience segments. Broad searches like “breast cancer” return thousands of results, including government reports, articles from scores of CDC publications, and files from the organization’s copious database of health statistics.

While the link titles and summaries are descriptive, they are of little use to users unfamiliar with the centers’ publication roster. There are no advanced search tools or tips to help users hone their results. A click on “search tips” simply offers the search field again, with a curt instruction to “enter a search phrase or individual terms that are separated by and or or.”

The search engine is powerful, with generous error-handling features, but lacks the organization of results through categorization.

Organization type: Federal government agency
Audience: General public and researchers
Content searched: Massive selection of health databases, publications, and news sources
Strengths: Good error handling; search of multiple types of documents and databases; useful custom abstracts
Weaknesses: Overwhelming results, with no way to sort them into useful categories; no advanced search tools

CDC.gov Search results are cleanly formatted, with key information highlighted at the top of the page, including quick links to related topics. The quantity of results can be overwhelming, however. Users need a way to sort through results from scores of publications written for widely different audiences. In this context, an advanced search to help users narrow their findings would be far more useful than the prominently displayed date.
The CNN.com search engine focuses on just one type of content, news articles. This makes the results easy to design and simple for users to understand. Every story has a uniform headline, a lead sentence, and a date. These elements make up a descriptive and easy-to-scan results page. Each headline includes a prominent article date in a contrasting font — an appropriate choice for a site focused on the latest current events. In fact, the date could be even more prominent: making it the first element in the title line would be helpful. The search help page is well targeted at an audience of novice searchers.

Despite these strong suits, the search feature is crippled to the point of being nearly useless, due to an absurd choice of defaults. CNN has designed its internal search engine to search the entire Web by default. A radio-button allows users to search only CNN, but they must remember to make this change every time they search; even modifying a query on the results page requires this extra step. Whether this is a poorly executed marketing deal or neglect is unclear, but it makes the user experience abysmal. Additionally, the results default to a listing by keyword relevance rather than timeliness. For most search engines, this is the right choice, but not for a media site like CNN. A radio-button allows users to search only CNN, but they must remember to make this change every time they search; even modifying a query on the results page requires this extra step. Whether this is a poorly executed marketing deal or neglect is unclear, but it makes the user experience abysmal. Additionally, the results default to a listing by keyword relevance rather than timeliness. For most search engines, this is the right choice, but not for a media site like CNN. Here, up-to-date information on current events makes or breaks the site’s credibility.

**Organization type:** Media  
**Audience:** General public  
**Content searched:** News stories  
**Strengths:** Uniform, descriptive titles and abstracts; ability to sort by relevance or date; the search help is easy to understand  
**Weaknesses:** Defaults to a full Web search even on the results page of a CNN.com search, which is an unexpected behavior. Default display by relevance can pull up outdated articles as the first results. Engine doesn’t search two main sections, business and sports, which are on different domains with separate search engines.
Here’s an example: Using the site’s defaults, a search on “presidential race” the day after the 2004 Iowa caucus returned results with eBay’s “presidential” category as the first listing. Switching from a Web-wide search to an internal search, using the interface’s radio button, returns a list headed by a story on Steve Forbes’s decision to pull out of the 2000 race. Finally, by clicking the option to sort by date, we get the expected results covering the previous day’s caucus. A relevance algorithm that correctly weighted date in the mix would be the best fix. Lacking that, simply defaulting to a listing by date would help users immensely. Regardless, virtually every search we conducted on the CNN site required the same three steps before we found useful results. We suspect most users wouldn’t bother.

The site’s fragmented architecture presents the search engine with another challenge. CNN.com’s sports and business sections reside on different domains, and must be searched separately from those sites.

**Searching CNN** These results take advantage of the articles’ headlines and lead sentences to provide descriptive and well-written titles and summaries. The formatting is clean and easy to read. However, because the site defaults to a search of the Web rather than the CNN site, and then to a ranking by badly defined relevance rather than date, any query will bring up unexpected results on the first two searches. The screens above show the listings on a search for “presidential race” the day after the 2004 Iowa caucus. By default, they’re sorted by relevance (left), users must click again to get a listing by date (right).
Edmunds.com
www.edmunds.com

The publishers of Edmunds.com have the advantage of a single topic (vehicles) with well-structured and consistent data (make, model, year). Additionally, their audience arrives with a single purpose, deciding which car to buy. With those clear parameters, Edmunds.com is able to help users create useful queries by offering dropdown menus, which structure the query to match the database.

The site demonstrates effective techniques that can be used when data is uniform and structured. Edmunds.com offers search features in many parts of its site. For the purposes of this report, though, we focus on the main search interface, accessible under the Search tab, which surfaces most options in a central location. That page offers three kinds of searching: a quick search, allowing users to select a year, make, and model or model type; advanced search, offering additional fields such as price range, transmission type, and others; and a full-text search of all the site’s pages and discussion boards.

The results pages vary depending on the type of search performed — a search by model returns specs and prices for different variations, with links to pricing and buying information. A search by type is chock-full of information: a photo, critic and user ratings, a summary of the car’s strengths and weaknesses, controls for selecting several models to compare, and links to deeper information on each model.

Edmunds.com The main search page offers many ways of searching the site’s car-buying information. Some interface glitches intercede, but the highly structured, menu-driven search quickly helps users drill down to many types of information on new and used cars.
The advanced search returns a different page type, a simpler list of results based on a much wider selection of options. The results for the full-text search are typical of content search engines, titles and descriptions sorted by relevance. This search, however, lacks many of the features search engines typically include. There are no fields for refining the search or links to advanced search features. The site’s search engine is licensed from Inktomi and offers an absurd number of search operators, which can be discovered only through a link from a zero-results page.

The differences between the results pages for each search control are easily explained by the different types of data available. Unfortunately, users will only notice that the page they got this time isn’t the same as the one they got last time, and they may be at a loss to figure out how to get the expected page again. A bit more explanation on the search page would be useful, as would some standardization of how the same type of information is displayed on different pages.

The full-text search field is obscured by its low position on the search page. (It is also at the bottom of most of the site’s other top-level pages.) That positioning is justified by the feature’s relative importance, but a more efficient page layout could highlight all search alternatives. The search layout is also littered with ads, which are embedded both in the search column and in a dedicated right-hand column. Of course, ads are expected on a free resource from a commercial publisher, but this treatment obscures the user experience.

Sloppy interface design is also apparent in the search interface. For example, in advanced search, the year-range menus are empty until you click the Used or New radio buttons.

The site as a whole, however, demonstrates effective techniques that can be used when a site’s underlying data is uniform and highly structured.

**Structured Search** A search by make and model pulls up stats on that model and its variations, plus quick links to the most-researched models in the category and a quick-search control for viewing a new model.

**Rich Results** A search by model type turns up clearly categorized information on each model, with extra features like the ability to choose models to compare in a table format.
We were hard-pressed to find a great example of a corporate enterprise site with well-implemented search features, so we selected one that illustrates some of the pitfalls these sites face. Lucent’s site search is cosmetically appealing but riddled with hidden traps for the user.

A straightforward search field is consistently well placed at the top left of each page. The search engine brings up straight text matches, with the document’s date and ranking prominently displayed. The page looks attractive, but the results are sorted into categories that have little meaning: products and services (elsewhere called “product catalog”), documents, and site content. Aren’t products and services part of the site content? Isn’t everything a document? The categories are not explained.

The initial results page shows the first five hits in each category, but the layout is so inefficient that only three fit in a fully sized browser window. Users must scroll to see all results in a single category or to return to the “more results” link, which is displayed only at the top of the category. Clicking on advanced search offers a form-based interface for modifying the page, but with only one useful control for category searching — and these categories don’t even match those on the results page. The remaining options control only how results are displayed; there are no descriptions of Boolean operators or other search controls that might be offered.

Lucent Technologies
www.lucent.com

A classic example of attention visual style with little investment in user-centered design.

Organization type: Business-to-business enterprise

Audience: Customers, investors, and press

Content searched: Information about the company and its networking products

Strengths: Simple, standard search interface on every page; meaningful titles and abstracts in search results

Weaknesses: Meaningless and inconsistently named content categories; wasted space on the results page makes it hard to scan; trivial options in advanced search, offering display rather than search control
Microsoft
www.microsoft.com

Microsoft’s search engine serves a wide variety of audiences with an even wider variety of information needs. But by featuring handpicked results and a smart set of categories, the site helps users quickly find the information they need. The search engine also illustrates a best practice in categorized results. The categories from the results page are repeated as the scoping feature on the advanced search page. Just as importantly, the results in these categories are well chosen, and they feature descriptive titles and useful abstracts.

Microsoft’s search feature is diminished by a couple of easily fixable details. The results page doesn’t provide a count of all returned results, only totals for each category. Links to advanced search and search tips are hidden at the bottom of the results page. The font on the results and search tips pages is too small for easy reading on some machines, and the page doesn’t re-flow well to suit smaller screens. Furthermore, the page layout obfuscates the valuable see also results, which are relegated to the right-hand column under an advertisement.

From a design and feature section perspective, the Microsoft search experience excels for users. And this site would have received an “Outstanding” rating from us, had the quality of results been better. The results from our test queries were always well presented and categorized, but often irrelevant or not ranked properly.

Organization type: Technology company
Audience: Prospective business customers, current users, developers, investors, and press
Content searched: Information about the company and its software products
Strengths: High-quality results; useful categories, clearly presented; clear titles and abstracts
Weaknesses: Font is sometimes too small for easy reading; no access to advanced search from the main search field or the top of the results page

By featuring handpicked results and a smart set of categories, the site helps users quickly find the information they need.
The NASA site delivers access to a massive collection of public-domain information — from sites specifically created for students, to the most technical papers on space exploration. Despite its many constituencies, NASA had to pick an audience to serve, and the search engine interface is targeted mostly toward the general public.

NASA’s primary challenge is to offer users an easy way to differentiate among the overwhelming number and breadth of results. Relevance is difficult to assign for such a large library with extremely diverse audiences. The titles used on the main results page refer to categories, but they are not explained. In advanced search, users may sort the results by date or title in addition to the default relevance ranking. Because relevance is difficult on a site like this one, these sorts of features should be included with all results pages.

The left navigation on the results page offers access to a number of useful search tools. Advanced search has a form interface for specifying AND, OR, and NOT operators, the location of the term in a document, an odd assortment of document types, a publication date, and display options. Category search unexpectedly, but helpfully, lets users drill down through a Yahoo-like directory of much more useful categories — business, NASA history, and so on. Search tips provides a comprehensive guide to the search tools, written for a novice audience. Popular search terms provides a list of preselected terms, which users can click to go directly to the most useful document on each topic. Multi-

**NASA**

www.nasa.gov

The site’s search experience would be greatly improved if the features already available in the left navigation were integrated into the main search results.
media search offers access to the home pages of several image and video libraries.

