

LARGE PRINT AND READING INDEPENDENCE

▶ Research Summary and Findings

- ✓ Legibility
- ✓ Reading Comprehension
- ✓ Fluency

This research report highlights recent studies on the positive effects of large print on student reading achievement.

THORNDIKE PRESS®

Reading speed and accuracy are aided when texts have larger and more widely spaced fonts.

— Laura Hughes and Arnold Wilkins,
Journal of Research in Reading (2000)

Large Print and Reluctant Readers

Documented in this report are both educational research as well as action studies that confirm what Librarians and Teachers have been testifying to for years, that Large Print leads to:

- ✓ Reading confidence
- ✓ Improved letter and word recognition
- ✓ Reading comprehension
- ✓ Reading enjoyment

Large Print is defined as alphanumeric characters, set as 14 point or larger font. Books published by Thorndike Press that were used in the action research detailed below were typeset in 16-point Plantin (a serif typeface) and printed in jet-black ink on high-opacity paper (the standard of all books published by Thorndike Press). Furthermore, all of the titles published by Thorndike Press are complete and unabridged and are produced with durable materials and binding.

The vast majority of Large Print books published today are reprints of bestselling, popular and classic books; teachers and librarians tell us that the content of these books are more apt to hold the reluctant reader's attention. In turn, as detailed in this document, vocabulary and reading independence increase because the reader is not limited to lower-level reading materials.

Because reluctant readers are often self-conscious about their reading abilities, Thorndike Press books for student readers are the same size as or smaller than regular print hardcover versions and created with the same cover as the original. The words "Large Print" do not appear anywhere on the cover or spine of the book.

About Thorndike Press®

Thorndike Press has been publishing unabridged reprints of books in Large Print for middle and young adult readers since 1999. Their goal is to help struggling and reluctant readers become independent readers. The world's leading large-print publisher, Thorndike Press began its Large Print publishing program in 1980 in Thorndike, Maine. Thorndike Press is also the home of Large Print Press, Wheeler Publishing, Walker Large Print .

The company currently publishes a total of 1,500 new large-print titles each year for adult and young adult readers. The young adult list features over 350 award winning, best-selling, popular and classic titles for young adult and middle readers.

To learn more about Thorndike Press visit us at <http://www.galegroup.com/thorndike/> or to place an order or to receive a free catalog call 1-800-223-1244, ext. 4.

Summary of Studies

This report presents a summary of studies and reviews published by educational and scientific journals on reading, fonts and legibility, as well as action research conducted by teachers using Large Print materials. It illustrates that Large Print books are no longer the domain of just the visually impaired or the elderly. Large Print books are an asset to and valuable learning tool in any classroom.

Over a four-year period, action research was conducted on the use of Large Print in the classroom. During the 2002–2003 school year, seventeen reading/language arts/English teachers in ten states across the nation utilized Large Print reading materials. Elizabeth Lowe, a literacy and neuroscience researcher and reading research consultant in Brunswick, Maine, did additional action research independently. Lowe tracked the use of large print books with third and fifth graders and found that the students improved between 41% and 70% on their SRA Reading scores after one year of large print remediation, gains that continued during summer breaks, unlike the typical loss from regular print books. Additional research is drawn from such studies conducted by Laura Hughes and Arnold Wilkins (2000), who found that typographical factors and print size aid in the development of reading, and by Maria Weiss (1978), who observed that font size and its affect on legibility is a major criteria used by children when choosing books. This report also cites the work of James Bloodsworth (1993) and Elizabeth Worden (1991), who summarized the work of earlier researchers and concluded that larger font sizes coupled with specifics for font type also affect reading ability and comprehension.

This research summary was compiled by Marie Gore, BA (College of Notre Dame), a teacher for ten years in public and private schools. She has been a classroom teacher in upper elementary, high school, and in a college-preparatory school for students with learning disabilities. She is pursuing a Masters of Education Degree in reading at Loyola College, Maryland. She is a member of The International Dyslexia Association.

“The findings suggest that larger type, usually reserved for picture books intended for the younger child is often preferred by children in the late primary grades and by some late intermediate grade children.”

Maria Weiss (1978)

Introduction

The research summarized in this document demonstrates that Large Print books are an indispensable component in reading programs for students of all ages. Large Print books aid reluctant readers, regardless of a diagnosis of learning disabilities.

