Independent Reading in Rural China’s Elementary Schools: A Mixed-Methods Analysis

Huan Wang, Di Mo, Emma Seevak, Reid Manheim, Matthew Boswell, Scott Rozelle

Abstract:
There is consensus in the international literature that independent reading leads to improvements in both traditional and nontraditional academic outcomes. Countries throughout the world invest heavily in independent reading programs. However, little research has been done about independent reading in rural China, where students are falling behind their urban counterparts in academic subjects at alarming rates. This article seeks to explore the prevalence of independent reading and its correlation with test scores. It brings together data from a survey of 13,232 students and findings from 745 interviews with students, teachers, principals, and heads of household. Although independent reading is correlated with higher test scores, only 16% of students read for more than 60 minutes per day. Furthermore, school libraries are not correlated with student performance. Quotations from extensive qualitative interviews provide possible explanations for the data.

Keywords: Independent reading; rural China; academic performance; elementary school; qualitative study; mixed methods

JEL Codes:
Independent Reading in Rural China’s Elementary Schools: A Mixed-Methods Analysis

1. INTRODUCTION

Independent reading—unassigned reading for personal pleasure—has been shown to be an important factor in early years educational development (National Reading Panel, 2000; Slavin et al., 2009). Indeed, research has shown that independent reading is positively correlated with increased vocabulary, reading comprehension, and verbal fluency (Cullinan, 2000; Anderson et al., 1988; Greaney 1980; Guthrie and Greaney 1991; Taylor, Frye, and Maruyama 1990). It is widely understood that children who succeed in becoming fluent, strategic and joyful readers have a better chance at achieving academic success, becoming active citizens, and experiencing self-fulfillment (Cullinan, 2000).

Reading at an early age—particularly the elementary school years—appears to be especially important. It is during this phase that children develop skills such as word recognition, language cues, and vocabulary. If adequate reading skills and abilities are not developed by the age of 10 (grades 3 or 4), students may fall into the “fourth-grade slump,” a term used by scholars to describe how reading gaps in the critical fourth grade period may underlie a deceleration in reading comprehension among children—an effect that can last a lifetime (Chall et al., 2009). For this reason, experts emphasize the need to confront reading challenges early in children’s lives, before students encounter more challenging reading materials in grades 4 and above (Chall et al., 2003).

Poor children are particularly prone to the developmental delays that arise from reading challenges (Chall et al., 2003; Snow, 2002). Among other factors, low-income children may suffer from lack of fluency and automaticity and avoid difficult reading materials (Chall and Jacobs 2003; Stanovich, 1986); have fewer reading materials at home
relative to their high-income counterparts (Chin & Phillips, 2004); or have less expansive vocabularies and, therefore, lower reading comprehension (Anderson & Freebody, 1981). For these reasons there is a consensus in studies based in developed countries that without ample remediation reading gaps may quickly widen after grade 4 and disadvantaged students will likely remain behind for their entire lives.

One method that may help promote children’s academic achievement and stave off developmental delays is encouraging children to increase their reading volume. Research has suggested that simply the amount that a child reads is positively correlated with his or her educational outcomes, irrespective of underlying cognitive ability (Cunningham & Stanovich, 2001; Baker, 1999; Nueman & Roskos, 1993; Rucker, 1982). McQuillan and Au (2001) suggest that differences in students’ academic achievement can be explained in part by the quantity they read both in school and at home. Cunningham and Stanovich (2001) posit that a child’s reading volume may be a potential source of cognitive skills, as the amount a child reads improves verbal skills, increases content knowledge and establishes a positive feedback loop that promotes future learning. Similarly, research has demonstrated that simply increasing children’s access to reading materials is related to positive academic outcomes (Small et. al, 2009; Krashen, 1995). This finding may suggest that granting children access to reading materials can help promote higher reading volume and, in turn, induce academic gains.