Together, NASA's search tools offer valuable ways to sort through the site's vast online library. Unfortunately, only motivated users will find them. The site's search experience would be greatly improved if the features already available in the left navigation were integrated into the main search results. For example, the search results could take advantage of the categorization already used by the category search feature, and the documents pointed to as the most helpful links for popular queries could be highlighted at the top of the list when that term or its synonyms are used.

NASA's results page is a good example of how easy it can be to improve search by removing features. The relevance percentage and graph, the file size of each page, and the page's URL could all be deleted to the benefit of the remaining information. Also, as many of the resulting documents are in alternate formats — PDF, Flash, JPEG, and others — the list needs a clear and consistent way to differentiate them. We recommend using icons and short text descriptions. See the SchwabLearning.org case study on page 23 for an example.
The Schwab Foundation for Learning offers information to parents of children with learning difficulties. The site is organized into four main sections: three that relate to the stages of the parents’ process — Identifying (the problem), Managing (it), Connecting (with other parents) — plus Resources.

Simple filtering and a smart categorization system makes this site one of the friendliest we reviewed.

The main search interface, available from every page, has two parts. The first, a dropdown menu labeled “Select a topic to search,” automatically executes searches on a set of common topics. The second is a standard search field with a Go button (labeled with an arrow).

The search results are easy to read. Titles are set off by color, and each result has up to three excerpts from the document with the search terms highlighted. Each listing includes a document date and, less helpfully, a relevance rating.

The site offers excellent controls for sorting and displaying results. A display at the top of the page shows the number of results in each category — categories that match the site sections. Three controls allow users to hide summaries for each listing or re-sort the list by date, relevance, or category. Clicking on the category option shows the first several results for each category.

Rating: Outstanding

Organization type: Nonprofit
Audience: Parents of children with learning difficulties
Content searched: Articles relating to helping children with learning problems
Strengths: Prepackaged searches on popular topics available from every page; consistent categorization, from site navigation to document types, makes the system meaningful and easy to understand; high-quality results; flexible results display, easy to re-sort, collapse, and filter; advanced search form integrated into results page on selection; useful set of advanced search operators and settings; clearly differentiated document types
Weaknesses: Bulletin board entries not included in results; distracting extra information prominently positioned on the results page; small default font on results page makes highlighting hard to see on some platforms
In a nice touch, clicking advanced search on the results page replaces the simple search interface at the top of the page with the advanced search form. Clicking search tips brings up a pop-up window, which reveals an easily understood description of additional operators that users can type into the search field, including a wildcard.

In a site with many unusual nice touches, we found one major flaw: The main search feature doesn't include the community forums, a fact that isn't clear from the search interface. Other weaknesses are minor: The page layout is distracting, the colorful left column makes quick scanning of the page difficult, and the entries have too much information. The page titles were clear and the results were generally highly relevant, but the excerpted summaries were less useful than those on other sites we've looked at.

All in all, though, the ease with which users can filter results, coupled with the simple and diligently applied categorization system makes this site's search feature one of the friendliest we reviewed.
Shakespeare Search

www.it.usyd.edu.au/~matty/Shakespeare/test.html

This site illustrates a useful principle:
You can break many established rules of “good” interface design and still have a great user experience. The Shakespeare Search engine, hosted by a Shakespeare fan in Australia, offers academics and others interested in Shakespeare’s plays and poems a full-text search of the complete works. The search interface consists of a text field plus two buttons: Begin Search and Reset. The rest of the page is filled with short paragraphs explaining the use of the optional search operators.

At first glance, the page is a mess — there is a <BLINK> tag in the first sentence, for example — but a closer look reveals its well-thought-out features and its efficiency.

Because the only purpose of this page is to search Shakespearean texts, and because most users will do many types of specialized searches, it is a good choice to explain all of the options on the main page, ready at hand when a new type of search is necessary. Since academic visitors to this site are likely to use it again and again, many users are willing to carefully read and learn the options described on this page.

The search options themselves are well suited to the type of searches academics are likely to do, offering operators such as AND, NOT, BEFORE, AFTER, NEAR, distance parameters, exact phrase, parentheses, and weight assignments. Most operators have alternate forms (e.g., + for AND). Users can also specify

Organization type: Academic, amateur
Audience: Academics, interested amateurs
Content searched: The full text of Shakespeare’s works

Strengths:
Powerful search options that are geared to the site’s content and use; clear explanation of search options; efficient display of instructions and results

Weaknesses:
No link back to query instructions from the results page; page layout of search instructions is difficult to scan; placement of the Reset Form button might cause problems for users who expect the Submit button in that position; Return key inserts a return in the search field rather than executing the query.

Shakespeare Search

The site could use some page layout help, but its content and features are very well suited to its task, full-text searching of Shakespeare’s works. This page includes a search field and explanation of the many operators available for refining the search. But careful! The button on the right clears your carefully constructed query.
particular fields (play, speaker, act, or scene) to search, and in a bow to the audience’s mental model, the engine accepts Roman numerals for the act and scene parameters.

That said, the site could benefit from a carefully crafted set of HTML forms. Powerful query languages serve an expert audience. But those features could reach a broader user base with a few simple dropdown menus and radio buttons.

In addition, we found two interface problems of note. First, the search control includes a Reset Form button where users will expect a Submit button, which will cause user errors. Second, there is no link back to the search instructions from the search results; if you want to improve your query, you’ll need to use the Back button for tips on how to do it.

### Shakespeare query

Search results

**Enter your query:**

**Flower**

<table>
<thead>
<tr>
<th>Begin search</th>
<th>Reset form</th>
</tr>
</thead>
</table>

Your search flower resulted in 63 hits

The following words appeared in your search: Flower: 63

### King Henry VI, Part ii

**Act 5, Scene 1**

From Ireland thus comes York to claim his right,  
And pluck the crown from feeble Henry's head:

```
York
```

King, bells, slowly burn, benfire, clear and bright,  
To entertain great England's lawful king.

All sancta majesty, who would not buy thee deaz?  
Let them obey that know not how to rule;

```
This hand was made to handle naught but gold.
I cannot give due action to my words,  
Except a sword or sceptre balance it;

A sceptre shall it have, have I a soul,

[Enter Buckingham]
```

On which I'll toss the flower-de-luce of France.

Whom have we here? Buckingham, to disturb me?

The king hath sent him, sure: I must dissemble.

### A Result By Any Other Name

The results page offers an interface for refining your search. It also offers the full text of every speech that includes the search term, ordered by the play’s category and chronological order within it. The play’s title links to the work’s full text. Layout with a simple fixed-width font does the job and helps the page load quickly.
Interface Feature Analysis
**Search Interface**  
How users enter queries into the search engine

Search should be ubiquitous on your site; users should never have to pause to figure out where it is. For this reason, you should design every page to include search functionality. That means not just linking to a page with your search engine on it, but including the text box and submit button in the exact same position on every page. Make it a tool that users subconsciously reach for when they need it, like the stick shift in a car.

Try to keep this control simple. Include a text input box big enough to allow users to see (and edit) their full queries. The actual length of the search box on your site will vary based on the types of queries your users will be typing. Stock quotes, for example, usually require only four characters, but full-text search will be much longer.

Additionally, include an HTML submit button labeled Search. If the architecture of your site is well defined, and subsections are meaningful to your users, you may include a narrowing function: radio buttons under the text that offer a choice of searching one section or the whole site. (If you do this, make sure the global search is selected by default.) And make sure the HTML is coded in a way that allows users to press “return” or “enter” and execute the search.

Finally, you should include two links: one to search tips or help, another to an advanced search page. Ideally, though, help and advanced search should be combined by describing each feature of your search engine in context. If you link to search tips, edit them down aggressively, then link with JavaScript to a smaller popup window that lets users stay in the context of their task. Don’t just use the feature descriptions that came with the vendor’s search software; these are often poorly written and only make matters worse for users. Don’t use a new window for advanced search.

Never include a Reset button on your search interface. You introduce the risk of users accidentally clearing their queries, and users never need to reset a form — they can just leave the page or delete the contents of the text field.

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**Edmunds.com** Multiple options presented clearly.

**Lucent Technologies** A minimal search interface is placed consistently throughout the site.
Search Interface

**AOL @ School**
Students must click “research a topic” from the site’s home page. From there, they have two choices: They can either select their grade level and proceed to the target page, or type a search term, select their grade level, and click “search.”

**Apple Computer Support**
Users type into a search box with a magnifying-glass icon. The button should say, “Search” and the layout of the search controls makes the category drop-down feel disconnected.

**Centers for Disease Control and Prevention**
A text box labeled search, with a Go button, is at the top right of each page.

**CNN.com**
Search is at the top of every page, with a long text box and Search button. The control is designed well enough, even though it inexplicably defaults to a Web search using Google, resulting in a very confusing experience for users.

**Edmunds.com**
Users must click the Search tab in the main navigation to reach the search page. This page offers several types of search. Two simple search interfaces, make and model and vehicle type, let users build queries in dropdown menus. An advanced search on the same page offers additional parameters via dropdowns and checkboxes. Finally, the site offers full-text keyword search and a search of the bulletin boards.

**Lucent Technologies**
All pages have a search field with Go button at the top left, along with a link to advanced search.

**Microsoft**
All pages have a text field — labeled, “Search Microsoft.com for:” — with a Go button.

**NASA**
A search box labeled “Find it @ NASA” with a “Go” button is at the top right of every page.

**Schwab Foundation for Learning**
There are search controls at the top of every page. A dropdown menu labeled “Select a topic to search” allows users to narrow their queries. The Submit button is designed with a stylized arrow, rather than the word “search.”

**Shakespeare Search**
A text field is near the top of the page, with Begin Search and Reset Form buttons. The Reset Form button is placed where users probably expect a submit button, which may cause unfortunate results.
Data Integration
Accessing and presenting data from multiple sources

Many sites offer a variety of content, from several different sources. Your search engine should be able to both search them all, and remember where each result came from. Ideally, search results should be displayed in aggregate. Users are expecting the most relevant result to be at the top, regardless of where it came from. But you should also label each result discreetly, using a parenthetical style to indicate its source.

There are other ways to incorporate this information as useful functionality for your users. First, allow users to scope their search based on source — just make sure they are choosing from meaningful categories. Present these options to your users as a dropdown menu on either the results page, for query refinement, or on your advanced search page. Don’t clutter the rest of your pages with this control. In that dropdown, include “All of example.com” as the default option, then list each source that can be searched. For example, a software company might include the menu in the figure on this page.