As opposed to the traditional regular print version, a Thorndike Large Print edition helps struggling and reluctant readers develop the skills they need to enable them to:

- ✓ Recognize words accurately
- ✓ Comprehend what they are reading
- ✓ Read fluently

Because there are fewer words on a page, reluctant readers are more willing to pick up books and read, often encouraging their classmates to do the same. Nationwide, the teachers who participated in the Large Print action research study using Large Print books in their classrooms reported that their students' reading enjoyment improved. When asked if they thought their students' skills had improved more by having used Large Print, 67% of the teachers responded with a resounding "yes."

Research studies on Large Print also show that fewer words on a page means reluctant readers visually process less per page. Because there are fewer words and those words are easier to decode struggling readers make substantial progress with comprehension, tracking, and fluency, all while making fewer decoding mistakes. Additionally, research shows that fewer words on the page lower anxiety levels in reluctant readers, leaving them with the positive sense of "I can do this!" All of these factors ultimately help students obtain and develop those skills necessary to become successful, confident, and lifelong readers.

"The students have enjoyed them [Thorndike Press Large Print books in the classroom] . . . encouraging each other to read quickly and finish books — [They] love the 'contemporary' titles."

— Debbie Martin, teacher (grades 9–12)
Blue Spring South High School
Blue Springs, MO

Legibility

Research Findings

- ✓ Elizabeth Worden (1991) summarized James Hartley's findings (1985) that serif fonts aid struggling readers by making the words easier to read.
- ✓ James Bloodsworth (1993) summarized the research conclusions of Burt (1959), stating that larger font sizes are more easily read by younger children, specifically font size 24 for children under age seven and font size 18 for children aged seven and eight.
- ✓ Bloodsworth summarized Burt's research on leading, concluding that children are aided by greater leading, as more space between lines means their eyes can better track the line being read and when moving between lines, thus eliminating their tendency to double or skip lines when reading.
- ✓ Bloodsworth summarized several studies that conclude:
 - 1) the most legible combination is black print on a white background and
 - 2) cross lines of serif fonts reduce eye fatigue.
- ✓ Reading comprehension and memory hinge on legibility (Worden, 1991).
- ✓ Lydia Gaster and Cherie Clark (1995) found that font size 14 is the legal size for Large Print text; however, font sizes of 16 to 18 were recommended for Large Print texts by the Lighthouse Research Department in 1991.

Research Conclusions

Once decoding has been mastered and comprehension skills are internalized, reading should be automatic. But decoding is not all that is required for reading. Print also affects reading because without legibility, reading becomes a laborious process. *Legibility* is defined as the capability of being read or deciphered, especially with ease. More specifically, typographers define *legibility* as the ease in differentiating between letters while reading. Legibility refers to formatting factors, such as font size, font style, and leading. Each factor has no effect on the grammar, syntax, or literary elements used by authors; but each factor has an impact on the legibility or ease of reading.

Font sizes force the eye to move more slowly than with standard-sized fonts, allowing students to track their reading more easily.

(Bloodsworth, 1993)

Font size: Today's computers have the capability of producing font sizes from 8 point to 72 point; *point* refers to the height of each letter and is approximately .72 of an inch. Point size 18 equals one-quarter of an inch; 24 point equals one-third of an inch. Because of this available range, there is no consistency among publishers. For example, 10 or 12 point is typical for adult books; newspapers are printed in 8 point. Large Print varies from 14 to 18 point.

Legibility

Older children who struggle with reading, regardless of the reason, benefit from larger font sizes, i.e., 14 or 16 point. The reason is not because these children have visual difficulties. Rather, they still struggle with the process of reading. As a result, larger font sizes force the eye to move more slowly than with standard-sized fonts, allowing students to track their reading more easily. (Bloodsworth, 1993).

Standard publishing font size.
11-pt Times New Roman

Standard Large Print publishing
font size.
16-pt Plantin

Font style: As with font size, font style influences legibility. There are two types of fonts: 1) serif, e.g., Times Roman, which includes cross lines on the letters; and 2) sans serif, e.g., Arial, which has no serifs. In addition, fonts are either fixed or proportionally spaced. Fixed spacing, common with the typewriter, means that the distance between all letters is the same, regardless of the letter size; therefore, an *i* will take up as much space as a *w*. Proportional spacing, used by computers, adjusts the spacing around each letter to fit its size; thus, an *i* will take up less space than a *w*. Serif fonts aid struggling readers by making the words easier to read. (Wordon, 1991; Hartley, 1994).

Font variations: Italics can be used to emphasize words or phrases, for titles or headings, and following a word with its definition. Because bold print provides more contrast between letters

and the paper, it can aid legibility and is also an excellent tool for emphasis, as in subheadings. As the use of all capital letters interferes with legibility, its usage should be discreet.

