

## Access > FVR > Literacy

### The spectacular role of libraries in protecting students from the effects of poverty

Prof. Stephen Krashen

Poverty is by far the most powerful predictor we have of school performance. This has been established in study after study over several decades. One of the best studies, however, showing the impact of poverty comes from Australia. Perry and McConery (2010) reported that both individual levels of poverty (SES) and the poverty level of the school have strong effects on performance, and the combination of the two is overwhelming.

Table 1 presents the impact of both of these factors on performance reading comprehension (PISA 2003 test) given to 15 year olds (Maths and Science tests show a similar pattern). Note that students living in the worst poverty score 70 to 90 points lower than the most privileged students, and students attending low SES schools score about 50 to 60 points lower than those in wealthier schools. But low SES students in low SES schools score nearly 150 points lower than high SES students in high SES schools.

**Table 1** Influence of individual levels of socio-economic status and the socio-economic status of the school



*Stephen Krashen is a beacon for research into school libraries.*

*Professor Emeritus at University of Southern California, he championed bilingual education as a right, and not a luxury.*

*Criticised for his activism in education, Prof. Krashen was inducted into the International Reading Association's Reading Hall of Fame (2005).*

*In 2004, Krashen published The power of reading: Insights from the research which provided strong evidence that reading for pleasure [FVR] raised literacy levels.*

*His twitter handle is @skrashen*

*The full text of this article can be read at [www.sdkrashen.com/articles/Multivariate\\_Studies.pdf](http://www.sdkrashen.com/articles/Multivariate_Studies.pdf)*

INDIVIDUAL SES	SCHOOL SES				
	1 <sup>st</sup> (lowest)	2 <sup>nd</sup>	3 <sup>rd</sup>	4 <sup>th</sup>	5 <sup>th</sup>
1 <sup>st</sup> (lowest)	459 (n=984)	466 (n=690)	472 (n=490)	503 (n=231)	516 (n=88)
2 <sup>nd</sup>	486 (n=591)	496 (n=681)	503 (n=596)	531 (n=425)	544 (n=195)
3 <sup>rd</sup>	498 (n=416)	504 (n=492)	515 (n=639)	542 (n=568)	561 (n=348)
4 <sup>th</sup>	520 (n=213)	525 (n=377)	530 (n=516)	557 (n=682)	577 (n=693)
5 <sup>th</sup>	548 (n=99)	543 (n=199)	549 (n=362)	576 (n=602)	602 (n=1212)

SES = social economic status, based on parental occupational status, parental education, economic and cultural resources in the home. The average PISA score is 500, standard deviation = 100. From Perry and McConery (2010).

SES includes a number of factors influencing school performance. On the individual level, students living in poverty have inferior diets and health care (Coles, 2008, 2009; Berliner, 2009; Rothstein, 2010) and low SES schools lack the facilities high SES schools do,

*...a strong school library can make up for the effect of poverty in several aspects of school achievement.*

and tend to have fewer qualified teachers. Both individual students and schools from low SES backgrounds, however, suffer from a lack of access to books.

Students from low SES families have fewer books in the home and live in neighborhoods with inferior public libraries and fewer bookstores, and low SES schools have inferior classroom and school libraries (Krashen, 2004).

The one source of books that can be easily improved is the school library. In recent years, two studies have confirmed that investing in the school library can not only make a difference, it can actually offset the impact of poverty on reading achievement.

### The California Study

Achterman's analysis (2008) is based on scores on the California Standards Tests (2006-7) provided by the State of California, the California Department of Education Library Survey, and other data provided by California schools. Achterman used three predictors of academic achievement:

1. **library quality**, combination of hours school library is open, collection size, budget, total staff hours, total services, and total technology,
2. **community factor**, combination of parent education, the percentage of students eligible for free and reduced lunch, student ethnicity, and the percentage of English learners, and
3. **school factor**, average teacher salary, which correlated with the percentage of teachers who hold teaching credentials.

Table 2 presents the results of a multiple regression analysis, a very useful statistical procedure that allows researchers to examine the impact of individual predictors holding other predictors constant.

For example, it is *likely that community factors and library factors are related*. Schools in wealthier communities might spend more on libraries, especially in America where local taxes are used to pay for schools.

Multiple regression allows us to pretend that this isn't so; that each factor is independent of the others.

The numbers in Table 2 are *betas*. A larger beta means a greater impact, and betas from different predictors can be compared with each other. Table 2 tells us that for high school students in California, the impact of **community** was strong on tests of both language arts and history (beta = -.51 for language arts), consistent with the results of studies that show the impact of poverty on school achievement. The impact of school was positive, but weak.

Of great interest to us is the finding that the effect of **school library quality** was strong on both tests and nearly as strong as the effect of community, or poverty. This suggests that a strong school library can make up for the effect of poverty in several aspects of school achievement.

Table 2 indicates that  $r^2 = .57$  for Language Arts and  $.46$  for History. This means that if we know the poverty level of a school (the community factor), the quality of the teaching staff (as reflected by salaries or credentialing), and the quality of the school library, we have 57% of the information we need to predict Language Arts test scores for 11<sup>th</sup> graders at that school.

Confirming the effect of the library, Achterman reported positive correlations between the size of the collection and test scores (for English language arts,  $r = .44$ ) and between the number of hours the library was open and test scores (for English language arts,  $r = .52$ ).

It must be noted that Achterman did not find similar results for grades 4 and 8. The effect of the library was much weaker than in grade 11. The weaker correlations found for younger students could be due to the lack of library services in lower grades in

**Table 2**

*Multiple regression analysis: Impact of community, school, and library quality on achievement Year 11.*

	Language Arts	US History
Community	-0.51	-0.47
School	0.14	0.16
Library	0.46	0.48

$r^2 = .57$  (Language Arts),  $r^2 = .58$  (US History)  
From Achterman (2008)

**Students in countries that provided time for independent reading in school every day, or almost every day, tended to do better in reading .**

California, which results in limited variability and therefore lower correlations.