Scoping is only useful where categories of searches are well understood, such as at a technical support site where some users are likely to be searching only for downloads. Additionally, organizations with complex sites like Microsoft understand that users will be searching for discrete types of information, for example, product information versus technical support.

Some sites use scoping like this well; at other times it is a crutch for bad technology. Where the scoping is meaningless to users, it can be a confusing hindrance. NASA, for example, allows users to scope searches based on internal NASA.gov domain names, which most users won't know.

| All of Example.com |  
| Product Information |  
| Downloads |  
| Documentation & Support |  
| User Forums |  
| Press Releases |  

One Search, Many Data Sources A dropdown menu is a good way to show your users what sections of the site they’re searching.
Data Integration

**AOL @ School**

Users are required to select their grade level prior to any search, which is appropriate for this site. However, the choice doesn't seem to affect results. Resolving this inconsistency would dramatically improve users’ experience.

**Apple Computer Support**

Search defaults to a subset of the data, just the knowledge-base articles. Users can choose different databases — downloads, manuals, or discussions — from a dropdown menu to the right of the Submit button. In advanced search, users can restrict their search to a specific product or type of document, like a FAQ or manual.

**Centers for Disease Control and Prevention**

There is no scoped searching, despite the confusing array of searchable publications.

**CNN.com**

CNN’s sports section is on si.com, and its business section is on cnnmoney.com. Neither is integrated and both must be searched separately from their own home pages.

**Edmunds.com**

The main search page offers controls for several types of searches: searching buyer information via the dropdown menus; a full-text search of all site content, and a separate search field for searching content in the discussion boards. The use of each control is clear, and having them all on one page allows users to see the range of options easily. The only improvement would be to fully integrate discussion-board content.

**Lucent Technologies**

Scoping by information type (e.g., product info) is offered only through the advanced search page. The Resources Library — white papers, product brochures in PDF — must be accessed via a separate search, which is available only from the search results page. Thus, users must first fail in their searching to reach this content.

**Microsoft**

Users can narrow their search by topic or by selecting a Microsoft site in advanced search. Results are displayed by category.

**NASA**

This site has many great search features, but none of them can be used concurrently. If popular searches, pictures, and other media were integrated into one set of results, the search engine would be excellent. NASA tries to overcome this by allowing users to limit their search by internal Web site address, but why would they?

**Schwab Foundation for Learning**

Most content is well integrated in this search engine. Bulletin boards are the one exception — those must be searched separately, which isn't clear from the interface.

**Shakespeare Search**

Users can limit searches to a particular play, character, scene, or act, but must do so by using a query language.
After users submit a query, they immediately scan for the first result. Help them. Number your results, and use a clean layout so users can instantly start finding their desired resource.

Your users are going to assume that results are ranked in relevant order; the “amount” of relevance is useless. Don’t show a percentage score (e.g., 75%), a bar graph, or other visual representation of how close the result matches the query. Users rightly question how this score is generated and what exactly it means. Percent of what?

Determining the relevance of a document to a user’s query is the hard part, and you’re likely not going to have much control over that. If you can tweak the search algorithms your engine uses, do so based on the needs you hear from your users. Relevance should be determined by a number of factors:

- whether the exact phrase is in the result
- current popularity of the different results
- the likelihood of some categories (such as product information) being more useful than others (such as press releases)
- site-specific relevance factors. CNN.com, for example, should give more relevance to timely content, because they are a breaking news site. They don’t, and the user experience suffers as a result.

Our research shows that few sites handle relevance well. We’ve included additional recommendations (see “Try These First, p. 44) to help you with the challenge of pulling relevant content from unstructured text.

**Lucent.com** The results page offers a relevance ranking for each resource found. But what does “98%” mean? Users consistently ignore this information. Worse yet, the inclusion of some sort of relevance rank can decrease a user’s faith in the efficacy of the search engine.
Relevance

AOL@School
The search help states that results are listed by relevance, but it’s hard to see just what that means. Some expected parameters that might be considered to add relevance — sites hand-picked by the educators, or sites best suited for the searched-on grade level — aren’t weighted.

Apple Computer Support
Search results vary dramatically in quality, using an algorithm that seems based on simple frequency of the search terms.

Centers for Disease Control and Prevention
The default sort is by relevance, but the overwhelming, often arcane results make it hard to judge what criteria are being used.

CNN.com
Results are numbered, but the site offers no explanation of the ranking. Search words are highlighted in the result abstract. The default listing by relevance seems to sort data by frequency of the search term’s appearance. This causes some confusion on a news site. An alternate sort by date would likely provide more useful results.

Edmunds.com
For structured searches, all results fit the search criteria; results are sorted by type (e.g., midsize sedan) and in ascending order of price. Search by Type lists results alphabetically by manufacturer. Full-text search results, however, display an unnecessary relevance percentage.

Lucent Technologies
Results are ranked by relevance; a superfluous relevancy percentage is displayed for each result.

Microsoft
Results generally seem relevant and are of high quality.

NASA
Mediocre results, with low-quality links at the top. Relevance percentages given for each result seem to have little relation to the actual usefulness of the document. The full text of the document can be displayed with search terms highlighted.

Schwab Foundation for Learning
Excellent-quality results. Removing the relevance percentage would make this site Outstanding. Search terms are highlighted in the abstracts.

Shakespeare Search
Results are first listed by play category (e.g., history, tragedy) and poems follow. Within each category, works are listed by the order in which they were written, a system well understood by the site’s users. The specificity offered by the site’s copious search options make for finely pinpointed results.
The search results page on your site is one of the most important pieces of functionality that you’ll design. Avoid the urge to fall back on site-wide consistency here. Make this page good, and make it feel like part of your site; but get rid of any navigation, advertising, or other features that will distract users from achieving their goals. Your users will have more affinity for your site if it works for them. They probably could care less how pretty the results page is.

Most results pages could benefit from displaying far fewer of the features built into search engines by default. Searches constrained to a single site should forgo displaying URLs. Relevance percentages should never appear. Controls for showing or hiding descriptions are seldom necessary.

The key is simplicity. Getting rid of everything you possibly can on the page helps users quickly pick out the information they can use to determine each item’s usefulness.

Apple Computer Support The clean layout and contrasting elements of Apple’s results page go a long way toward helping users find what they need.
Results Layout

**AOL @ School**
The simple layout has appropriate highlights for (linked) page title, URL, and grade level. The short page — showing only five results — allows for at-a-glance comprehension, especially for younger students.

**Apple Computer Support**
The layout is clean, with efficiently edited and appropriately weighted information. Additional search options are available, including search again, and ads are separated into a right-hand column.

**Centers for Disease Control and Prevention**
Key information, like search phrase and number of hits, is appropriately highlighted. An unwieldy number of responses per page (50) and the small font makes scanning difficult. Date is inappropriately displayed as the most important field.

**CNN.com**
Tightly edited information — title, date, and abstract — is all the user needs, and it's displayed economically and clearly. Search term and sort options are right at the top of the page. Numbers on each item make the page easy to scan and understand. The Next button stands out well.

**Edmunds.com**
For Search by Model, the results page is very well structured, with a graphic display of vehicle ratings, full information about the car's pros and cons, and links to more information. Key categories, like manufacturer and vehicle type, are well marked. The layout of full-text search results has good contrast between information types but is cluttered by relevance percentages and graphs.

**Lucent Technologies**
The layout is attractive, but not useful. Background shades make individual entries easy to differentiate, but the very large font size restricts the number of visible results, and thus impedes users’ ability to gauge the effectiveness of their queries. The column layout also wastes space, giving too much room to parameters such as relevance and date. Column headings are redundant, and even confusing — “Document” is a column heading as well as a category name.

**Microsoft**
The layout makes a clear differentiation between categories. The returned content is well edited and useful. However, the small font size makes the page hard to scan. Users have to scroll to the bottom of the page to find a query field for another search, and anchor links for each category at the top of the page would help users get to information more quickly.

**NASA**
The layout is passable, but too much information is displayed too densely. The graph showing relevance is redundant with the percentage listed next to it, and neither is meaningful. The display of the document parameters — relevance, date, and refinement options — is efficient and clear, and font color and weight are used well to identify data types. Given the prominence of non-HTML documents in the results, however, it would be preferable to have a more obvious way to differentiate them than the subtle bracketed notation currently used.
Results Layout  (continued)

Schwab Foundation for Learning
Satisfactory

The layout is clear, but the small font size on some platforms makes it difficult to read and obscures the highlighting of search terms in the abstracts. The ellipses in the abstracts also make the content difficult to scan, though the layout of one result per line is useful. Search and display options are clearly highlighted, and document parameters such as date and relevancy are appropriately displayed. The links in the left-hand column are not related to the search query; they merely highlight features throughout the site, and are distracting.

Shakespeare Search
Needs Improvement

The page is formatted simply, with appropriate line breaks and highlighted search terms in context. The font size is readable. The choice to display all results on a single page, even if there are thousands, is a good one for this site, allowing users to easily do further text searches on the results or scroll to the most interesting citations. The search field at the top, however, should take up less space.
Global navigation helps users understand the bigger picture of your site. It should clearly communicate the overall architecture, and give a sense of what the site is ultimately about. Leaving it on the results page can be a sort of “escape hatch,” letting users jump back to a familiar place if they feel they’ve gone too far astray. Consider the poor users who just can’t find anything relevant after 10 screens of results. These links are for them.

AOL @ School
Users can navigate only to the main page for their grade level.

Apple Computer Support
Site navigation is available.

Centers for Disease Control and Prevention
Site navigation is available.

CNN.com
Site navigation is available.

Edmunds.com
Site navigation is available.

Lucent Technologies
Site navigation is available.

Microsoft
Site navigation, plus a “Related Links” sidebar, are offered.

NASA
Site navigation is available

Schwab Foundation for Learning
Not only is the architecture made clear through tabs, but the structure also permeates the search results.

Schwab Foundation for Learning
No site navigation is available.
Navigating Results Pages
The interface for moving through pages of search results

Design your results page to be easily navigable. This lets users move quickly through individual pages of the total number of results. To this end, the intra-page navigation should follow certain guidelines.

Include the total number of results returned, which subset is currently being displayed, and the user’s query. It will look something like this: “11-20 of 1,250 results for ‘query.’” There should be at least 10 results on the first page. This helps users gauge the success of their queries without needing to navigate to other pages.

All of the following controls for navigating results pages are also useful:

- Add a link to the previous page of results, disabled (or “grayed out”) if there isn't one.
- Add a link to the next page of results, also disabled if there isn't one.
- Use chevrons (HTML entities &LAQUO; and &RAQUO;) with your next and previous links. They look clean, and are clear indications of function.
- Include a direct link to each result page, unless there are more than 10. If so, just show the first 10, and move that page to the beginning of the next list. So, for example, if your users clicks directly to results page 8, the resulting navigation would look like this:

  «Previous  8 9 10 11 12 13 14 15 16 17  Next»

- If your search engine offers different ranking orders (alphabetical, by date, and so on) consider a dropdown menu that allows these alternatives to be selected.
- Place navigation to results pages at both the top and bottom of the page.

