Library Circulation Increases with Accelerated Reader

An analysis of 3 journal articles, 1 dissertation, and 21 case studies

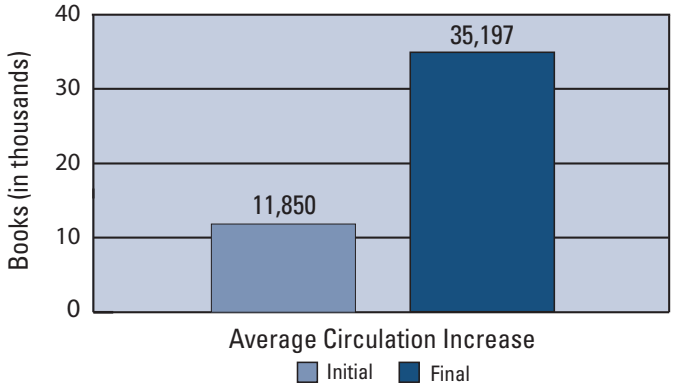
Introduction

Accelerated Reader is a progress-monitoring tool that provides immediate feedback to students on the comprehension of books they have read. It also provides critical information to teachers about student reading practice that helps them effectively guide reading practice. Teachers use Accelerated Reader to set goals for the quantity and quality of student reading and to help monitor progress.

A number of research studies have documented the impact of Accelerated Reader on student reading achievement, including Nunnery, Ross, & McDonald (2006); Brem, Husman, & Duggan (2005); Samuels & Wu (2003); Holmes & Brown (2003); and Vollands, Topping, & Evans (1999). Researchers also have documented positive motivational effects associated with Accelerated Reader use (Husman, Brem, & Duggan, 2005). Related, the amount of independent reading often increases dramatically when teachers implement Accelerated Reader according to recommended best classroom practices (Borman & Dowling, 2004; Paul, 2003).

One would expect that the combination of improved student motivation and teacher encouragement to read would affect library circulation. Although library circulation data have often been reported in many studies, to date they have not been summarized. The purpose of this report is to review and summarize existing research on Accelerated Reader where library circulation was reported.

Circulation Nearly Triples



Main Findings

- All schools found that library circulation increased after using Accelerated Reader.
- Average circulation nearly tripled, from about 12,000 to 35,000 books.

School Sample Profile

24 elementary, middle, and high schools
Grade range: pre-K–12
Average enrollment: 738
Enrollment range: 46–3,679
17 States, 1 Canadian Province

Demographics

7 rural and 5 urban schools
8 Title I schools
Free/reduced-price lunch: 17–79%
Mobility: 8–31%
ESL/LEP students: <1–38%

Race/Ethnicity

Black/African American: 1–57%
Hispanic/Latino: 0.4–56%
Asian/Pacific Islander: 1–25%
Native American: 0.6–2%

Studies

Currently, 25 studies have indicated that schools with Accelerated Reader experience changes in library circulation after implementation of the software. All of these changes were positive, and in many cases circulation more than doubled. The studies in this review include 3 journal articles, 1 dissertation, and 21 case studies. Each study examined a different school. In total, 17 states and 1 Canadian province were represented. Table 1 (page 5) summarizes the measurement of library circulation in a number of schools.

In the *School Library Journal*, Anderson (2001) noted that library circulation doubled after the implementation of Accelerated Reader. After using Accelerated Reader and best classroom practices with professional development, Lawson (2000) reported to the *CSLA Journal* that library circulation increased from 600–700 books per month to about 4,000 books per month. In a *Time* magazine article, Lopez (2000) noted that students from a low socio-economic status school read 25,000 books after one year of using Accelerated Reader. Turner (1993) completed a study that included sixth- through eighth-grade underachieving students. After implementing Accelerated Reader, not only did reading comprehension scores increase, but also the circulation of fiction books increased by 406% over the course of a year.

Renaissance Learning has collected data reported by a number of schools across the country in a series of case studies. Twenty-one of these studies included library circulation data. Library circulation increases ranged from 5,000 books (Renaissance Learning, 2001e) to over 50,000 (Renaissance Learning, 2006c). Data were reported by librarians, principals, teachers, Title I coordinators, and reading specialists. All of the schools implemented Accelerated Reader according to Renaissance Learning's recommended best practices to some extent.