Leading: This refers to the amount of white space between lines of print. In other words, the space from the bottom of one line of print to the top of the subsequent line is measured; the greater the space, the more leading between lines. As with font size, there is no standardization among publishers. Leading alone has no direct effect on legibility; more accurately, it is the combination of leading with font size that affects reading speed. Greater leading helps children to track more effectively, thus eliminating a tendency to skip lines (Bloodsworth, 1993).

Many factors must be considered when dealing with legibility. But one consideration is paramount — speed of reading. Therefore, in order to be legible, the type used must be one that can be read rapidly and easily. This is an important consideration for school-age children and their teachers, in an effort to aid academic success for all students. Particularly for struggling readers, specific legibility factors are paramount. The preferable font size is 16 point, with a serif font (e.g., Times New Roman); discreet use of italics, all capitals, and bold print; and heavy leading which can be manually adjusted or set to double-spacing. In essence, this is Large Print. Put these factors together and the ergonomics of reading — “then fitting the text to the reader” — work to make text understandable and readable because the text is legible.

Large Print — Helping to Improve Test Performance

Research Findings

- ✓ A survey conducted in 1996 by Madhavi Jayanthi, Michael Epstein, Edward Polloway, and William Bursuck of 708 general education teachers determined that of twenty-four testing accommodations questioned, the use of Large Print tests received favorable results, particularly from elementary and secondary (high school) teachers. Principally, 401 teachers stated that a Large Print accommodation was helpful to their students and an easy accommodation to provide.
- ✓ In studies by Lynn Fuchs, Douglas Fuchs, Susan Eaton, Carol Hamlett, Edward Binkley, and Robert Crouch (2000) and by Philip Grise, Susan Beattie, and Bob Algozzine (1982), the use of Large Print as a test accommodation for learning disabled students resulted in overall higher levels of test performance.
- ✓ Research by Martha Thurlow, Allison House, Dorene Scott, and James Ysseldyke (2000) found that changing the layout of the test — specifically the use of Large Print — is the most universally used testing accommodation in the United States to meet students' needs.
- ✓ In 2001, according to Martha Thurlow and Sara Bolt, forty-eight states administered statewide assessments; of those, thirty-eight affirmed that Large Print is an acceptable accommodation. Of these thirty-eight states, none mandated that Large Print only be used with visually impaired students.
- ✓ Based on findings by Edward Burns (1998), using a Large Print version of a test — a font size of 18 point — is an acceptable test modification and has a negligible effect on test taking and scores.

Research Conclusions

Enlarging the print of tests — both standardized and those created by teachers — ensures that academic abilities are tested, not the students' visual abilities. Teacher-created tests should have an uncluttered look. This can be achieved by using a serif font (e.g., Times New Roman or Courier New) and a font size ranging from 14 to 18 point. Margins should be wide (1.5 inches on all four sides), with left justification. Proportional spacing is preferred, as this mimics what students see on computers and in books. Lines should be

double-spaced, and there should be triple-spacing between items. Finally, printing should be in black ink on white or off-white paper.

Large Print tests are appropriate for very young children and for those students who are adversely distracted by cluttered test formats. Large Print tests can benefit struggling readers as well, helping them track their reading of each question and its responses.

Reading Comprehension and Fluency

Research Findings

- ✓ In a study conducted by Laura Hughes and Arnold Wilkins (2000), it is now recognized that typographical factors such as font size, font style, leading, and color aid in the development of reading.
- ✓ Hughes and Wilkins stated that font size and leading tend to decrease in children's fiction and nonfiction books as reading age increases. Yet, small print is now recognized as a factor that makes reading — a visual activity — more difficult and more stressful for the eyes. Hughes and Wilkins concluded that decreasing perceptual difficulties in books enhances overall reading abilities, as evidenced by the increase in reading errors when print size decreased.
- ✓ Hughes and Wilkins concluded that reading speed and accuracy are aided when texts have larger and more widely spaced fonts. This is particularly true for emerging readers of any age, thus eliminating an intimidation factor associated with small font sizes.
- ✓ In a study conducted by Maria Weiss (1978) regarding children's preferences when choosing books, the most important format factor was font; an 18 point font size was preferred by 66.7% of third graders. In addition, 66.7% of a lower reading ability group and 53.1% of a middle reading ability group preferred an 18 point font size.

Research Conclusions

The use of Large Print with children is gaining momentum. The Northland Library Cooperative in Alpena, Michigan, reported as far back as 1987 that Large Print books allow dyslexic children to read with success. The primary reason for this is the additional spacing on the page required by Large Print (Havens, 1987).

