Optimized Typesetting by ReadHowYouWant
Dr. Paul Beidler

“The primary goal of low vision rehabilitation is increasing access to printed material” (Arditi).

Introduction:

Research on the readability of print has continued for decades. Unfortunately, however, as James Bloodsworth (1993) has noted, “Factors affecting legibility typically are not determined by research, but by persons who publish printed material simply according to their own beliefs and opinions.” Research and technological advances have therefore not fuelled innovation, and the result is that typesetting today is remarkably similar to that of our Victorian forebears. Production has changed dramatically, but the actual products have not.

One reason is cost. One director of instruction reports that “the annual cost of providing a set of large print books to a student is approximately $2,737” (Farmer 2007). A one-size-fits-all Large Print product, therefore, seems the most practical solution, but when that solution is also streamlined to manage cost, the result is letters and lines set so close together that, for many readers, the benefit is minimal.

Thanks to its revolutionary, patent-pending technology, ReadHowYouWant can offer thousands of affordable books to readers in seven different optimized print formats, as well as Braille and DAISY. Typesetting no longer needs to be a compromise, and reading no longer must be difficult and uncomfortable because of individual needs or preferences.

1. The Current Situation—Access:

There is little question that readers of all ages will benefit from improved typesetting. Most readers begin their search for better texts with Large Print books. One problem, however, has to do with access. Robin Casten has written that

Assistive devices include magnifiers, large-print materials (such as books, clocks, and calculators), audio materials (such as books and magazines), electronic reading devices, and speech-output systems. Despite the availability of these rehabilitative services and devices, they are underutilized. A series of
focus groups that were conducted by the National Eye Institute (NEI) indicated that many older persons with low vision have little or no awareness of these services, and, as a consequence, few take advantage of them.”

Janice Day, studying special-need children in school, finds that “Unfortunately, children who have visual impairments frequently are not provided access to the same early literacy learning opportunities as children with typical development, even when attending literacy-rich preschool classrooms.” This is a problem because, as Amy Grant has noted, “Exposure to print is a significant predictor of vocabulary growth and declarative knowledge in normally achieving readers.” In fact, research in Portugal has even shown that people who never learn to read and write often have underdeveloped brain structures (cited by Larry Reid). To make matters even worse, “many incarcerated youths have failed to learn to read. The fact that youths who have deficits in reading are disproportionately represented in correctional institutions suggests that the juvenile justice system has become the default system for many youths who have reading problems.” (Christle)

Clearly, we need to improve access to accessible texts, and not only for the sake of reader’s comfort and convenience. Accessible formats meet an important need in contemporary society.

2. Large Print--Font Size:

The first thing to do when improving the readability of print is to increase the font size. In fact, one reading consultant we spoke to, Lars, said he often uses the office photocopier to enlarge texts for his LD children. Many teachers do this, and although it is perhaps the least effective solution to the problem of low vision, it is better than nothing.

Larger type helps. Jonathan Ling, summarizing research by Bernard, observes that “14-point fonts were more legible, led to faster reading, and were preferred to the 12-point fonts.” Beth O’Brien et al., studying dyslexic readers, find that: “Dyslexic reading curves showed higher critical print sizes.” Dyslexic readers “needed larger print to support maximum reading rates.” They conclude:

For very tiny print, the fine spatial scale must become too small to resolve critical features, so letters cannot be identified and the acuity limit is reached. Just above this point, letters can be resolved but may not be ordered correctly because of noise (spatial uncertainty) in the codes for spatial position. Theoretically, greater relative position noise in dyslexia may contribute to slow reading in general, and could cause dyslexic reading to be more susceptible to

1 Personal e-mail, January 22, 2006.
deterioration with small print: meaning dyslexic readers should have slower maximum reading speeds and higher critical print sizes.

Obviously, what’s good for readers with defined disabilities is good for all readers. The only obstacles for most healthy readers, are access and cost. But is enlarged print alone good enough?

### 3. Optimized Typesetting: font type, spacing, and regularity:

At ReadHowYouWant, we are keenly aware that the goal should be not just enlarged print but typesetting that is optimized for comfort, ease, and comprehension. Decades of academic research have shown that we must do more than just enlarge the letters. One variable is the type of font used: Elizabeth Russell-Minda finds that “sans serif typefaces tend to be more readable or legible than are serif typefaces,” and Dean Yager et al. have reached the same conclusion. Thomas Sanocki has tested and confirms the importance of regularity: fonts that are regular are processed faster. This research supports our use, with both Verdana and Tersias, of italics that are very similar to the ordinary font, and our avoidance of sub- and superscripts and footnotes in our EasyRead® optimized formats. Joel Geske (1996) finds that bolding Helvetica 12, 10, and 9 “significantly increases legibility in most cases and at least does not decrease legibility.”

There is also the question of letter spacing. There must be enough space between characters:

> “Tests on 14 readers with low vision showed that increased letter spacing benefited their reading speed and also reduced the critical print size of the majority of subjects tested” (McLeish)

but not too much:

> “Increased letter spacing beyond the standard size, which presumably decreases the adverse effect of crowding, does not lead to an increase in reading speed in central or peripheral vision.” (Chung)

Many readers experience tracking problems as well as acuity problems, and fully optimizing text for readability means carefully adjusting all the factors that affect readability, not just increasing the size of the letters.

### 4. The Ideal—Customized Typesetting:

At ReadHowYouWant, we feel that the ultimate goal must be fully customized typesetting, which we already offer for readers of our King James New Testament. Clearly, the fact is that all readers are different. Research done recently by Aries Arditi
has shown that visually impaired readers who are given the chance to design typefaces that work for them “tend to produce a variety of very distinct fonts, and that the adjustment process results in greatly enhanced legibility.” Elizabeth Worden writes that, “Among the important physical attributes of a text are type face, type size, type emphasis, margin justification, line width, leading, and other vertical and horizontal spacing. By fitting the text to the reader, ergonomics can make more text understandable to more readers. The resulting improvement in the quality of the lives of individuals and to society may be invaluable.” Joy Sykes has shown, in her recent doctoral dissertation, that for dyslexic readers, reading materials “are not fixed and need to be designed to work with many different kinds of learners.” One day, it will be possible for readers to buy reading materials that fit them, the same way they buy their shoes.

5. **The Immediate Goal—Optimized Formatting and Interesting Content:**

Until fully customized texts are available for all readers, ReadHowYouWant meets the needs of readers by making thousands of books available in seven different optimized EasyRead® print formats, plus Braille and DAISY.

Let’s look at one other academic study that has yielded surprising and disappointing results. Carolyn Denton recently published a study in which struggling readers were divided into two groups. One group was placed in the normal classroom, and the other experienced an intensive, structured intervention to address their reading difficulties. Interestingly, “Results indicated that treatment students did not demonstrate significantly higher outcomes in word recognition, comprehension, or fluency than students who received the school’s typical instruction and that neither group demonstrated significant growth over the course of the study.” The author hypothesizes that much more intense intervention might have been necessary. Perhaps, but struggling readers need both interesting content and accessible formatting in addition to intensive intervention. How were the students’ texts formatted? Could more have been done to make the materials accessible to them?

Would optimized formatting have changed the results of Denton’s research? Other analyses indicate that it probably would have. There are so many obstacles for struggling readers, whether they are children with learning disabilities or seniors with macular degeneration or glaucoma. In fact, all readers benefit from ergonomically optimized typesetting. At ReadHowYouWant, with the help of our publishing partners, we make easy reading a reality.

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