In acknowledgement of the significant benefits of reading, numerous developed countries have invested tremendous time, effort and financial resources to promote regular reading habits among children during the early stages of education (Torgesen et al., 2006). For example, the US allocated $1.1 billion to its Reading First program and $132 million for Early Reading programs from 2001-2008 (U.S. Department of Education, 2005). In 2012, Australia declared a “National Year of Reading”, initiating several programs across the
country that focused on children and young people with the hope of increasing Australia’s literacy rate (Australian Bureau of Statistics, 2012). The Israeli city of Netanyu implemented a program that placed specially-trained teacher assistants in first and second grade classrooms to ensure that children have mastered the required reading skills for their age group (The Jerusalem Post, 2009). In Finland—one of the global leaders in standardized reading comprehension scores—over 40.5% of students receive special assistance from a teacher for reading or writing (Center on International Education Benchmarking). Most developed countries recognize the important role reading plays in learning and, as a result, have implemented numerous reading programs of different sizes and scope.

In addition, research has provided evidence that children’s reading volume has significant impacts on academic achievement in developing contexts as well. For example, reading frequency has shown to be related to overall grades of classrooms in rural Uganda (Dent & Goodman, 2015) and the number of books on loan from a school library is positively and significantly correlated with student achievement levels in several Latin American countries (Coleman et al.,1966). Evidence also has suggested that access to a wide variety of books and other reading materials may contribute to educational gains in developing countries. (Bristown, 1992; Hayneman and Loxley, 1983; Haron, 1977). These effects are of particular import in developing countries as they suggest that increasing children’s reading volume can improve education achievement, in turn offering a potential mechanism through which these countries can spur future growth.

Recognizing the benefits of reading, the developing world has experienced a proliferation of reading-focused programs and initiatives. Many of these programs have been implemented by NGOs and international development organizations rather than local governments. Reading initiatives directed towards young students have been implemented by USAID and other organizations in Africa, Southeast Asia, Latin America and the Caribbean
(First Principles for Early Grades Reading Programs in Developing Countries, USAID; USAID/Ghana Country Development Cooperation Strategy 2013-2017). Read India, a program first introduced in 2007, was recently replicated and scaled-up in partnership with Indian state governments, affecting an estimated 4.7 million children in the 2013-2014 year (Pratham USA). Additionally, 15 countries in Sub-Saharan Africa and South Asia currently employ Literacy Boost, a reading program developed by Save the Children that works with the existing national curriculum to promote, encourage, and develop reading skills (Save the Children). In Nepal, Room to Read has established over 3,776 libraries and implemented reading, writing, and girls education (Room to Read).

However, there is very little known about independent reading in China’s heavily populated rural hinterland, an area where almost 15 percent of the developing world’s children reside (United Nations Bureau of Statistics). There is virtually no paper in the English language academic press on the issue, and the handful of papers that address it in China’s academic press are case studies. These case studies are typically written by teachers and other educators and they only describe practices observed in their individual classrooms (Zheng & Tong, 2010; Xu, 2013).

Given what appears to be the important role of independent reading in enhancing learning, the lack of research on the matter in China is especially troubling. Educational inequity is severe in China (Wang et al., 2013), as rural students lag far behind their urban peers. This problem may have implications for China’s continued economic growth and even social cohesion. It is possible that placing emphasis on independent reading habits could help narrow this educational gap as it has appeared to have done in certain developed contexts (Kim & Quinn, 2013; Kim, 2006). Unfortunately, little is known about how an assessment of current reading habits should be constructed or how to develop potential remediating strategies.
The goal of this study is to investigate the connection between independent reading and academic outcomes among rural children in China. To meet this goal, we have several specific objectives. First, using quantitative methods, we establish the empirical facts. We seek to show how much kids read, the importance of reading in academic performance, and the way in which access to books affects student test scores. The second and perhaps more important objective is to illuminate the mechanisms behind these quantitative findings. Using qualitative interviews, we seek to uncover why kids read (or do not read), and why access to books at home and in school is correlated (or not correlated) with higher test scores.

2. QUANTITATIVE DATA AND RESULTS

Sampling Procedure and Data Collection

To achieve these objectives, we draw on a large-scale survey of three counties in Guizhou province in southwest China and three counties in Jiangxi province in southeast China from April 2015 (Figure 1). Trained enumerators collected data from 13,232 students from 150 rural schools. The surveys were designed to collect information about the independent reading habits of rural elementary school students. Independent reading (“读课外书”) was specifically defined in the survey as reading outside of school for a purpose not related to school.