Achterman noted that only 1.2% of California elementary schools have a full-time clerk and full-time teacher librarian. This improves to 8.5% at the middle school and 30.3% at the high school level.

### The PIRLS Study

The PIRLS organization (Progress in International Reading Literacy Study) administers a reading test to fourth graders in many countries every few years. Students are tested in the language of the country, and all tests are of equal difficulty. We (Krashen, Lee & McQuillan, 2012) analyzed the 2006 PIRLS results for 40 countries.

Our analysis included countries for which complete data was available for all factors. Most countries tested about 4000 students from about 150 schools.

Table 3 presents one of our analyses, which examined the impact of factors considered to be related to reading achievement. As in Achterman's study, we used multiple regression, which allowed us to determine the impact of each predictor uninfluenced by the other predictors.

**Table 3** Multiple Regression Analysis of predictors of achievement on the PIRLS reading test

	Reading
SES	-.42
Independent Reading	.19
Library	.34
Instruction	-.19

$r^2 = .63$  (Krashen, Lee & McQuillan, 2012)

According to Table 3, the strongest predictor of reading achievement among ten-year olds is SES, defined here as a combination of education, life expectancy and wealth in each country.

In agreement with many other studies, we found that lower SES meant lower performance.

*Independent reading* stands for the percentage of students in each country who participated in independent reading programs in school.

Students in countries that provided time for independent reading in school every day, or almost every day, tended to do better in reading (beta = .19).

This result fell just short of the usual standard for statistical significance, but the positive relationship between independent reading and reading proficiency is consistent with the results of in-school self-selected reading programs (Krashen, 2004).

*Library* means the percentage of school libraries in each country with over 500 books. This was a strong predictor of reading achievement. As was the case in Achterman's study, the library predictor was nearly as strong as social class (similar to Achterman's community factor).

The final predictor, *instruction*, means the average hours per week devoted to reading instruction in each country. According to our analysis, the effect of instruction was modest and negative, that is, more instruction tended to be related to lower performance on the reading test (beta = -.19). This predictor fell just short of statistical significance. It may be the case that a little reading instruction is beneficial, but after a point it is ineffective and counterproductive.

Table 3 indicates that  $r^2 = .63$ . The four variables considered here account for 63% of the variability in reading test scores.

In other words, if we know the SES level of a country, the percentage of children who do independent reading in school, the percentage of children who have access to a library of 500 books or more, and the amount of instruction, this is 63% of the information we need to predict their reading score. This  $r^2$  is quite high, and is similar to the  $r^2$  reported by Achterman.

Both Achterman's and our results are consistent with the results of other studies showing that access to books from other sources can make up for the effect of poverty (Evans, Kelley, Sikora, & Treiman, 2010; Schubert & Becker, 2010).

**More access to books has been shown to lead to more self-selected reading and more self-selected reading leads to higher levels of literacy (Krashen, 2004).**

## Conclusion

A plausible explanation for the results of these studies and others is **Access > FVR > Literacy**.

There is very strong evidence supporting this formula.

More access to books has been shown to lead to more self-selected reading and more self-selected reading leads to higher levels of literacy (Krashen, 2004).

There is also substantial research connecting the ends of the formula.

Better libraries are related to higher levels of literacy (Krashen, 2004; see especially studies by Keith Curry Lance and others at [www.lrs.org/impact.php](http://www.lrs.org/impact.php)).

Those living in poverty have little access to books, which explains their low levels of literacy development.

I suspect that this relationship will continue until e-readers and e-books are far less expensive and far more available than they are now.



## References

Achterman, D. (2008). *Haves, halves, and have-nots: School libraries and student achievement in California*. PhD dissertation, University of North Texas. <http://digital.library.unt.edu/permalink/meta-dc-9800:1>

Berliner, D. (2009). *Poverty and potential: Out-of-school factors and school success*. Boulder and Tempe Education and the Public Interest Center & Education Policy Research Unit. Retrieved from <http://epicpolicy.org/publication/poverty-and-potential>

Coles, G. (2008/2009). Hunger, academic success, and the hard bigotry of indifference. *Rethinking Schools*, 23(2). Retrieved from [www.rethinkingschools.org/archive/23\\_02/hung232.shtml](http://www.rethinkingschools.org/archive/23_02/hung232.shtml)

Evans, M., Kelley, J., Sikora, J., & Treiman, D. (2010). Family scholarly culture and educational success: Books and schooling in 27 nations. *Research in Social Stratification and Mobility*, 28 (2), 171-197.

Krashen, S. (2004). *The power of reading: Insights from the research*. [2nd ed.]. Westport, CT: Libraries Unlimited.

Krashen, S., Lee, S., and McQuillan, J. (2012). Is the library important? Multivariate studies at the national and international level. *Journal of Language and Literacy Education*, 8 (1)?, 26-36.

Perry, L., & McConney, A. (2010). Does the SES of the school matter?

An examination of socioeconomic status and student achievement using PISA 2003. *Teachers College Record*, 112(4), 1137-1162.

Rothstein, R. (2010). How to fix our schools. *Economic Policy Institute Issue Brief #286*. Retrieved from [www.epi.org/publications/entry/ib286](http://www.epi.org/publications/entry/ib286).

Schubert, F. and Becker, R. (2010). Social inequality of reading literacy: A longitudinal analysis with cross-sectional data of PIRLS 2001 and PISA 2000 utilizing the pair wise matching procedure. *Research in Social Stratification and Mobility*, 29, 109-133.

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