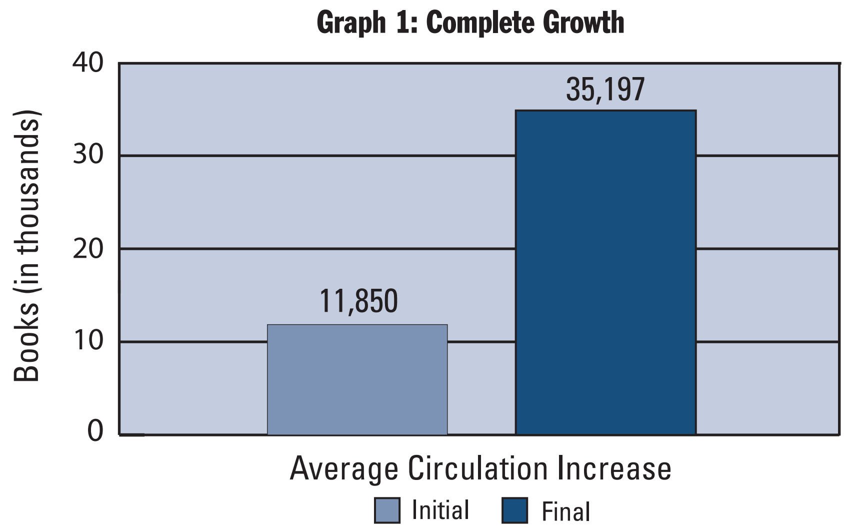
Analysis

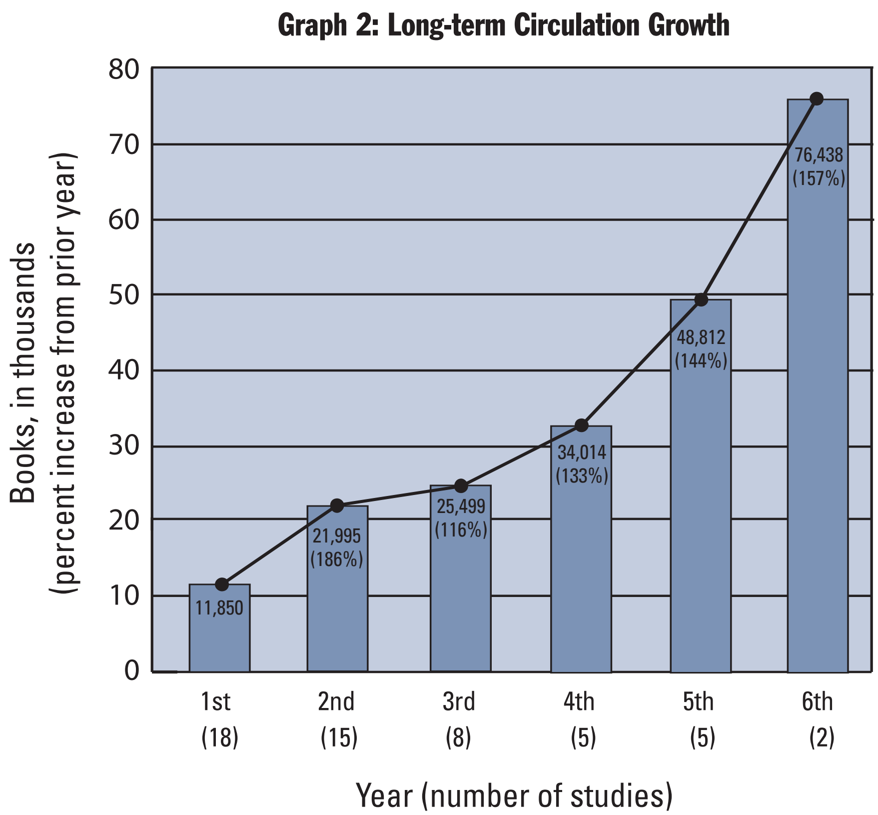
In order to describe the increases in library circulation accurately, we conducted an analysis to determine if library circulation significantly improved during the reported period. We reviewed each study and determined that 18 provided sufficient information for data analysis; that is, the study provided at least two monthly or annual library circulation measurements. Three of these studies reported library circulation in monthly intervals; for these studies, we converted monthly circulation to annual circulation by multiplying each measurement by 9 (the typical monthly length of a school year).

Some studies provided annual data for more than two years, with a total range of 2 to 6 years (see Graph 2). In order to calculate changes in library circulation, we computed gains from the first year reported to the last year reported. Since most of the studies did not report data past the second year, we also calculated gains from the first to the second year. Library circulation was first measured before or during the first year of Accelerated Reader implementation.