The student survey included two parts, a questionnaire and three standardized tests. The questionnaire collected information of student reading habits and attitudes, as well as school and home access to books. Using the information from the survey, we generated variables of whether the student spends more than 60 minutes on independent reading per day (1=yes; 0=no), whether the student reads books at home (1=yes; 0=no), whether the student likes reading (1=yes; 0=no), whether the school has a library (1=yes; 0=no), whether
the student *borrows books from the school library* (1=yes; 0=no), and whether the student’s *parents buy books for the student* (1=yes; 0=no).

The standardized tests included reading, math, and Chinese language. The reading test questions were adapted from the Progress in International Reading Literacy Study (PIRLS) test, an international test of reading comprehension that is widely used throughout the world. The test questions were carefully translated according to the PIRLS translation guidelines and reviewed by a panel of experts and local teachers well versed in the Chinese education system. The translated reading tests then went through several rounds of pilot tests in Chinese schools. The results were independently reviewed by a group of test assessment experts and were revised to make sure they are of the highest quality and appropriate for student levels. In the survey, students were required to finish the reading test in 30 minutes. The enumeration team closely monitored the test and strictly enforced the time limits.

The tests in math and Chinese language were carefully designed with assistance from educators in the local bureaus of education to ensure coherence with the national curriculum. We pretested the exam repeatedly to ensure its relevance and to make sure the time limits were appropriate. Both the tests in math and Chinese language took 30 minutes. When we administered the exam in the sample schools, it was timed carefully and proctored closely by trained enumerators. For analysis, the scores for the standardized tests in reading, math and Chinese are all normalized by the distribution of scores in each grade.

**Statistical Approach**

In investigating how reading is correlated with reading skills, math and Chinese test scores, we regressed student standardized test scores (reading, math, Chinese) on student reading behaviors, attitudes, and school and home access to books. We estimated the following ordinary least squares (OLS) model:

\[
Y_{ijc} = \alpha + \beta' \text{Read}_i + \gamma \text{X}_ij + \phi c + \epsilon_{ijc} \tag{1}
\]
where the dependent variable $Y_{ij}$ indicates the standardized test score of student $i$ in school $j$ and county $c$, $\text{Read}_i$ is a vector that includes six variables of reading behaviors, attitudes and school and home access to books. Specifically, $\text{Read}_i$ includes whether student $i$ is an independent reader (equaling 1 if the student spends more than an hour per day on independent reading, and equaling 0 if the student doesn’t), whether the student reads books at home (1=yes; 0=no), whether the student likes reading (1=yes), whether the school has a library (1=yes; 0=no), and whether the student’s parents buy books for the student (1=yes; 0=no). The vector $X_i$ includes student characteristics, family characteristics and school characteristics. The student characteristics include student age (in years), student gender (the variable equals 1 if the student is female and equals 0 if the student is male), boarding (the variable equals 1 if the student is boarding student and equals 0 if the student is non-boarding). The family characteristics include the household consumption asset value (To calculate an asset index, we asked the students to fill out a checklist of household consumption, then used the coefficients from principal component analysis to create a single measure of wealth). The school characteristics include classroom has a book corner (the variable equals 1 if the classroom has a library and equals 0 if there is no book corner in classroom) and number of students at school.

We add school-level fixed effects for both equations to further improve efficiency. We also compute heteroskedasticity-robust standard errors and adjust for clustering at the school level in all our regressions.

**Quantitative Results: The Prevalence of Reading**

The quantitative data analysis found low levels of reading and reading resources among rural students. Table 2 shows data from 13,232 students in grades three through six. Only 2,197 out of 13,232 (16.6%) students read for more than 60 minutes per day. Also, only
2,646 of 13,232 (20.0%) students reported borrowing books from the school library in the past semester. Students appear to lack support for reading at home. Only 4,075 of 13,232 (30.8%) students have independent reading books at home and only 1,284 of 13,232 (9.7%) students report that their parents purchase books for them.

**The Correlates of Test Performance**

Based on the OLS multivariate analysis in Table 3, reading for more than 60 minutes per day, reading books at home, and enjoying reading are correlated with higher test scores in all three tests administered: math, Chinese, and critical reading. Reading for more than 60 minutes per day is correlated with a 0.09 SD higher reading score (significant at 1%) and improvements of 0.09 and 0.08 SD in math and Chinese, respectively (significant at 5%). Furthermore, reading books at home is correlated with 0.21 SD improvements in both Chinese and reading (significant at 1%) and a 0.20 SD improvement in math (significant at 5%). Finally, enjoying reading is correlated with a 0.49 SD improvement in Chinese and a 0.35 improvement in reading (both significant at 1%) and a 0.32 SD improvement in math (significant at 5%).