Also consider what not to offer:

- Be careful with controls that allow users to invert the ranking of their results. It may be interesting to re-sort results from earliest to most recent date, but re-sorting by least relevance to most is absurd.
- Don't offer users the ability to change the number of results per page in small increments. The difference between 10, 15, and 20 (as offered by Lucent) is negligible. Instead, follow Google's lead with groupings of 10, 50, 100, and 500.
## Navigating Results Pages

### AOL @ School

The number of total results, with “back” and “more” links, are at the bottom of the page only. The small number of results per page, five, is appropriate for this audience. To improve, the navigation should be included at both the top and bottom of the results page, and should include direct links to individual pages.

(1 - 5 of 307) more >>

### Apple Computer Support

The navigation appears at the bottom of the page only. Each page of results includes a pulldown menu for selecting a number of results per page, from 10 to 50. The menu also lets users hide summaries, and categorize results. Apple should include navigation at the top of the page, as well.

Results 1-10: 1 2 3 4 5 6 7 8 9 10: Next

### Centers for Disease Control and Prevention

Navigation appears at the top and bottom of listings.

1-50 of 12494 1 2 3 4 5 6 7 8 9 10 | next >

### CNN.com

Navigation appears at the top and bottom of listings, but does not allow for navigation to a particular page of results.

1 - 15 of 863 NEXT ➔

### Edmunds.com

For structured searches, all results appear on one page; these searches are narrow and specific enough that this is manageable. In full-text search, an arrow points to further results — an unacceptable design, but this type of searching is rarely needed on this site.

### Lucent Technologies

Five results per document type are shown on the first page. At the top of the page, “Showing x of x” and a More link is shown. Full navigation appears only on the subsequent pages. A listing of categories in the left margin looks like a navigation tool, but is only a simple list.

First | Prev | 1 | 2 | 3 | 4 | 5 | Next | Last
**Microsoft**

Navigation appears at the bottom of each category with no indication of how many results pages follow.

**NASA**

Ten listings per page are shown. Navigation is provided at the top and bottom of listings.

**Schwab Foundation for Learning**

Navigation appears at top and bottom of listings, but does not allow for navigation to a particular page of results.

**Shakespeare Search**

All results are displayed on one page, so no navigation is necessary.
Media Types
Displaying results that aren’t Web pages

If media types other than HTML are included in search results, be sure to identify them as such. Users always expect to navigate to a Web page when they click a result link. Show an icon for non-HTML file types, and provide a text description — Adobe PDF, QuickTime Movie, and so on. Place these indicators inline with the result’s title, and include the download size of the resource.

AOL @ School
No other media types were found.

Apple Computer Support
HTML only. All links are to HTML pages, which then link to any alternate file formats.

Centers for Disease Control and Prevention
Document formats other than HTML are noted in parentheses after the listing title. Icons would improve visibility.

CNN.com
No other media types were found.

Edmunds.com
HTML only. Documents in PDF are linked to from an HTML page that appears in the results list.

Lucent Technologies
HTML only. Documents in PDF are linked to from an HTML page that appears in the results list. The user is told the document is in PDF only after they go to the HTML page.

Microsoft
HTML only. All links are to HTML pages, which then link to any alternate file formats.

NASA
No indication of alternate formats in the title listing, unless the filename being linked to has a document extension — .doc, .pdf, and so on — as part of its name. In that case, the format can usually be determined from the URL, but this is insufficient to ensure that users know what to expect when clicking on the link.

Schwab Foundation for Learning
PDF, indicated with an Acrobat logo after the title.

Schwab Foundation for Learning Icons clearly denote media type.

Outstanding

Shakespeare Search
No other media types were found.
Advertising
How advertisements are integrated into the results page

Advertising is a reality for many content sites; the revenue generated by ad-supported pages often can't be eschewed — especially for high-traffic pages like search results. Ideally, results-page advertising would be consistent with the goals of your users. Look at Google to see an example of unintrusive yet successful advertising that is relevant to users’ queries.

However, you may find yourself saddled with flashy banners or buttons that attempt to distract your users into clicking. If this is the case, try to position the ads unobtrusively in a right-hand column. Never allow advertising to push relevant and valuable information down the page.

AOL @ School
There is no integrated advertising.

Apple Computer Support
Apple product ads are included in the far-right column, below the search refinement tools. Their color scheme is so in line with the rest of the page that they are extremely unintrusive.

Centers for Disease Control and Prevention
There is no integrated advertising.

CNN.com
There is no integrated advertising.

Edmunds.com
Intrusive “Sponsored Links” are placed in-line with search tools and search results. Additional ads are placed in a right-hand column.

Lucent Technologies
There is no integrated advertising.

Microsoft
There is no integrated advertising.

NASA
There is no integrated advertising.

Schwab Foundation for Learning
Internal advertising in left-hand column is the strongest graphic presence on the results page, creating a distraction from the content.

Shakespeare Search
There is no integrated advertising.
Query Display
Is the search term shown on the results page?

The search terms should be displayed in a text box on the results page so users can edit or refine them. It’s also a sound idea to display them at the top of the results, for example, “1-10 of 258 results for ‘query.’”

Lucent Technologies
The query is shown both in the search field and as the first line of the search results page, “Search results for ‘query.’”

Apple Computer Support
The query is shown both in the search field and as the first line of the search results page, “Your search for ‘query’ returned x results.”

Centers for Disease Control and Prevention
The query is shown both in the search field and as the first line of the search results page, “You searched for ‘query.’”

CNN.com
The query is shown both in the search field and as the first line of the search results page, “Article matches for ‘query’ on CNN.com.”

Edmunds.com
For structured searches, the search criteria are not shown. For full-text searches, the query is shown in the first line of the results page, “Results for ‘query.’”

CNN.com
The query box should be the most prominent interface element on the results page.

Lucent Technologies
The query is shown as the first line of the search results page, “Search results for ‘query.’”

Microsoft
The query is shown in the search field at the top of the page.

NASA
The query is shown as the first line of the search results page, “Search results for ‘query.’”

Schwab Foundation for Learning
The query is shown in the search field located in the summary section at the top of the page.

Shakespeare Search
The query is shown in the search field at the top of the page and also below the search field, “Your search ‘query’ resulted in x hits.” The subsequent line also provides information about the search query, showing the number of times each word in the query appears.
Try These First
Providing handpicked results for common queries

Search engines aren't perfect — far from it, in fact. It's impossible to guarantee useful results for every query.

The best thing you can do, then, is to guarantee good results for the most important queries. If you study your site's search reports, you'll probably find that most searches involve only 20–25 terms.

One effective way to fight back against irrelevant results is to simply pick them yourself. It may sound like a lot of work, but it’s possible to structure this as a quick project and still add a lot of value to your users' search experience.

All search technologies include reporting, so it should be relatively easy to find the top 20 queries typed into your search engine. Using those queries, determine the most appropriate three or four pages to answer each query, and grab their titles and URLs.

Next, you'll need a little technical support. Have these valuable pages associated with the corresponding queries, so that when users type them in, they'll see the handpicked results at the top of the page. Keep these selections separated from the standard results — use a bulleted list instead of numbered results, and label the section “Try These First.”

You may have thousands of queries in your logs, but 80 percent likely fall into the top 20. Revisit these quarterly, and adjust your handpicked results as necessary.

This feature is more important for some sites than for others. It may not be needed on sites where all data are assumed to be equal and well structured (e.g., for collected works of Shakespeare or Edmunds.com) — or where the search engine takes advantage of intelligently assigned metadata to return high quality results first.

Edmunds.com Sometimes, auto-generated results like these popularity-based links from Edmunds can act as a shortcut for users.
Try These First

**AOL @ School**
A special icon marks resources that were hand-selected by the site editors, but those results don't appear at the top of the list. There are also links to internal directories of related information.

**Apple Computer Support**
An overview section at the top of many results pages links to preselected collections for technologies and topics included in the search phrase.

**Centers for Disease Control and Prevention**
No handpicked results are provided.

**CNN.com**
No handpicked results are provided.

**Edmunds.com**
“Most researched models” links are at the top of the results. It’s notable, and laudable, that primary space isn’t given on a pay-for-placement basis.

**Lucent Technologies**
No handpicked results are provided.

**Microsoft**
A Related Links box at the right lists primary topic pages related to the search, but the feature is inconspicuous.

**NASA**
The preselected documents available on the Popular Search Terms page should be integrated into the results pages.

**Schwab Foundation for Learning**
No handpicked results are provided.

**Shakespeare Search**
No handpicked results are provided.
Categories
Classifying results to add context

Your users will have an easier time judging the effectiveness of their queries if you can show where on the site the individual results reside. It’s a good practice to list results in major categories separately, show a major category for each listing, or include a breadcrumb path to the document’s location on the site. Including page URLs, however, is seldom helpful unless your site’s page addresses are very clear. When pointing to resources offsite, URLs — or at least the external site’s domain — can be helpful.

This feature is often useful, and frequently underused. By far the best approach is that used by Schwab Learning — which has an alternate, category display — and Microsoft, which segments the results into meaningful categories. The worst is that used by Lucent, which segments results into meaningless categories.