Results

We employed a dependent *t*-test using the first measure of library circulation as a pretest score and the last measure as a posttest score. This analysis resulted in a significant difference between first (M = 11,849.56, SD = 9,790.84) and last (M = 35,196.94, SD = 25,317.86) library circulation counts, $t(17) = 5.07$, $p < .001$, $d = 1.22$ (see Graph 1). As mentioned previously, some studies included data for more than two years. In order to verify the previous results and to place each study in the same timeline, we compared the first year of library circulation (M = 10,664.67, SD = 9,059.23) to the second year of library circulation (M = 21,995.07, SD = 14,235.12). This analysis was also significant, $t(14) = 4.69$, $p < .001$, $d = 0.95$. Over time, growth in library circulation continues steadily (see Graph 2). Given these results, it is reasonable to conclude that when schools use Accelerated Reader, library circulation increases.


Graph 1: Complete Growth
40
30
20
10
0
Books (in thousands)
11,850
35,197
Average Circulation Increase
Initial
Final


Graph 2: Long-term Circulation Growth
80
70
60
50
40
30
20
10
0
Books, in thousands
(percent increase from prior year)
11,850
21,995
(186%)
25,499
(116%)
34,014
(133%)
48,812
(144%)
76,438
(157%)
1st
(18)
2nd
(15)
3rd
(8)
4th
(5)
5th
(5)
6th
(2)
Year (number of studies)

Conclusion

Accelerated Reader is a progress-monitoring tool that positively influences student reading behaviors, as supported by research and library circulation data. Given the results above, we can reasonably conclude that students are seeking to read more books while using Accelerated Reader, and are perhaps more motivated to read than before their schools implemented Accelerated Reader. Therefore, it can be expected that library circulation increase during the use of Accelerated Reader. Additionally, if teachers are using the software according to Renaissance Learning's recommended best practices, they are setting goals for reading quality and quantity—goals that may also influence how much students read and therefore library circulation as well.

These results also suggest that libraries may need additional books to satisfy students' increased needs for reading. On average, schools in the sample reported that circulation increased by approximately 23,000 books during the study. The average total library circulation after using Accelerated Reader was about 35,000. Libraries should be aware of, and prepared for, the potential increase in library circulation. ATOS, a free and highly accurate measure of text readability specifically designed for books, can be useful in targeting which books are needed in a small library (see Renaissance Learning, 2006b). A librarian can simply count how many books the library has in each grade level (e.g., 3.1, 3.5, 3.9). The resulting data would provide information about what grade level of books are needed so the school can order more.

Table 1

School Library Circulation Increases

Study	School*	Location	Size	Circulation Increase	Interval	Years
1.	Liberty HS	Renton, WA	NA	"doubled"	NA	NA
2.	Portola MS	Orange, CA	850	700–4,000	Month	2
3.	Spencer ES	Tifton, GA	400	?–25,000	Year	NA
4.	49 ES & MS	16 States	NA	20,761–91,925	Year	6
5.	East Valley IS	Yakima, WA	587	?–1,200	Month	NA
6.	Coosada ES	Millbrook, AL	580	21,822–38,732	Year	2
7.	Harris ES	Mesa, AZ	645	24,390–31,062	Year	3
8.	Pulaski Academy (ES/MS)	Little Rock, AR	740	31,869–56,229	Year	4
9.	Buford ES	Buford, GA	830	+10,000	Year	2
10.	Troy Howard MS	Belfast, ME	486	662–1,220	Month	2
11.	Collins ES	Collins, MS	548	6,733–16,882	Year	3
12.	Horizon ES	Jerome, ID	650	4,000–60,950	Year	6
13.	Lincoln ES	Norfolk, NE	167	2,413–20,850	Year	3
14.	Cottonwood SD	Cottonwood, AZ	2,389	137%	NA	NA
15.	Pittsburg MS	Pittsburg, TX	500	1,000–4,000	Month	2
16.	Grant ES	Muscatine, IA	NA	500%	NA	NA
17.	Sudan ES	Sudan, TX	210	14,637–32,073	Year	5
18.	St. Paul ES	New York, NY	270	about +26,250	Year	2
19.	Milford SD	Milford, DE	3,679	6,313–20,800	Year	5
20.	Sheridan ES	St. Paul, MN	304	?–22,000	Year	NA
21.	Richardson ES	Fort Madison, IA	452	18,627–29,152	Year	4
22.	St. Joseph Catholic School (ES/MS)	Tilbury, Ontario, Canada	325	"doubled"	NA	NA
23.	St. Mary Catholic School (HS)	Ontario, Canada	1,475	2,360–10,168	Year	4
24.	Concord ES	Paducah, KY	423	32,372–90,023	Year	5
25.	Franklin ES	Franklin, NJ	46	423–1,719†	Month	2

* School type: HS = High, MS = Middle, ES = Elementary, IS = Intermediate, SD = District

† This circulation data is for only the 46 students in the study.