The results of the correlation analysis also contained some surprises. Whether or not a school has a library or whether the student borrows books from the library was not correlated with test scores. Moreover, there is a strong and negative correlation between parents who purchase books for their children and children’s test scores. When parents buy books for their children, the children score worse by 0.38 SD in math, 0.26 SD in Chinese, and 0.28 SD in reading. All of the correlations are significant at the 1% level.

3. QUALITATIVE FINDINGS AND MIXED-METHODS ANALYSIS

**Qualitative Data Collection**
As part of our effort to interpret and better understand key findings from the quantitative data, we conducted three waves of qualitative interviews. Specifically, we wanted to investigate why many students do not read, why school libraries are not positively correlated with test scores, and why parents buying books for their children is negatively correlated with test scores.

First, a five-person team (from Shaanxi Normal University and Stanford University) interviewed students, parents, teachers, and education bureau officials from ten elementary schools in two of the sample counties in Guizhou province. In total, 22 teachers, 18 students, eight heads of household, and three education bureau officials were randomly selected and interviewed. All interviews were conducted in June 2015. The interviews lasted from 20 to 60 minutes and were semi-structured: interviewers referenced a scripted interview protocol but also had the freedom to diverge from this protocol in order to investigate specific responses that emerged. Relevant portions of each interview were transcribed with personally identifiable information removed.

Second, a team of 12 enumerators (graduate students from Shaanxi Normal University) conducted in-person interviews with 213 randomly selected fourth and fifth grade math and Chinese teachers and 113 principals from 113 schools in Jiangxi province. The team also conducted telephone interviews with 322 heads of household. All interviews occurred over a five-day period in April 2015. All interviews were conducted one-on-one and transcribed. All participants gave informed consent, and all personally identifiable information was removed from the transcripts. The interviews lasted from ten to 15 minutes and were a structured set of five free-response questions.

For the third wave of interviews, we randomly selected 46 students who read (defined as students who read independently for more than 60 minutes a day) and 10 parents who buy books for their children (as reported on the quantitative surveys). All interviews were
conducted one-on-one by phone in July 2015 and transcribed. All participants gave informed consent, and all personally identifiable information was removed from the transcripts.

In the following sections, we include quotations from all three waves of interviews. The selected quotations are representative of the sentiments expressed by a majority of respondents on any given issue. These sentiments were common to the responses we heard.

**Qualitative Findings**

In our interviews, we noticed three main factors that may prevent reading among rural children: *inaccessible bookstores, curriculum constraints, and unsupportive home environments*. Second, we hope to further understand why school libraries are not correlated with test performance. Based on our interviews, we suggest that the *poor quality of school libraries* and *insufficient school investment* may contribute to the failure of libraries to boost test scores. Finally, we examine why children whose parents buy books for them perform worse on the tests. We have categorized our qualitative data as follows: *books are not suited for independent reading* and *books used as test remediation*. In the rest of the paper we explore through these qualitative data the factors that may explain the quantitative survey results.

**Barriers to Reading in Rural Areas**

In general, students in rural areas lack suitable independent reading books, free time, and encouragement to read within the household. This combination of factors may contribute to the low levels of reading reported in our quantitative data.

*Inaccessible bookstores*  
Both our qualitative analysis and casual observations suggest that the unavailability of bookstores in rural areas may deter students from reading. Our interviewees echoed the challenges of accessing a bookstore near their home.

“I don’t own any books. If I wanted to go buy one from the bookstore, I would have to walk down to the road, take a minivan to the township, then take a bus to the
county seat and go to the bookstore, then come all the way back. I don’t know how long that would take.” (Student, 2011S1)

“I’d say one out of five of the students will buy books for themselves besides the curriculum books. They buy them in the township. There’s no bookstore there but they sell workbooks in the convenience store. But as for any other kind of book, nobody buys any of them. And even if they wanted to, they aren’t available.” (Principal, 2034H1)

Over the course of our interviews in Guizhou, we visited five townships with over 60 schools and an estimated 10,000 students. However, not a single township contained a bookstore or a store that sold independent reading books. This severe supply-side constraint may factor into children’s low reading habits.