AOL @ School
Displaying categories can help users broaden their search. Here, AOL offers links to categories (and parents of those categories) above the standard search results.
# Categories

<table>
<thead>
<tr>
<th>Site</th>
<th>Rating</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>AOL @ School</strong></td>
<td>Needs Improvement</td>
<td>No categories are used because the search results all come from external sites, and thus don’t fall into neat categories. The descriptive abstracts let users know what to expect for each item.</td>
</tr>
<tr>
<td><strong>Apple Computer Support</strong></td>
<td>Satisfactory</td>
<td>Separate searches are required for each category, so at least users know what type of results they’re getting. A Categorize Results link allows users to do a simultaneous search on all categories from the results page. Results from the global search are clearly labeled by category.</td>
</tr>
<tr>
<td><strong>Centers for Disease Control and Prevention</strong></td>
<td>Unsatisfactory</td>
<td>No categories are used, but they are sorely needed on a site with such a diverse range of information.</td>
</tr>
<tr>
<td><strong>CNN.com</strong></td>
<td>Unsatisfactory</td>
<td>No categories are used. Because it’s CNN, all the results are presumably news, but an indication of news category — as defined by the site’s main sections — would be useful.</td>
</tr>
<tr>
<td><strong>Edmunds.com</strong></td>
<td>Satisfactory</td>
<td>Categories are used for different types of queries (by vehicle type, price, and so on).</td>
</tr>
<tr>
<td><strong>Lucent Technologies</strong></td>
<td>Unsatisfactory</td>
<td>Listings are in three categories: Products and Services, Documents, and Site Content. These vague categories actually make it harder to comprehend the search results.</td>
</tr>
<tr>
<td><strong>Microsoft</strong></td>
<td>Outstanding</td>
<td>The results page is clearly divided into meaningful categories, with the top three results shown for each. Each listing also includes a meaningful abstract and URL.</td>
</tr>
<tr>
<td><strong>NASA</strong></td>
<td>Unsatisfactory</td>
<td>No categories are used on the results page. Results should be organized into the categories displayed on the “Search by Category” index.</td>
</tr>
<tr>
<td><strong>Schwab Foundation for Learning</strong></td>
<td>Outstanding</td>
<td>The site can be searched by meaningful categories that match the site’s main sections, or users can easily filter results by category. Clicking Show Categories on the results page reformats the listing into a page clearly segmented by categories.</td>
</tr>
<tr>
<td><strong>Shakespeare Search</strong></td>
<td>Satisfactory</td>
<td>The only applicable category is the title of the work from which the excerpt is taken, which is clearly displayed.</td>
</tr>
</tbody>
</table>
Query Refinement
Tools for helping users adjust their search on the results page

One of the simplest ways to make your results page more usable is to include a text box right at the top with the user’s query in it. It sounds obvious, but we’re surprised by how often this is overlooked.

Users make mistakes when searching — they spell words wrong, use queries that are too broad or narrow, hit enter before they’re done typing. You can account for all of these mistakes by letting users edit what they’ve tried to search for. Be sure the text box is wide enough to allow editing of the full query, and include any other appropriate features: a selection of data sources or categories to search, or whether to search on “exact phrase,” “all the words,” or “any words.” Include links to search tips and advanced search features.

Some sites repeat this interface at the bottom of search results as well, but we find that a bit overzealous, and it often clutters the page unnecessarily.

AOL @ School
In addition to a search box with the current query, users are offered an additional dropdown menu, which shows alternate databases available for search. The “search tips” link should appear adjacent to the search box, not at the top right of the page.

Apple Computer Support
The search box is available, with links to advanced search and search tips. Under search options in the right column, an ambiguously named link, “categorize results,” shows the results for your search in all document categories.

Centers for Disease Control and Prevention
The search box is included only at the top, with a link to a page of useless search tips (see “Help and Search Tips” on page 60 for more information). A category search would be very useful on this site, but isn’t available.

CNN.com
The query box is included at the top and bottom of the page. A Help link is located only at the top, giving users access to tips for effective and advanced searching. The “help” link is located so far from the query box, though, that it is unclear whether it applies to search or to the site as a whole. The biggest problem is that the search defaults back to Web search via Google, even on the results page of a CNN.com search. This makes query iteration difficult and quite confusing.

AOL @ School
Make it easy for users to change their query.
Query Refinement

Edmunds.com

The results page for a structured search allows users to choose a different subtype — e.g., compact or full-size minivans — or a new make and model. An “advanced search” link takes users back to the full set of search options. The results page for full-text searches is less complete. It offers no query-refinement tools or query box.

Lucent Technologies

A query box, with a link to advanced search, is at the top left of the page. No other refinement tools are available.

Microsoft

The search box is offered at the top and bottom of the results list, but links to advanced search and search tips are only at the bottom. On category pages, an additional check box lets users search within the current category.

NASA

A search field is located at the top of the results page. Left navigation offers access to an interesting array of search tools, including advanced search and search tips. It also gives users a list of popular search terms for instant searches and a useful tool for category searches.

Schwab Foundation for Learning

The results page includes a query box at the top, with additional controls for filtering the results by category. A useful summary at the top of the list shows the number of results in each category, allowing the user to filter results by clicking on the category name. Advanced search and search tips are also available.

Shakespeare Search

The search query box is offered at the top of the results. The extensive list of search tips is only on the main query page, which is accessible only via the Back button. No other refinement tools are available.
## Sorting Results

### Options for changing the order of returned results

When searching, users need the ability to change how the results for their queries are sorted. Generally, search results should be sorted by relevance. But users may wish to sort by date, category, or other criteria. Sites should offer this functionality on the results page, not just on the advanced search interface, as some sites do.

<table>
<thead>
<tr>
<th>Site</th>
<th>Grade</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>AOL @ School</strong></td>
<td>Unsatisfactory</td>
</tr>
<tr>
<td>No alternate sorts. Sorting by grade level or category would be useful.</td>
<td></td>
</tr>
<tr>
<td><strong>Apple Computer Support</strong></td>
<td>Unsatisfactory</td>
</tr>
<tr>
<td>No alternate sorts. Sorting by date, content type, or product would be useful.</td>
<td></td>
</tr>
<tr>
<td><strong>Centers for Disease Control and Prevention</strong></td>
<td>Unsatisfactory</td>
</tr>
<tr>
<td>No alternate sorts. Sorting by agency or publication would be useful.</td>
<td></td>
</tr>
<tr>
<td><strong>CNN</strong></td>
<td>Satisfactory</td>
</tr>
<tr>
<td>Sort by date or relevance. Relevance is the default, which is perhaps a mistake on a news site, in which timeliness is a top priority for users.</td>
<td></td>
</tr>
<tr>
<td><strong>Edmunds.com</strong></td>
<td>Unsatisfactory</td>
</tr>
<tr>
<td>No alternate sorts. Sorting by vehicle type or review ranking would be useful.</td>
<td></td>
</tr>
<tr>
<td><strong>Lucent Technologies</strong></td>
<td>Needs Improvement</td>
</tr>
<tr>
<td>No alternate sorts available in the results list, but sorting by date, relevance, or title, in ascending or descending order, is available from the advanced search controls.</td>
<td></td>
</tr>
</tbody>
</table>

### Sorting Options

<table>
<thead>
<tr>
<th>Sorting Options</th>
</tr>
</thead>
<tbody>
<tr>
<td>DATE</td>
</tr>
</tbody>
</table>

1. San Francisco digital economy worth billions (08.07)
   Amid San Francisco's recent cultural backlash again

Schwab Foundation for Learning
### Sorting Results (Continued)

<table>
<thead>
<tr>
<th>Service</th>
<th>Rating</th>
<th>Reason</th>
</tr>
</thead>
<tbody>
<tr>
<td>Microsoft</td>
<td>Unsatisfactory</td>
<td>No alternate sorts. Sorting by date, content type, or product would be useful.</td>
</tr>
<tr>
<td>NASA</td>
<td>Needs Improvement</td>
<td>Sort by relevance, date, or title is available only from the advanced search interface.</td>
</tr>
<tr>
<td>Schwab Foundation for Learning</td>
<td>Satisfactory</td>
<td>Sort by date or relevance. Date is crucial here, because parents will return again and again, to see the latest articles on their child’s condition.</td>
</tr>
<tr>
<td>Shakespeare Search</td>
<td>Satisfactory</td>
<td>No alternate sorts; but the default sort, by category and date written, is fine for this site.</td>
</tr>
</tbody>
</table>
Hide Summaries
Condensing the results page to display only titles

This feature, which reloads the page to display results without abstracts, is often implemented but seldom useful. While there might be a slight value in being able to scan more results without scrolling, the potential for clutter and misunderstanding makes its usefulness questionable. We recommend simply eliminating this interface control, and therefore have not scored the sites on this feature.

<table>
<thead>
<tr>
<th>Site</th>
<th>Availability</th>
</tr>
</thead>
<tbody>
<tr>
<td>AOL @ School</td>
<td>Not available.</td>
</tr>
<tr>
<td>Apple Computer support</td>
<td>Available from search options in the right-hand column.</td>
</tr>
<tr>
<td>Centers for Disease Control and Prevention</td>
<td>Available from a bar above the search results.</td>
</tr>
<tr>
<td>CNN.com</td>
<td>Not available.</td>
</tr>
<tr>
<td>Edmunds.com</td>
<td>Available from full-text search results.</td>
</tr>
<tr>
<td>Lucent Technologies</td>
<td>Not available.</td>
</tr>
<tr>
<td>Microsoft</td>
<td>Not available.</td>
</tr>
<tr>
<td>NASA</td>
<td>Available as an option in advanced search.</td>
</tr>
<tr>
<td>Schwab Foundation for Learning</td>
<td>Available from a bar above the search results and Advanced Search.</td>
</tr>
<tr>
<td>Shakespeare Search</td>
<td>No summaries are available; therefore, none to hide.</td>
</tr>
</tbody>
</table>
Number of Results Per Page
User control of how many results are shown

Letting users select the number of results per page is useful, but only if the options are dramatically different. Offering a choice between 10 and 15 results is annoying, but giving users the option to display 100 or 500 results might be exactly what they want. If you implement this feature, make sure it is available from the results page; don't relegate it to an advanced search interface. Also, consider allowing users to save their selection as a preference. You don't need an elaborate user login system — just set a cookie to remember the user's preference between visits.

<table>
<thead>
<tr>
<th>Service</th>
<th>Options Available</th>
</tr>
</thead>
<tbody>
<tr>
<td>Centers for Disease Control and Prevention</td>
<td>Not offered.</td>
</tr>
<tr>
<td>CNN.com</td>
<td>Not offered.</td>
</tr>
<tr>
<td>Edmunds.com</td>
<td>Not offered.</td>
</tr>
<tr>
<td>Lucent Technologies</td>
<td>Offered as an advanced search option, but not from the results page itself.</td>
</tr>
<tr>
<td>Microsoft</td>
<td>Not offered.</td>
</tr>
<tr>
<td>NASA</td>
<td>Offered as an advanced search option, but not from the results page itself.</td>
</tr>
<tr>
<td>Schwab Foundation for Learning</td>
<td>Offered as an advanced search option, but not from the results page itself.</td>
</tr>
<tr>
<td>Shakespeare Search</td>
<td>Not offered.</td>
</tr>
</tbody>
</table>

*Apple Computer Support* If you offer this seldom-useful feature, at least make the choices substantial.

*AOL @ School*
Not offered.

*Apple Computer Support*
Offered as a dropdown in search options in the right-hand column.
## International Options

**Searching internationalized and localized content**

If internationalized content is available on your site, offer a way to restrict searches to a single country or language. Link to any available international search engine interfaces from the results page or Advanced Search.

### Apple Computer Support

Not Applicable

Users search on the local site. They can select a new country, with a localized search page that searches localized content, from the results page.

### Centers for Disease Control and Prevention

Needs Improvement

Search is only on the English site. CDC en Español has no search.

### CNN.com

Needs Improvement

Main search also includes CNN International edition, which is written in English.