Note: The numbers in the left column identify the associated study in the reference list, and the studies appear in this order. Shaded schools were not included in the statistical analysis due to insufficient data.

References

Note: Numbers preceding citations refer to the study numbers in Table 1.

[1]Anderson, J. (2001). A skeptic is sold: A high school librarian finds reasons to love Accelerated Reader. *School Library Journal, 47*(7), 31.

Borman, G. D., & Dowling, N. M. (2004). *Testing the Reading Renaissance program theory: A multilevel analysis of student and classroom effects on reading achievement*. Unpublished manuscript, University of Wisconsin-Madison. Available online: http://www.education.wisc.edu/elpa/people/faculty/Borman/BormanDowling2004.pdf

Brem, S. K., Husman, J., & Duggan, M. A. (2005). *Findings from a three-year study of Reading Renaissance in a Title I urban elementary school: The effects of Reading Renaissance on students' standardized reading performance and motivation towards independent reading* (Tech. Rep.). Tempe, AZ: Arizona State University, Division of Psychology in Education. Available online: http://drbrem.ml1.net/renlearn/publications/rr2005.pdf

Holmes, C. T., & Brown, C. L. (2003). *A controlled evaluation of a total school improvement process, School Renaissance* (Tech. Rep.). Athens: University of Georgia. (ERIC Document Reproduction Service No. ED474261)

Husman, J., Brem, S., & Duggan, M. A. (2005). Student goal orientation and formative assessment. *Academic Exchange Quarterly, 9*(3), 355-359. Full article and summary available online, respectively: http://drbrem.ml1.net/renlearn/publications/AEQip.pdf and http://research.renlearn.com/research/pdfs/196.pdf

[2]Lawson, S. (2000). Accelerated Reader boosts student achievement. *CSLA Journal, 23*(2).

[3]Lopez, S. (2000). Cat in the Hat and all that. *TIME Magazine, 156*(17), 6.

Nunnery, J. A., Ross, S. M., & McDonald, A. (2006). A randomized experimental evaluation of the impact of Accelerated Reader/Reading Renaissance implementation on reading achievement in grades 3 to 6. *Journal of Education for Students Placed at Risk, 11*(1), 1-18. Summary available online: http://research.renlearn.com/research/pdfs/198.pdf

Paul, T. D. (2003). *Guided independent reading: An examination of the Reading Practice Database and the scientific research supporting guided independent reading as implemented in Reading Renaissance*. Madison, WI: Renaissance Learning. Full article and summary available online, respectively: http://research.renlearn.com/research/pdfs/165.pdf and http://research.renlearn.com/research/pdfs/172.pdf

[4]Renaissance Learning. (1999). *The librarians' Reading Renaissance survey* (Scientific Research Series L0344). Madison, WI: Author.

[5]Renaissance Learning. (2000). *Number of students meeting or exceeding state standard on Washington Assessment of Student Learning increases* (Scientific Research Series L0378). Madison, WI: Author. Available online: http://research.renlearn.com/research/pdfs/76.pdf

[6]Renaissance Learning. (2001a). *Accelerated Reader helps Alabama elementary school turn first-graders into independent readers* (Scientific Research Series L0794). Madison, WI: Author. Available online: http://research.renlearn.com/research/pdfs/102.pdf

[7]Renaissance Learning. (2001b). *Accelerated Reader to Model Certified School: Harris Elementary increases Stanford 9 reading scores 10.5 percentile ranks in two years* (Scientific Research Series L0348). Madison, WI: Author. Available online: http://research.renlearn.com/research/pdfs/41.pdf

[8]Renaissance Learning. (2001c). *Arkansas school sees schoolwide improvements in reading achievement* (Scientific Research Series L0958). Madison, WI: Author. Available online: http://research.renlearn.com/research/pdfs/114.pdf

[9]Renaissance Learning. (2001d). *Georgia elementary school achieves growth in ITBS scores through Reading Renaissance implementation* (Scientific Research Series L0327). Madison, WI: Author. Available online: http://research.renlearn.com/research/pdfs/45.pdf