Curriculum constraints

According to our interviews, rural elementary schools are faced with a variety of responsibilities, including preparing students for standardized examinations, adhering to the standard curriculum, and fulfilling government directives. These functions require significant time and resources and may render schools unable to oversee independent reading.

The education system in China revolves around high-stakes examinations beginning in elementary school and lasting through selection into tertiary schooling (Loyalka, et al., 2014). Perhaps as a result, classes often focus on test preparation (Thogerson, 2000). This emphasis on test scores may leave little room for teachers to encourage independent reading.

Many teachers we interviewed spoke about the limitations posed by the test-focused system.

“The standard curriculum doesn’t emphasize independent reading. The only focus is on scores. The purpose of the system is to pass the college entrance exam. If a student is falling behind, he’ll sometimes get special tutoring after class. But if he can’t keep up, he should just self-study the dictionary at home.” (Teacher, 2034T1)

“Under China’s exam-oriented education system, I believe that students should pay attention to textbooks rather than independent reading books because textbooks are the foundation.” (Teacher, 2063T1)

Moreover, teachers report being pressured to adhere to the rigid week-by-week national curriculum called renjiaoban. This material is the central source of teaching and learning material for the majority of rural schools throughout the country (Paine, 1998;
independent
divert
Intern
implement
in
for
paced
Huang,
low
teachers
in
- national
for
performing
teaching
resources,
addition
government
children's
burdens,
I'm
All
do
not
read
properly,
people
reading.

But
I'm
speaking
frankly
now,
is
too hard
for
students
like
the
ones
at
this
school.
But
the
fact
is
that
we
have
to
teach
them.
If
they
understand
the
material,
we
teach
it.
If
they
don't
understand
the
material,
we
still
teach
it
because
we
don't
have
any
other
options.”
(Teacher,
2022T2)

“Our
curriculum
is
designed
by
experts
somewhere,
we
don't
know
where.
Someone,
we
don't
know
who,
tells
us
which
curriculum
to
use.
We
have
to
implement
that
curriculum.
If
we
don't
think
it's
suitable,
we
don't
have
a
choice.
There
are
no
independent
reading
programs
that
are
part
of
that
curriculum.”
(Teacher,
1000T3)

In
addition
to
complying
with
the
standard
curriculum,
schools
and
teachers
must
implement
government-mandated
supplementary
initiatives
such
as
safety
training
and
International
Children’s
Day
performances.
Many
teachers
and
principals
complained
about
these
burdens,
which
demand
significant
time
and
money.
When
directives
such
as
these
divert
schools’esources,
schools
may
lack
capacity
to
focus
on
other
activities
such
as
independent
reading.

“The
government
mandates
that
schools
employ
safety
education.
We
place
a
heavy
emphasis
on
safety
training.
For
example,
we
have
to
教
kids
not
to
swim
in
the
river,
not
to
eat
wild
mushrooms,
how
to
cross
the
road
properly,
not
to
chase
each
other
around
the
campus,
and
not
to
jump
near
the
windows.
In
short,
rural
areas
are
unpredictable
in
many
ways
and
when
accidents
happen,
society
becomes
upset
and
expects
responsibility
to
be
assigned
for
those
accidents.
Often
schools
are
blamed.
Therefore
we
do
our
best
to
implement
safety
training,
which
ends
up
being
a
significant
burden
in
terms
of
time
and
resources.”
(Principal,
2034H1)

“Basically,
I
don't
read
because
I
don't
have
any
time.
I
haven't
read
a
book
in
two
years,
and
even
that
book
was
for
work
and
not
for
fun.
It’s
the
same
for
the
other
teachers.
They
never
have
time
to
go
to
the
library
and
read
books;
not
only
do
I
have
to
teach
the
4th
grade
class
but
I'm
also
a
homeroom
teacher
and
principal
of
the
school.
The
teaching
staff
has
a
wide
variety
of
tasks
they
have
to
do outside
of
教学
that
are
mandated
from
above.
For
example,
they
have
to
institute
a
safety
education
program,
which
requires
developing
materials,
displaying
information,
and
lecturing
on
how
to
deal
with
traffic.
All
of
these
tasks
take
an
ever
enormous
amount
of
time.
Do
we
need
this
knowledge?
Of
course
we
do.
But
we
don't
have
enough
people
to
properly
cover
all
of
this
material.
(Teacher,
2022T1)
Even if there were sufficient time and resources to encourage independent reading, it is not clear that teachers value reading. Although most teachers said that independent reading is important, few spoke of concrete methods to encourage reading. Teachers commonly expressed the attitude that independent reading is a student’s personal responsibility.

