Low-Literacy Users

Summary:
Lower-literacy users exhibit very different reading behaviors than higher-literacy users: they plow text rather than scan it, and they miss page elements due to a narrower field of view.

We've known since 1997 how most users read on the Web: they scan text and pick out the pieces that interest them. Content usability guidelines have remained mostly the same since 1997, but now there's news.

We recently expanded our research to cover a big part of the population left out of earlier studies: lower-literacy users. As it turns out, their online behavior is radically different than that of higher-literacy users.

This new research on lower-literacy usability is sponsored by Pfizer, which has a major effort underway to make its consumer communications understandable and actionable by a broad consumer audience. Understanding health information can be challenging for anyone, regardless of literacy level, so the effort's benefits will be far reaching in helping consumers understand and treat their conditions.

Lower-Literacy Users: Characteristics

Lower literacy is different than illiteracy: people with lower literacy can read, but they have difficulties doing so.

The most notable difference between lower- and higher-literacy users is that lower-literacy users can't understand a text by glancing at it. They must read word for word and often spend considerable time trying to understand multi-syllabic words.

Lower-literacy users focus exclusively on each word and slowly move their eyes across each line of text. In other words, they "plow" the text, line by line. This gives them a narrow field of view and they therefore miss objects outside the main flow of the text they're reading.

Unlike higher-literacy users, lower-literacy users don't scan text. As a result, for example, they can't quickly glance at a list of navigation options to select the one they want. They must read each word in each option carefully. Their only other choice is to completely skip over large amounts of information, which they often do when things become too complicated.
Lower-literacy users tend to **satisfice** -- accept something as "good enough" -- based on very little information because digging deeper requires too much reading, which is both challenging and time consuming. As soon as text becomes too dense, lower-literacy users start skipping, usually looking for the next link. In doing so, they often overlook important information.

In addition, having to **scroll** breaks lower-literacy users' visual concentration because they can't use scanning to find the place they left off.

Finally, **search** creates problems for lower-literacy users for two reasons. First, they often have difficulty spelling the query terms. Second, they have difficulty processing search results, which typically show weird, out-of-context snippets of text. As a result, lower-literacy users often simply pick the first hit on the list, even if it's not the most appropriate for their needs.

## Improving Usability for Lower-Literacy Users

The main and most obvious advice is to simplify the text: use text aimed at a **6th grade reading level** on the homepage, important category pages, and landing pages. On other pages, use text geared to an **8th grade reading level**.

You can also improve your site's usability for lower-literacy users in several other ways.

**Prioritize information.** Place the main point at the very top of the page, where even readers who typically give up after a few lines will see it. Place any other important information above the fold, to minimize the risk of users losing their place after scrolling. This is always good practice; even the most skilled readers will leave a page if the first few paragraphs don't seem valuable. It's even better to avoid scrolling all together (which also helps **teenagers**) unless eliminating it requires you to chop content into unnaturally short sections, which can be even more confusing.

**Avoid text that moves or changes**, such as animations and fly-out menus. Static text is easier to read. This guideline also helps international users (who might need to look up words in a dictionary) and users with motor skills impairments (who have difficulty catching things that move).

**Streamline the page design.** Place important content in a single main column, so users don't have to scan the page and pick out design elements in a two-dimensional layout. This guideline also helps low-vision users and users of handheld devices (such as smartphones), which narrow the field of view.

**Simplify navigation** by placing the main choices in a linear menu. This helps users clearly understand the next place to go, without requiring them to scan the page for options.
Optimize search. Make your search tolerant of misspellings (which also helps seniors, who are particularly prone to making typos). Ideally, a user's first search hit should answer the query, and all hits should provide short, easy-to-read summaries.

How Big Is the Lower-Literacy Population?

According to the U.S. Department of Education's National Adult Literacy Survey, 48% of the U.S. population has low literacy. (Literacy levels are roughly the same in other advanced countries, though slightly higher in Scandinavia.)

For obvious reasons, Web design is concerned only with Web users, and not the population at large. Generally, people with lower-literacy tend to use the Internet less than people with higher-literacy.

Based on the available information about Internet participation at different education levels, I estimate that 30% of Web users have low literacy. Because most of the higher-literacy population is already online, however, future growth in Internet usage will mainly come from adding lower-literacy users. Thus, in five years or so, lower-literacy users will probably be 40% of Web users.

Who Should Care about Lower-Literacy Users?