[10]Renaissance Learning. (2001e). *Maine middle school achieves academic success with Renaissance Comprehensive Schoolwide Improvement Process* (Scientific Research Series L0736). Madison, WI: Author. Available online: http://research.renlearn.com/research/pdfs/93.pdf

[11]Renaissance Learning. (2001f). *Mississippi elementary school documents dramatic gains in reading and library circulation* (Scientific Research Series L0329). Madison, WI: Author. Available online: http://research.renlearn.com/research/pdfs/2.pdf

[12]Renaissance Learning. (2001g). *Reading growth nearly triples and library circulation increases through extended Renaissance implementation* (Scientific Research Series L0347). Madison, WI: Author. Available online: http://research.renlearn.com/research/pdfs/34.pdf

[13]Renaissance Learning. (2001h). *Reading percentiles increase by more than 10 percentiles at Nebraska elementary school* (Scientific Research Series L0809). Madison, WI: Author. Available online: http://research.renlearn.com/research/pdfs/107.pdf

[14]Renaissance Learning. (2001i). *Reading Renaissance leads to increased test scores* (Scientific Research Series L0336). Madison, WI: Author. Available online: http://research.renlearn.com/research/pdfs/4.pdf

[15]Renaissance Learning. (2001j). *Texas school district increases test scores, narrows the gap with Reading Renaissance* (Scientific Research Series L0337). Madison, WI: Author. Available online: http://research.renlearn.com/research/pdfs/44.pdf

[16]Renaissance Learning. (2002). *Test scores improve and discipline problems decrease at Iowa elementary school* (Scientific Research Series L0324). Madison, WI: Author. Available online: http://research.renlearn.com/research/pdfs/43.pdf

[17]Renaissance Learning. (2003). *Achievement gap at a Texas elementary school reduced by 88%* (Scientific Research Series L1637). Madison, WI: Author. Available online: http://research.renlearn.com/research/pdfs/145.pdf

[18]Renaissance Learning. (2004a). *Average ITBS reading scores at a Harlem elementary school rise 5 percentiles per year* (Scientific Research Series L1778). Madison, WI: Author. Available online: http://research.renlearn.com/research/pdfs/173.pdf

[19]Renaissance Learning. (2004b). *Average number of students meeting Delaware state standards increases by more than 15 percentage points* (Scientific Research Series L1706). Madison, WI: Author. Available online: http://research.renlearn.com/research/pdfs/178.pdf

[20]Renaissance Learning. (2004c). *Percentage of students scoring "At or above grade level" on Minnesota Comprehensive Assessment increases 43.5 points* (Scientific Research Series L2034). Madison, WI: Author. Available online: http://research.renlearn.com/research/pdfs/176.pdf

[21]Renaissance Learning. (2005). *Iowa school boosts ITBS reading and math scores* (Scientific Research Series L2201). Madison, WI: Author. Available online: http://research.renlearn.com/research/pdfs/204.pdf

[22]Renaissance Learning. (2006a). *Accelerated Reader contributes to Ontario school's reading success* (Scientific Research Series CL2195). Madison, WI: Author. Available online: http://research.renlearn.com/research/pdfs/211.pdf

Renaissance Learning. (2006b). Matching students to books: How to use readability formulas and continuous monitoring to ensure reading success. Madison, WI: Author.

[23]Renaissance Learning. (2006c). *Ontario secondary school excels in reading* (Scientific Research Series L2322). Madison, WI: Author. Available online: http://research.renlearn.com/research/pdfs/238.pdf

[24]Renaissance Learning. (2006d). *School district makes great strides in reading* (Scientific Research Series L2285). Madison, WI: Author. Available online: http://research.renlearn.com/research/pdfs/214.pdf

Samuels, S. J., & Wu, Y. (2003). *The effects of immediate feedback on reading achievement*. Unpublished Manuscript, University of Minnesota. Available online: http://www.tc.umn.edu/~samue001/web%20pdf/immediate_feedback.pdf

[25]Turner, T. (1993). *Improving reading comprehension achievement of sixth, seventh, and eighth grade underachievers*. Unpublished doctoral dissertation, Nova University. (ERIC Document Reproduction Service No. ED372374)

Vollands, S.R., Topping, K.J., & Evans, H.M. (1999). Computerized self-assessment of reading comprehension with the Accelerated Reader: Action research. *Reading and Writing Quarterly, 15*(3), 197-211. Summary available online: http://research.renlearn.com/research/pdfs/17.pdf

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