“I have been a Chinese teacher for 28 years. The library at the school was built, oh, I’d say, 10 years ago. I’ve rarely gone in there. I don’t think there’s many independent reading books in there—I think that most of the books are workbooks. For reading outside of class, that’s really the students’ business and something they need to address on their own. If it were up to me, I’d recommend that they read workbooks.” (Teacher, 2034T2)

“None of the students read for fun. The school has a library, but the teachers don’t manage it. They don't record who checks out the books. The students just like TV and cartoons, and in rural areas very few students read outside of school. They don’t even read textbooks. Teachers don't care what students do outside of school.” (Teacher, 2042T2)

The test-driven and rigid standard curriculum appears not to foster ample opportunities for independent reading. Even if a student is falling behind, the curriculum must carry on. In such a system, it comes as no surprise that many teachers do not value independent reading—the focus is on scores and they view textbooks and workbooks as the only keys to examination success.

Unsupportive home environment

Based on our interviews, many rural students’ living situations do not foster independent reading for two main reasons. First, many students have significant time constraints outside of school. Second, households may not encourage independent reading. In China’s elementary schools, school days are long, often extending from 7:30am to 4:00pm. After school, many children we interviewed must walk home and help around the house, performing tasks such as cooking, caring for younger siblings, and working on the farm. These activities limit time available for independent reading.

“After school, I walk home and then feed the geese, ducks, and chickens. I then do my homework. Then I cook, do more homework, and go to sleep.” (Student, 2022S1)
“Listen, some of our students live a two hour walk away. They are from places where there aren’t roads whatsoever. They wake up before sunrise, walk to school, spend all day in school, and sometimes—especially during the wintertime—they have to walk home in the dark. Some of them have to traverse the mountain behind the school, a two hour walk, every day.” (Teacher, 2022T3)

On top of substantial time constraints, very few children appear to receive encouragement from their families to invest time in independent reading. In rural China there are as many as 58 million children who are left behind by parents who have migrated to faraway cities in search of work (China Youth Research Center, 2006). Left-behind children generally have limited contact with their parents: fewer than 30% of left-behind children see their parents every year (Ye, et al., 2005). Unfortunately, migrating parents may be unable to supervise their children’s education and encourage independent reading habits.

Many left-behind children are raised by their grandparents. Our qualitative data shows that grandparents are often too busy and ill equipped to supervise children’s study and independent reading habits.

“We are a poor family. Our son and his wife have four kids, and only completed fifth grade, so they have to work in a factory in Guangdong to make a living. They left their children at home with us. If the children do well in school, great. If not, it doesn’t matter to us. We don’t have any books at home and we’re illiterate so we can’t help with their homework or reading.” (Grandparent, 2011G1)

“Generally, kids live with their grandparents because their parents are out of town working. Grandparents are most concerned with getting food and clothes for the kids. As long as those two things are met, they don’t think about much else for the children.” (Teacher, 2041T1)

Furthermore, independent reading may not be a common practice in rural China, as evidenced by our survey finding that only 30 percent of households own books. Many interviewees explained the limitations of households in supporting children’s independent reading.

“In the countryside I can safely say that no parents read to their kids. The parents lack time and also lack sophistication.” (Teacher, 2022T2)
“Independent reading increases students’ burdens. It also makes them wild and distracts from curricular learning. Independent reading does not benefit language or math grades—it will affect students’ concentration. Our family does not buy independent reading books for the children because we fear that it will affect their studies.” (Parent, 3062P2)

In a home environment where independent reading does not seem to be valued—only 9.7% of parents buy books for their children and free time is scarce—rural students may not find the time or may lack the motivation to read. Reading independently may run counter to their guardians’ expectations and take away from valuable time they believe should be purely focused on academics.

School Libraries Do Not Improve Test Performance

By definition, school libraries are supposed to provide access to books. Although our research shows that reading books is correlated with higher test scores, students’ test performance was not correlated with the existence of a library at their school. The qualitative interviews may help explain this discrepancy: we found that libraries are of poor quality and lack school support, which, perhaps, contributes to their lack of impact on academic outcomes.