### Edmunds.com

Not Applicable

No international content.

### AOL @ School

No international content.

### Microsoft

Needs Improvement

Searches only the local site. Access to the international site search is offered at the bottom of the results page, or from advanced search.

### NASA

Needs Improvement

The only international content is NASA en Español. The main search engine searches both the English and Spanish versions when a query comes from either page.

### Schwab Foundation for Learning

Unsatisfactory

The Spanish version of the site has its own search engine, with a Spanish-language results page. However, the results on that page were very confusing. Listings had little relationship to the search query.

### Shakespeare Search

Not Applicable

No international content.

### Apple Computer Support

Make it easy to switch between sets of different international content collections.
## Search Defaults

**Boolean operators that affect simple queries**

Most search engines have a “query language,” that is, a set of Boolean operators that affect how multi-word searches are handled. This is an excellent expert feature: Power users can get good results without cluttering the interface for newer users.

Make sure you know how your search engine uses these features by default. If a user types a two-word query, how is it treated? We find that the best way is to use a cascading strategy. First, treat the words like an exact phrase, then show results for pages containing both terms, and so on. Here’s the ideal order for multi-word queries:

- Exact phrase
- Boolean AND
- Boolean OR
- Multiple instances of individual keywords
- A single keyword

To see how this affects searching, visit Google, which uses this strategy. Then visit Edmunds.com. Their search defaults to OR, which returns unexpected and confusing results for multiple-word queries.

### AOL @ School
- AND only

### Apple Computer Support
- AND only

### Centers for Disease Control and Prevention
- AND only

### CNN.com
- AND only

### Edmunds.com
- OR

### Lucent Technologies
- AND only

### Microsoft
- AND only

### NASA
- AND only

### Schwab Foundation for Learning
- AND only

### Shakespeare Search
- None; returns an error if multiple words are used without an operator or quotation.

---

**Search Defaults**

Boolean operators that affect simple queries
Case Sensitivity
Differentiating between upper- and lowercase

In general, case should be ignored by default. Case sensitivity can sometimes be a valid feature for advanced search interfaces, however.

**AOL @ School**
Case is ignored.

**Apple Computer Support**
Case is ignored.

**Centers for Disease Control and Prevention**
Case is ignored.

**CNN.com**
Case is ignored.

**Edmunds.com**
Full-text search distinguishes between uppercase and lowercase, but does not explain this in the interface.

**Lucent Technologies**
Case is ignored.

**Microsoft**
Case is ignored.

**NASA**
Case is ignored.

**Schwab Foundation for Learning**
If the query is capitalized, any results that match that case are ranked higher. Lowercase results are still provided, however.

**Shakespeare Search**
Case is ignored.
Even the most sophisticated search users on your site can benefit from a visual interface for the myriad options your search engine offers. And everyone else will certainly appreciate the power afforded by a well-designed advanced search page.

The Schwab Foundation for Learning site (top right) includes good choices for rendering advanced features. On this page, the query text box could be much larger, and screen real estate could be allotted to fully explain how features are used. In fact, placing search tips next to each interface control is a good way to help users with what can often be a confusing array of features.

But as is generally the case, an advanced search design will depend on the users and content of a site. For an academic audience using the site regularly, like the Shakespeare Search audience, a command-driven interface that offers power over ease of use may be appropriate. Microsoft and Apple lean toward easy to use, but less powerful interfaces to help computer users get help without calling for support.
# Advanced Search

<table>
<thead>
<tr>
<th>Site</th>
<th>Rating</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>AOL @ School</strong></td>
<td>Outstanding</td>
<td>The site offers a full set of Booleans, plus operators for proximity and other options — perfect for teaching children how to search databases. Options are described in clear, age-appropriate language.</td>
</tr>
<tr>
<td><strong>Apple Computer Support</strong></td>
<td>Satisfactory</td>
<td>Form-based input gives plain English options for executing exact phrase, AND, OR, and NOT searches. Also gives options for restricting searches to specific products or types of documents, and for including archived files (before 1997).</td>
</tr>
<tr>
<td><strong>Centers for Disease Control and Prevention</strong></td>
<td>Unsatisfactory</td>
<td>There is no advanced search; only AND and OR are mentioned in search tips.</td>
</tr>
<tr>
<td><strong>CNN.com</strong></td>
<td>Needs Improvement</td>
<td>Users can control searches with a variety of Boolean operators and symbols. Less helpfully, users can restrict search to a specific domain. The feature explanations are wordy and loosely organized.</td>
</tr>
<tr>
<td><strong>Edmunds.com</strong></td>
<td>Unsatisfactory</td>
<td>The site’s full-text search offers a wide variety of operators, but an explanation of them is very hard to find — it’s only available from the zero-results page. The help page you find there is hard to trust, since it seems to be a generic Inktomi help page with no reference to the Edmunds site, leaving users to wonder whether all the instructions are applicable.</td>
</tr>
<tr>
<td><strong>Lucent Technologies</strong></td>
<td>Unsatisfactory</td>
<td>There are no Boolean operators. Options in advanced search are limited to how many results display per page and which document types the user wants to search.</td>
</tr>
<tr>
<td><strong>Microsoft</strong></td>
<td>Satisfactory</td>
<td>As in Apple Support, Microsoft’s advanced search is a form-based page offering plain-English options for searching for an exact phrase, or AND, OR, and NOT. It also gives options for restricting searches to specific categories, a particular Microsoft site — like Knowledgebase, Microsoft Press, or an international site.</td>
</tr>
<tr>
<td><strong>NASA</strong></td>
<td>Outstanding</td>
<td>A form-based, plain-English interface allowing Boolean AND, OR, and NOT operators, and exact phrase searches. The interface restricts searches by the location of the search term (e.g., title or description), the type of document (e.g., report), a particular NASA domain, or the length of time since it was updated. It also offers result display options: the number of results per page, sort options, and with or without a summary. Category search is offered from a separate page.</td>
</tr>
<tr>
<td><strong>Schwab Foundation for Learning</strong></td>
<td>Outstanding</td>
<td>In a nice touch, clicking advanced search replaces the basic search interface in the results page with the form-based advanced search interface. Options include search by category; AND, OR, and exact phrase searches; sound-alike matching, date parameters; search on the article title or the full text; and display options. Users can choose</td>
</tr>
</tbody>
</table>
Advanced Search (continued)

10–100 results per page, with or without summaries, and rank them by relevance or date. Boolean and other operators — such as quotes, +/-, and wildcards — plus field restrictors like, “keys: membership” can also be used within the search box (as explained on the search tips page).

Shakespeare Search

The site provides a full array of operators including Boolean, distance parameters, exact phrases, and weight assignments, which can all be grouped with parentheses to control the order in which they are applied. Searches can also be restricted to a particular play, character, act, or scene (e.g., “play: name”). It even allows Roman numerals for act and scene numbers, and alternate syntaxes for different user preferences.
Help and Search Tips
Resources for helping users search more effectively

Good search help not only teaches users how to use the tool, but doesn't require navigation to get to it. This is important; users learn better when the tool remains before them as they read about it. This means either including help and search tips right on the main search page they’re using, or — more realistically — on a smaller pop-up window.
Help and Search Tips

AOL @ School

The search help is a mini-site of its own, with categories: Getting Started, Features of the Search Results Page, Common Problems, and Advanced Search Techniques. It takes on the role of a search primer for students. The instructions are clear and complete without talking down to users. Includes a search field at the top of every page, allowing users to perform their search as soon as their questions are answered.

Apple Computer Support

Apple’s help is written to explain search to novice users in the simplest possible terms. It points users to the Guided Search system for novices and the advanced search system for advanced users. It also does a commendable job of explaining the Boolean operators. Our rating would be Outstanding if a search field were included on this page.

Centers for Disease Control and Prevention

This site’s help is condescending and not at all useful — a single sentence appears on a new page, “Please enter a search phrase or individual terms separated by and or or.”

CNN.com

CNN’s help appears to be simply copied from an instruction manual that came with the technology, and is aimed at very novice users.

Edmunds.com

The only link to this site’s search help is available after making an error. Only if a user’s query returns zero results can they read about the advanced features available for searching.

Lucent Technologies

There are no separate search tips on this site, and the two help links on the advanced search page are ambiguous. The links shepherd users to a browsable product catalog and to a resource library search interface, but both of those databases are more conveniently accessible via the main search interface.

Microsoft

There is an exhaustive description of the available features in the basic and advanced search interfaces, but it feels redundant. Users can see the document categories and other options within the search interfaces themselves.

NASA

NASA’s search help is one of the features in its search mini-site. It explains the very basics of search (“What is Search?”) and elementary details on how to use NASA’s search tools. Users can access tips and all other search tools from the search section’s main navigation.

Schwab Foundation for Learning

A pop-up window uses a simple, bulleted format to clearly describe operators that can be used in the search box.

Shakespeare Search

The main search interface includes descriptions of all the search options.
## Designing Individual Results

### Relevance Ranking

Do the results have an indication of the relevance to the query?

**Best Practice:** Percentages or graphs are meaningless; leave them out.

<table>
<thead>
<tr>
<th>Site</th>
<th>Is the feature present?</th>
</tr>
</thead>
<tbody>
<tr>
<td>AOL @ School</td>
<td>No</td>
</tr>
<tr>
<td>Apple Computer Support</td>
<td>No</td>
</tr>
<tr>
<td>Centers for Disease Control</td>
<td>No</td>
</tr>
<tr>
<td>CNN.com</td>
<td>No</td>
</tr>
<tr>
<td>Edmunds.com structured search</td>
<td>N/A</td>
</tr>
<tr>
<td>Edmunds.com full-text search</td>
<td>Yes</td>
</tr>
<tr>
<td>Lucent Technologies</td>
<td>Yes</td>
</tr>
<tr>
<td>Microsoft</td>
<td>No</td>
</tr>
<tr>
<td>NASA</td>
<td>Yes</td>
</tr>
<tr>
<td>Schwab Foundation for Learning</td>
<td>Yes</td>
</tr>
<tr>
<td>Shakespeare Search</td>
<td>N/A</td>
</tr>
</tbody>
</table>

### Number

Are the results numbered sequentially?

**Best Practice:** Number results to give users context as they move through multiple pages. Numbering can also make it easier to scan the list, especially if each result is formatted with a hanging indent.