Long experience shows that improving usability for users with disabilities typically increases usability for non-disabled users as well. Similarly, improving websites for lower-literacy users can also help higher-literacy users. That said, some sites are targeted mainly at higher-literacy users:

- B2B sites that target business professionals, managers, and decision-makers
- E-commerce sites that sell expensive or intellectual products
- The public relations and investor relations areas of corporate sites
- Content sites that cover scientific or other advanced topics
- Intranets for knowledge workers

My own Alertbox column contains B2B content aimed at business professionals and executives who recognize usability's importance. I usually write it at a 13th grade reading level, which is not only far too difficult for lower-literacy users, but too complicated for the mainstream B2C audience. Given my readership, this readability level is acceptable.

However, sites that target a broader audience must make lower-literacy users a priority. Such sites include:

- Government sites, especially those for senior citizens or the unemployed
- Health sites
- Companies that sell mass-market products
• HR info and benefits applications on intranets for companies with many blue-collar workers

Case Study: What's at Stake?

To estimate the impact of writing for lower-literacy users, we collected usability metrics before and after the website content for a major pharmaceutical product was rewritten and simplified according to the new guidelines.

We tested the two website versions with fifty users, including both lower- and higher-literacy users. We conducted between-subjects testing using a double-blind protocol where neither the users nor the experimenters knew whether they were testing the original or the revised site.

As the following tables show, we collected three usability metrics: success rate (whether people could perform the tasks), the total time needed to complete seven representative tasks, and the users' subjective satisfaction as rated on a questionnaire following the test session.

<table>
<thead>
<tr>
<th>Success Rate</th>
<th>Original Site</th>
<th>Rewritten Site</th>
</tr>
</thead>
<tbody>
<tr>
<td>Lower-literacy users</td>
<td>46%</td>
<td>82%</td>
</tr>
<tr>
<td>Higher-literacy users</td>
<td>68%</td>
<td>93%</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Total Task Time</th>
<th>Original Site</th>
<th>Rewritten Site</th>
</tr>
</thead>
<tbody>
<tr>
<td>Lower-literacy users</td>
<td>22.3 min.</td>
<td>9.5 min.</td>
</tr>
<tr>
<td>Higher-literacy users</td>
<td>14.3 min.</td>
<td>5.1 min.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Satisfaction (1-5 scale, 5 best)</th>
<th>Original Site</th>
<th>Rewritten Site</th>
</tr>
</thead>
<tbody>
<tr>
<td>Lower-literacy users</td>
<td>3.5</td>
<td>4.4</td>
</tr>
<tr>
<td>Higher-literacy users</td>
<td>3.7</td>
<td>4.8</td>
</tr>
</tbody>
</table>

The revised site clearly had dramatically better usability on all three metrics: users got more correct information, did so faster, and liked the site better. All of the differences between the two sites are statistically significant at the p<.05 level.

Lower-literacy users increased their performance by 135% in terms of how quickly they could complete the tasks, which is a major predictor of users' willingness to stay on a site. On all three usability metrics, the lower-literacy users scored better with the revised site than the higher-literacy users did with the original site.

http://www.useit.com/alertbox/20050314.html
At the same time, the **improvements for lower-literacy users did not come at the expense of higher-literacy users**. In fact, the higher-literacy users also scored higher on all three usability metrics when using the revised site. People capable of understanding complex information nonetheless preferred more straightforward health information.

The original site was designed by a respected agency and was certainly not bad: it scored a 68% success rate for higher-literacy users, which compares favorably with the 66% average in our latest broad-ranging usability study. (That study didn't include lower-literacy users, so we can only compare the numbers for people with higher-literacy.) Similarly, the original site's subjective satisfaction rating of 3.7 is higher than the average satisfaction score across the 184 websites we have tested recently.

In summary, revising the text for a broad consumer audience made a good site excellent and benefited all users. The magnitude of improvement was huge: usability isn't a small tweak at the margins -- it **doubles a website's ability to meet its goals**.

**Learn More**

We are getting several interesting findings about users' detailed reading behavior in our current eyetracking studies, which will be presented at the [Usability Week 2006 conference](http://www.useit.com/alertbox/20050314.html) in New York, San Francisco, London, and Sydney.

The conference also contains a [full-day tutorial on content usability](http://www.useit.com/alertbox/20050314.html) and a tutorial on advanced content usability (San Francisco and Sydney only).

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