Typographic Influences: In 2000, Hughes and Wilkins conducted a study of 120 children in grades 1 to 5 in a primary school in Hove, United Kingdom. Four different reading passages were used, each differing in font size and spacing between both words and lines; size and spacing decreased with each subsequent passage. As children aged 5 to 7 moved through the four passages, a substantial decrease in reading speed was observed. While the difference was not as dramatic, children aged 8 to 11 also had better results when reading the larger text, instead of the standard-sized typeface for their age. All children, regardless of age, made more errors when reading the passages in smaller print. In summary, Hughes and Wilkins stated that many children would benefit from reading larger print for more years than is now customary; therefore, a delay in reducing print size in reading texts would be beneficial. Because of their difficulty processing smaller text, younger children aged 5 to 7 would benefit the most from longer exposure to Large Print books. In effect, Hughes and Wilkins

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- ✓ According to Weiss, 65.6% of the children's overall reason for choosing books was legibility.
- ✓ In an early 1990s study conducted by Elizabeth Lowe, reported at an International Reading Association Workshop in 2003, she found that students improved between 41% and 70% on their SRA Reading scores after one year of large print remediation, gains that continued during summer breaks, unlike the typical loss from regular print books.
- ✓ In a survey conducted by Thorndike Press (2002–2003), teachers reported that comprehension, motivation/confidence building, vocabulary, decreased tracking, and reading enjoyment were addressed when using Large Print books in reading/language arts/English classes.
- ✓ According to the Thorndike Press survey, after using Large Print books for approximately five months, more than half of the teachers reported that their students were reading better at the same level or reading at the next level. Student responses to the use of Large Print books were positive, as the students showed more willingness to read independently because the Large Print books were easier to read and understand.

suggested that the use of Large Print would aid the development of emerging readers, regardless of age.

Children's Choice of Books: When selecting books, especially nonfiction books, children consider many factors. They look at the format and layout, which includes the size of the book, number of illustrations, and font size and style.

In 1979, Weiss conducted a study to investigate three aspects of format in children's book selection preferences, one of the aspects being font size and type. She wanted to know if children of differing ages show a difference in preferences for font size and type. A group of 145 children from New York public schools, divided into three groups by reading ability, took part in the study. Designing her own reading materials, Weiss chose font sizes of 8 point, 12 point, and 18 point; she selected three different font styles: Futura, a sans serif, and Paladium and Parinesy, both serif fonts. Each of the three font sizes and styles were combined into nine variations. Lines were double-spaced, and the number of words per page depended on the font size and style used.

In interviews, one of the questions children were asked related to font and why he/she preferred that specific font. Based on the interview results, Weiss found that at least one aspect of format — font size or style — was an important factor for 70% of the children when making book selections. Statements by the children regarding font revealed that they

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based their book selections on the legibility of the text, the print being a size that did not strain their eyes.

In conclusion, Weiss stated that publishers need to consider the physical appearance of their books for children, being cognizant of the effects that font size and style can have on legibility. Based on her findings, Weiss suggested a font size of 18 point for upper elementary-aged children and even some older children, with a font style that is simple and clear and no distinction between the use of serif or sans serif fonts.

“Large Print books are the missing component for accelerating literacy comprehension and reading fluency for all students, whether they are struggling, proficient, or in between.”

— Elizabeth Lowe

Paths to Trouble-Free Reading: The use of Large Print is typically associated with meeting the needs of the visually impaired or older people. Yet many of the benefits they gain through Large Print are applicable to struggling readers, with or without diagnosed learning disabilities. Font size, paper and ink colors, and formatting are several factors that have an effect on readability. Font size should be at least 14 point. Black ink and white paper with a matte (dull) finish provide the greatest amount of contrast (Fiske, 1994).

Many learning disabled (LD) students require

assistive technology, defined as any technology that offers compensatory techniques. This assistance is necessary not only to function in today’s society, but also in school. One example of assistive technology is the use of Large Print, which improves visual processing by making those tasks less difficult and arduous. Because the print is larger, LD students (and adults) are faced with fewer words on the page, thus enabling them to focus more easily and decrease the chance of losing their place while reading (Riviere, 1996).

Action Research: Elizabeth Lowe, an independent literacy and neuroscience researcher and reading research consultant in Brunswick, Maine, conducted a study in the early 1990s on the use of large print books with third and fifth graders. As an educator of twenty-eight years, Lowe found that many of her students were willing and wanting to read books; but there seemed to be a barrier preventing them from reading. In a follow-up interview on August 25, 2004, Lowe reported that the barrier occurred because the students “lacked eye tracking motility (muscle movement).” As a way to compensate, Lowe began enlarging existing texts herself and found that “by enlarging print, the eye moves faster, which assists with phonics and fluency to aid with comprehension. And when motility tracking is smooth, the anxiety level shuts down.”