<table>
<thead>
<tr>
<th>Site</th>
<th>Is the feature present?</th>
</tr>
</thead>
<tbody>
<tr>
<td>AOL @ School</td>
<td>No</td>
</tr>
<tr>
<td>Apple Computer Support</td>
<td>No</td>
</tr>
<tr>
<td>Centers for Disease Control</td>
<td>Yes</td>
</tr>
<tr>
<td>CNN.com</td>
<td>Yes</td>
</tr>
<tr>
<td>Edmunds.com</td>
<td>No</td>
</tr>
<tr>
<td>Lucent Technologies</td>
<td>No</td>
</tr>
<tr>
<td>Microsoft</td>
<td>No</td>
</tr>
<tr>
<td>NASA</td>
<td>No</td>
</tr>
<tr>
<td>Schwab Foundation for Learning</td>
<td>Yes</td>
</tr>
<tr>
<td>Shakespeare Search</td>
<td>No</td>
</tr>
</tbody>
</table>
### Designing Individual Results (continued)

#### Title

*How is the document or resource described in the result?*

**Best Practice:** A good search result title will reflect a well-named page. Most search engines return the text of the HTML title tag. However, this may lead to multiple results listed identically, for example: 

NameOfSite.com > Products > Product Name

#### Abstract

*Is there an extended description of the resource?*

**Best Practice:** Use custom-written abstracts describing the resource, if at all possible. Many sites show an excerpt from the page highlighting the query in boldface. While this may seem an attractive technological solution, it seldom provides enough context for users to decide whether the result is useful.

<table>
<thead>
<tr>
<th>Site</th>
<th>Feature</th>
</tr>
</thead>
<tbody>
<tr>
<td>AOL @ School</td>
<td>Custom-written by the site's editors</td>
</tr>
<tr>
<td>Apple Computer Support</td>
<td>Document title</td>
</tr>
<tr>
<td>Centers for Disease Control</td>
<td>Document title</td>
</tr>
<tr>
<td>CNN</td>
<td>Story headline</td>
</tr>
<tr>
<td>Edmunds.com structured and free-text search</td>
<td>Page title</td>
</tr>
<tr>
<td>Lucent Technologies</td>
<td>Page title</td>
</tr>
<tr>
<td>Microsoft</td>
<td>Document location, type, and title</td>
</tr>
<tr>
<td>NASA</td>
<td>Page title (often confusing)</td>
</tr>
<tr>
<td>Schwab Foundation for Learning</td>
<td>Page title</td>
</tr>
<tr>
<td>Shakespeare Search</td>
<td>Play, act, scene</td>
</tr>
</tbody>
</table>

| AOL @ School                              | Provides a custom-written abstract                             |
| Apple Computer Support                    | Excerpts with search terms highlighted                        |
| Centers for Disease Control               | Excerpt, but unclear how it was chosen; Not the first instance of the term in the document |
| CNN                                       | From meta content, shows the first line of the story           |
| Edmunds.com: structured search            | Structured search presents a wide variety of information in graphic format |
| Edmunds.com: free-text search:            | Full-text search offers excerpts with highlighted terms        |
| Lucent Technologies                       | Excerpt, unclear how it was chosen                             |
| Microsoft                                 | Plain-English abstract                                        |
| NASA                                      | Plain-English abstract                                        |
| Schwab Foundation for Learning            | Excerpts with search terms highlighted                         |
| Shakespeare Search                        | Results display the full text of the speech that includes the term, with the search term highlighted |
Designing Individual Results (continued)

### URL

**Is the Web address of the page displayed in the result?**

**Best Practice:** Include the URL only if it is meaningful to your users. While this is a useful feature for general Web search engines like Google, your site’s search engine should probably not include URLs.

<table>
<thead>
<tr>
<th>Site</th>
<th>Is the feature present?</th>
</tr>
</thead>
<tbody>
<tr>
<td>AOL @ School</td>
<td>Yes</td>
</tr>
<tr>
<td>Apple Computer Support</td>
<td>No</td>
</tr>
<tr>
<td>Centers for Disease Control</td>
<td>No</td>
</tr>
<tr>
<td>CNN.com</td>
<td>Web searches: Yes; Internal searches: No</td>
</tr>
<tr>
<td>Edmunds.com</td>
<td>Yes, for full-text searching</td>
</tr>
<tr>
<td>Lucent Technologies</td>
<td>No</td>
</tr>
<tr>
<td>Microsoft</td>
<td>Yes</td>
</tr>
<tr>
<td>NASA</td>
<td>Yes</td>
</tr>
<tr>
<td>Schwab Foundation for Learning</td>
<td>Yes</td>
</tr>
<tr>
<td>Shakespeare Search</td>
<td>N/A</td>
</tr>
</tbody>
</table>

### Date

**Is the creation or last update date displayed?**

**Best Practice:** Include the date if timeliness is important for your content. CNN, for example, rightly emphasizes the date of the story.

<table>
<thead>
<tr>
<th>Site</th>
<th>Is the feature present?</th>
</tr>
</thead>
<tbody>
<tr>
<td>AOL @ School</td>
<td>No</td>
</tr>
<tr>
<td>Apple Computer Support</td>
<td>No</td>
</tr>
<tr>
<td>Centers for Disease Control</td>
<td>Yes</td>
</tr>
<tr>
<td>CNN.com</td>
<td>Yes</td>
</tr>
<tr>
<td>Edmunds.com structured search</td>
<td>Yes, for full-text searching</td>
</tr>
<tr>
<td>Lucent Technologies</td>
<td>For some types of content, not for others</td>
</tr>
<tr>
<td>Microsoft</td>
<td>Only for certain document types</td>
</tr>
<tr>
<td>NASA</td>
<td>Yes</td>
</tr>
<tr>
<td>Schwab Foundation for Learning</td>
<td>Yes</td>
</tr>
<tr>
<td>Shakespeare Search</td>
<td>No, though results are in chronological order</td>
</tr>
</tbody>
</table>
Categories

Is there a visible, useful classification system in place?

**Best Practice:** Categories are almost always useful, and they can be displayed in several different ways. The most effective implementations list categories at the top of the page, with total number of results in each category displayed. You might also include an indication of category in individual results.

<table>
<thead>
<tr>
<th>Site</th>
<th>Is the feature present?</th>
</tr>
</thead>
<tbody>
<tr>
<td>AOL @ School</td>
<td>Segmented by grade level</td>
</tr>
<tr>
<td>Apple Computer Support</td>
<td>Sorted into categories: downloads, articles, manuals, and discussions</td>
</tr>
<tr>
<td>Centers for Disease Control</td>
<td>No</td>
</tr>
<tr>
<td>CNN.com</td>
<td>No</td>
</tr>
<tr>
<td>Edmunds.com</td>
<td>Sorted by model name in quick search results</td>
</tr>
<tr>
<td>Lucent Technologies</td>
<td>Results are categorized, but not usefully</td>
</tr>
<tr>
<td>Microsoft</td>
<td>Yes</td>
</tr>
<tr>
<td>NASA</td>
<td>No</td>
</tr>
<tr>
<td>Schwab Foundation for Learning</td>
<td>Yes</td>
</tr>
<tr>
<td>Shakespeare Search</td>
<td>Sorted by play</td>
</tr>
</tbody>
</table>

Find Similar

**Does a “find similar” link offer an instant search for similar documents?**

**Best Practice:** When searching domains of limited scope, it’s usually best to forgo this feature. It was borrowed from Internet-wide search engines like Yahoo and Google, and it often fails on internal search products.

<table>
<thead>
<tr>
<th>Site</th>
<th>Is the feature present?</th>
</tr>
</thead>
<tbody>
<tr>
<td>AOL @ School</td>
<td>Yes: “Show me more like this”</td>
</tr>
<tr>
<td>Apple Computer Support</td>
<td>No</td>
</tr>
<tr>
<td>Centers for Disease Control</td>
<td>No</td>
</tr>
<tr>
<td>CNN.com</td>
<td>No</td>
</tr>
<tr>
<td>Edmunds.com structured search</td>
<td>No</td>
</tr>
<tr>
<td>Edmunds.com full-text search</td>
<td>Yes</td>
</tr>
<tr>
<td>Lucent Technologies</td>
<td>No</td>
</tr>
<tr>
<td>Microsoft</td>
<td>No</td>
</tr>
<tr>
<td>NASA</td>
<td>Yes</td>
</tr>
<tr>
<td>Schwab Foundation for Learning</td>
<td>No</td>
</tr>
<tr>
<td>Shakespeare Search</td>
<td>No</td>
</tr>
</tbody>
</table>
Handling Errors

Zero Results

What error recovery options are offered when a search returns no results?

**Best Practice:** The zero-results page should include all of the following:

- A message explaining what happened
- A search box with the current search term
- Tips (e.g., try a broader term)
- Suggestions of words with close spellings
- Access to advanced search, all site navigation, and a site map if one exists
- A contact link, so users can report an unexpected outcome

<table>
<thead>
<tr>
<th>Site</th>
<th>Feature</th>
<th>Rating</th>
</tr>
</thead>
<tbody>
<tr>
<td>AOL @ School</td>
<td>Access to search field and link to subject categories. It includes a confusing help message, &quot;You must enter a query,&quot; which is clearly meant for an empty search field, but isn't necessarily applicable here.</td>
<td>Unsatisfactory</td>
</tr>
<tr>
<td>Apple Computer Support</td>
<td>Access to search field and link to Guided Search feature</td>
<td>Needs Improvement</td>
</tr>
<tr>
<td>Centers for Disease Control</td>
<td>Access to the search field and hints for effective searching.</td>
<td>Unsatisfactory</td>
</tr>
<tr>
<td>CNN</td>
<td>Access to the search field, hints for effective searching, and access to the search help.</td>
<td>Satisfactory</td>
</tr>
<tr>
<td>Edmunds.com: structured search</td>
<td>In advanced search, the search page reloads. A red error message above the Advanced Search section explains the problem, but the message is below the fold, so the user isn't aware of it.</td>
<td>Unsatisfactory</td>
</tr>
<tr>
<td>Edmunds.com: full-text search</td>
<td>Full-text search offers hints for effective searching, and access to search help.</td>
<td>Satisfactory</td>
</tr>
<tr>
<td>Lucent Technologies</td>
<td>Access to the search field, no help</td>
<td>Needs Improvement</td>
</tr>
<tr>
<td>Microsoft</td>
<td>Access to the search field, advice to check the spelling, and access to search help.</td>
<td>Needs Improvement</td>
</tr>
<tr>
<td>NASA</td>
<td>Access to the search field, suggested alternate spelling, hints for effective searching, and access to all search aids.</td>
<td>Outstanding</td>
</tr>
<tr>
<td>Schwab Foundation for Learning</td>
<td>Access to the search field, hints for effective searching, access to search help and advanced search.</td>
<td>Satisfactory</td>
</tr>
<tr>
<td>Shakespeare Search</td>
<td>Access to the search field and hints for more effective searching, but no clear link back to the explanation of search operators.</td>
<td>Needs Improvement</td>
</tr>
</tbody>
</table>
### Handling Errors (continued)

#### Typos and Misspellings

**Does the search engine search for or suggest alternatives to misspelled words?**

**Best Practice:** Always alert users to misspellings in their queries and, if there is a close match, suggest an alternative and make it a link.