Based on these results, Lowe concluded that “Large Print books are the missing component for accelerating literacy comprehension and reading fluency for all students, whether they are struggling, proficient, or in between.” (International Reading Association presentation 2003). Lowe found that

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students were able to read books on a higher reading level when the books were Large Print, as opposed to only being able to read on- or below-grade level books in regular print. This meant that fiction and nonfiction Large Print books could be integrated into the curriculum of the content areas. Increased proficiency also reduced anxiety over the process of reading. In addition, reading miscues — misreading syllables or words; skipping syllables, words, or lines; rereading lines; ignoring punctuation cues — were virtually eliminated when students read from Large Print books. Students' reading rates and tracking capabilities also increased, as did their ability to chunk, retain, and comprehend what they read. This occurred because the students did not get stuck with the process of reading, that is on decoding; rather students could focus on what the author was saying and thereby improve their understanding of what they read.

Thorndike Press conducted a four-part survey on the use of Large Print materials during the 2002–2003 school year with seventeen reading/language arts/English teachers in ten states across the nation. These teachers represented the entire range of grades and included self-contained, inclusion, and “regular” classroom settings, from whole-class to small-group to one-on-one settings. Class sizes ranged from seven to twenty-six students per class period. More than 75% of the teachers continued their participation throughout the year.

The first survey asked several questions related to targeted skills and the skills teachers hoped

to improve by the use of Large Print books. Comprehension was the most important skill targeted (81%), followed by vocabulary (50%); decoding (31%); spelling (19%); and reading fluency, tracking, and thinking skills (12% each). As for skills to be improved by using Large Print, again comprehension was the foremost skill (56%). Next were motivation (25%); vocabulary (19%); and recreational reading, ease with reading, and word attack (13% each).

The second survey was completed after the teachers had been using Large Print books for almost two months. All the teachers described positive experiences with the materials. Moreover, their students' responses were also upbeat and enthusiastic. In fact, the teachers reported their students were more willing to do independent reading, finding the Large Print books easier to read and understand.

“Although I bought large print books to help the students with vision problems, all the students want them. It took me a moment to understand what was going on when I had so many requests for ‘books with big words.’”

— Sandy Runions
Clinton Middle School,
Clinton, TN

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The third survey was completed in the spring of 2003. This time, teachers were asked what skills they were addressing with Large Print books. Once again, comprehension was the principal skill (85%), followed by vocabulary and motivation (46% each); tracking, reading enjoyment, and spelling (31% each); and fluency (15%). Having used Large Print books for approximately four months, teachers were asked about their students' reading progress. Eighty-five percent of the teachers said their students were reading better at their existing level; whereas 46% said their students were reading at the next level. Sixty-nine percent said their students' overall reading enjoyment had improved; 54% noticed their students were more confident when it came time for reading.

The final survey was conducted near the end of the school year. Once again, teachers were asked about the skills they addressed with Large Print books. Comprehension (86%) remained the principal skill, followed by motivation, reading enjoyment, and vocabulary (57% each); skill building and spelling (43% each); and tracking (29%). In terms of reading progress, 57% of the teachers stated their students either were reading better at the same level or reading at the next level. All the teachers (100%) reported that their students' reading enjoyment had improved. When asked if they thought their students' skills improved more by having used Large Print, 67% of the teachers responded with a resounding "yes."

In summary, Large Print books are no longer the domain of just the visually impaired or the elderly.

In fact, Large Print books have a legitimate place alongside the regular print books in any classroom for all students. As the research has shown, Large Print books are a necessary ingredient in a successful reading program for students of all ages. But more importantly, Large Print books aid struggling readers, regardless of a diagnosis of learning disabilities. Because there are fewer words on a page, struggling readers are more willing to pick up books and read, often encouraging their classmates to do the same. Why? For the simple reason that less is more. Fewer words on a page mean struggling readers can visually process less per page, yet make substantial progress with comprehension, tracking, and fluency — all while making fewer decoding mistakes. Additionally, fewer words on the page lower anxiety levels in struggling readers, leaving them with the positive sense of "I can do this!" Finally, all of these factors ultimately help students gain and develop those skills necessary to become successful, confident, and lifelong readers.

"The students are so excited . . . They beg for independent reading time! They read for 60 minutes straight when normal reading time was 40 minutes."

— Rosemary Pillsbury
Mount View High School, ME,
comments on the use of Large Print
books in her classroom.

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