#### Search Results

**for powrepoint**

- Did you mean *powerpoint*?

**Sorry, no results were found.**

It may help to:
- Correct your spelling
- Consult [Search Help](#)

#### Microsoft

Offer help when your users’ queries appear to be misspelled.

---

<table>
<thead>
<tr>
<th>Site</th>
<th>Feature</th>
<th>Rating</th>
</tr>
</thead>
<tbody>
<tr>
<td>AOL @ School</td>
<td>Attempts to provide alternative spellings; users can click on an alternate to execute a search on that term. Suggestions are not always provided though, or may be off-base. (The only suggested alternate for “munkey” was “muncie.”) Alternate spellings built in for some terms, for example, “Louis and Clark” automatically returns results for “Lewis and Clark.”</td>
<td>Outstanding</td>
</tr>
<tr>
<td>Apple Computer Support</td>
<td>Zero results page offers alternate spellings for common terms, “ibook” for “ibook,” and so on.</td>
<td>Satisfactory</td>
</tr>
<tr>
<td>Centers for Disease Control</td>
<td>No error catching, though search hints on the page include a suggestion to check the spelling of your search term.</td>
<td>Unsatisfactory</td>
</tr>
<tr>
<td>CNN.com</td>
<td>Takes typos in stride, and still returns good results, “beast cancer” returns results for “breast cancer,” and “ontology” returns results for “ontology.”</td>
<td>Outstanding</td>
</tr>
<tr>
<td>Edmunds.com</td>
<td>No error-catching, though search hints on the page include a suggestion to check the spelling of your search term. (Applicable only to full-text search.)</td>
<td>Unsatisfactory</td>
</tr>
<tr>
<td>Lucent Technologies</td>
<td>Can manage errors of omission; a search for “wireless” returns results for “wireless.” Not so good with errors of commission, “woreless” returns no results or alternate spellings.</td>
<td>Needs Improvement</td>
</tr>
<tr>
<td>Microsoft</td>
<td>Spell-check (“Did you mean…”) on results.</td>
<td>Satisfactory</td>
</tr>
<tr>
<td>NASA</td>
<td>Suggests alternate spellings for zero results.</td>
<td>Satisfactory</td>
</tr>
<tr>
<td>Schwab Foundation for Learning</td>
<td>Automatically searches for close spellings and “sound-alike” words. For example, it finds “school” when the user enters “skool.”</td>
<td>Satisfactory</td>
</tr>
<tr>
<td>Shakespeare Search</td>
<td>No error-catching for typos.</td>
<td>Unsatisfactory</td>
</tr>
</tbody>
</table>
### Empty Query

*What happens if a user clicks Submit with no text in the query box?*

**Best Practice:** The site should perform a client-side check for content in the query box, using JavaScript, and display an error message if none is present. The search engine should also check for an empty query on the server side for users that have scripting disabled.

### Site Feature Rating

<table>
<thead>
<tr>
<th>Site</th>
<th>Feature</th>
<th>Rating</th>
</tr>
</thead>
<tbody>
<tr>
<td>AOL @ School</td>
<td>Standard zero results page, which includes a notice, “You must enter a search term in the box above to get results.”</td>
<td>S satisfactory</td>
</tr>
<tr>
<td>Apple Computer Support</td>
<td>Standard zero results page with no indication of what happened.</td>
<td>N needs improvement</td>
</tr>
<tr>
<td>Centers for Disease Control</td>
<td>Custom error message, “No terms were available for search. Please enter a search term and try again.”</td>
<td>S satisfactory</td>
</tr>
<tr>
<td>CNN.com</td>
<td>Nothing happens; the button doesn’t execute the search, but the user receives no explanation.</td>
<td>U unsatisfactory</td>
</tr>
<tr>
<td>Edmunds.com: quick search</td>
<td>A JavaScript error says, “Please select year.”</td>
<td>O outstanding</td>
</tr>
<tr>
<td>Edmunds.com: advanced search</td>
<td>Same page as for zero results, with the same layout problems.</td>
<td>U unsatisfactory</td>
</tr>
<tr>
<td>Edmunds.com: full-text search</td>
<td>Same page as for zero results.</td>
<td>N needs improvement</td>
</tr>
<tr>
<td>Lucent Technologies</td>
<td>Custom error with faulty instructions, “No search term entered; Please click ‘new search’ and be sure to provide a word to search for.” Unfortunately, there is no “new search” to click; a new search can be executed immediately from the search field on the page.</td>
<td>U unsatisfactory</td>
</tr>
<tr>
<td>Microsoft</td>
<td>Same page as for zero results.</td>
<td>N needs improvement</td>
</tr>
<tr>
<td>NASA</td>
<td>Custom error, “Please enter search query and click on Go or press enter.”</td>
<td>S satisfactory</td>
</tr>
<tr>
<td>Schwab Foundation for Learning</td>
<td>Client-side check for an empty search field on main search interface. Displays a JavaScript alert, “Please type in a keyword.”</td>
<td>O outstanding</td>
</tr>
<tr>
<td>Schwab Foundation for Learning (results page)</td>
<td>A blank field in the Search Again box on the results page returns a large, seemingly random assortment of results.</td>
<td>U unsatisfactory</td>
</tr>
<tr>
<td>Shakespeare Search</td>
<td>Displays a default server error, “Internal Server Error.”</td>
<td>U unsatisfactory</td>
</tr>
</tbody>
</table>
Automatic Query Expansion

**Stemming**

*Does the engine search on variations of search terms – such as plurals or gerunds – either automatically, or by offering “wildcard” characters in the search terms?*

**Best Practice:** Automatic searching on alternate forms, which can be turned off in advanced search. This is especially important when presenting “Try these first…” hand-picked queries.

<table>
<thead>
<tr>
<th>Site</th>
<th>Feature</th>
<th>Rating</th>
</tr>
</thead>
<tbody>
<tr>
<td>AOL @ School</td>
<td>Offers a wildcard for single characters.</td>
<td>Needs Improvement</td>
</tr>
<tr>
<td>Apple Computer Support</td>
<td>According to the search help, “To provide the most precise results…” the search doesn't use stemming.</td>
<td>Unsatisfactory</td>
</tr>
<tr>
<td>Centers for Disease Control</td>
<td>Automatic, search of “appl” finds “apple,” and so on.</td>
<td>Satisfactory</td>
</tr>
<tr>
<td>CNN.com</td>
<td>Not used, not available.</td>
<td>Unsatisfactory</td>
</tr>
<tr>
<td>Edmunds.com: structured search</td>
<td>Not used, not available.</td>
<td>Unsatisfactory</td>
</tr>
<tr>
<td>Lucent Technologies</td>
<td>Not used, not available.</td>
<td>Unsatisfactory</td>
</tr>
<tr>
<td>Microsoft</td>
<td>Automatically applied; for example, “wind” finds “wind” and “windows.”</td>
<td>Needs Improvement</td>
</tr>
<tr>
<td>NASA</td>
<td>Not used, not available.</td>
<td>Unsatisfactory</td>
</tr>
<tr>
<td>Schwab Foundation for Learning</td>
<td>Automatic search for plural variations. Wildcard available as an operator.</td>
<td>Outstanding</td>
</tr>
<tr>
<td>Shakespeare Search</td>
<td>Not used or available.</td>
<td>Unsatisfactory</td>
</tr>
</tbody>
</table>
## Automatic Query Expansion (continued)

### Synonyms

*Does the engine automatically search for synonyms of the user’s query?*

**Best Practice:** Same behavior as “Stemming,” above.

<table>
<thead>
<tr>
<th>Site</th>
<th>Feature</th>
<th>Rating</th>
</tr>
</thead>
<tbody>
<tr>
<td>AOL @ School</td>
<td>Not applied</td>
<td>Unsatisfactory</td>
</tr>
<tr>
<td>Apple Computer Support</td>
<td>Not applied</td>
<td>Unsatisfactory</td>
</tr>
<tr>
<td>Centers for Disease Control</td>
<td>Related terms offered as alternate links at the top of the results page</td>
<td>Satisfactory</td>
</tr>
<tr>
<td>CNN</td>
<td>Not applied</td>
<td>Unsatisfactory</td>
</tr>
<tr>
<td>Edmunds.com Structured search</td>
<td>Not applied</td>
<td>Unsatisfactory</td>
</tr>
<tr>
<td>Lucent Technologies</td>
<td>Not applied</td>
<td>Unsatisfactory</td>
</tr>
<tr>
<td>Microsoft</td>
<td>Not applied</td>
<td>Unsatisfactory</td>
</tr>
<tr>
<td>NASA</td>
<td>Not applied</td>
<td>Unsatisfactory</td>
</tr>
<tr>
<td>Schwab Foundation for Learning</td>
<td>Automatically applies related terms to some searches, notably the “canned” searches</td>
<td>Satisfactory</td>
</tr>
<tr>
<td>Shakespeare Search</td>
<td>Not applied</td>
<td>Unsatisfactory</td>
</tr>
</tbody>
</table>
About Adaptive Path

Adaptive Path advises organizations on user experience strategies, helping them realize the maximum value from their product design and development investments. The company’s founders are recognized around the world as industry leaders. Adaptive Path also shares its experience and expertise through publications, public workshops, and private corporate training.

Adaptive Path’s clients include Sony, PBS, Yamaha, PeopleSoft, Cathay Pacific, and the United Nations. The company is headquartered in San Francisco.

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Jeffrey Veen is a founding partner of Adaptive Path. He launched HotWired.com in 1994, and is author of The Art & Science of Web Design and HotWired Style. Jeffrey is an internationally sought-after speaker, author, and user experience consultant. As the executive interface director for Wired Digital, he managed the look and feel of HotWired, the HotBot search engine, Wired News, and other acclaimed sites.

In addition to lecturing and writing on Web design and development, Jeffrey has been active with the World Wide Web Consortium’s CSS Editorial Review Board as an invited expert on electronic publishing. He is also a journalist and columnist whose work has appeared in several publications including Wired, Wired News, New Architect, Webmonkey, Digital Web, A List Apart, WebEGG, and Stating the Obvious.

Darcy DiNucci is an information architect and content strategist. She has developed Web site strategies since 1994 for clients such as Bank of America, Netscape Communications, PeopleSoft, and McKesson Corporation, directly and with agencies such as Adaptive Path, Hot Studio, MetaDesign, and Small Pond Studio. She is author of Elements of Web Design (Peachpit Press), Adobe Master Class: Web Site Redesigns (Adobe Press), and Flash Interface Design (Macromedia Press) and was a columnist on Web design for MacWEEK and Print magazines.