Inadequate School Libraries

In rural areas, libraries may lack sufficient human resources and suitable books to effectively improve academic performance. One fundamental issue with many libraries in our qualitative sample of rural elementary schools is that they are often closed. Schools lack the human resources to maintain and supervise libraries, causing the libraries to open infrequently, as in this case:

“The library is required to be open Monday to Friday. But, in fact, it is only open once a month because there’s not a teacher whose responsibility it is to manage the library.” (Teacher, 2041T1)
Furthermore, schools lack control over the selection of books available in their libraries. Most books in rural schools are provided by donations and the education bureau. However, books are not always chosen with students’ needs in mind.

“A fraction of the books in our reading room were supplied by the education bureau. They just give us the books. They never ask us what kind of books we need. In fact, I think that some of the books they give us are not suitable for students to read. For example, books about how to code or repair computers. These kids have never touched a computer. How could that be useful?” (Principal, 1081H1)

One reason that some rural children do not utilize libraries may be that they cannot find books of topics and difficulty levels suitable for independent reading. In addition, books in the library may not often accord with students’ interests. Our quantitative results reveal that 75.7% of students are interested in fables, while 42.5% and 45.3% are interested in novels/kung-fu novels and nature books, respectively. Libraries, however, do not appear to prioritize these books in their collections, and some have none at all. This may be due to the belief held by many teachers that these types of books are not appropriate for elementary school students. Instead, the teachers believe that students should focus on reading classics and reference books.

“I think students should read reference books. For example, essay writing books, the dictionary of ancient Chinese expressions, fables, and the dialects of Confucius and Mencius. Even if students cannot understand the Chinese classics, it is still good for them to read these types of books. Novels are not good for students. They are too long and students don’t have enough time to finish them. It’s a waste of time for the students and they cannot understand these novels. Romance novels are also bad for the students. However, I’ve never read any of them.” (Teacher, 2022T1)

“Kids should not read manga or science fiction because content of manga books is imaginary. They don’t help students solve real world problems and lack educational value. In fact, they have a negative influence on students because they try to mimic the violence and humor in books. Village students should not read science fiction because those books have content such as spaceships that students won’t comprehend.” (Teacher, 2042T2)

---

1 Kung-fu novels (in Chinese: “武侠小说”) are a popular genre of Chinese adventure literature that blend martial arts with historical fiction.
In addition to potential challenges with the types of books available, school libraries contain books that are damaged and outdated. This may contribute to school libraries’ lack of success in improving academic performance.

“Almost 70 percent of the books from the library are damaged or out of fashion. They’re old, out of date, broken, and missing pages. The last time the government sent us a book was around ten years ago.” (Teacher, 2022T1)

“The books in the library are generally out of fashion; kids do borrow books, but they will read a few pages and then return them. They do not have much interest. I think that students could be interested in books if there were new books that were shiny, colorful, and had pictures or if there was a teacher there to help students decide what they want or how to be interested in reading. The books haven’t been updated in all of my time here.” (Teacher, 2041T1)

School libraries face interesting demand-side and supply-side dilemmas. On the demand-side, teachers disapprove of students reading outside of class books and instead encourage their children to read materials such as classics of Mencius or Tang Dynasty poems. Even if students wanted to find extracurricular books in the library, it is possible that they may be unable to do so—the library’s limited hours and scarce supply of often damaged or outdated books represents a significant supply-side constraint. Although all ten of the schools we visited for qualitative interviews in Guizhou had libraries, these constraints may account for the null relationship between test scores and school libraries.

*Insufficient school investment*

The decentralization of school finances in China has led to unequal distribution of money and resources among schools (Park, et al., 1996; Tsang, 1996). Rural schools generally receive less funding and human resources than urban schools and face severe budgetary constraints (Huang, 2004). These financial challenges may prevent reading resources and programs from becoming a priority. This is evidenced by the importance of donated books in libraries in rural schools. Of the ten schools visited during the qualitative interviews in Guizhou, all of them relied on donations for their library materials. Many teachers and administrators expressed their schools’ financial challenges.
“Our budgets are extremely tight. In fact, we’re in the red. We need to buy teaching materials like paper, pens, computers, folders, and bookcases. We have to prepare for and pay for community activities like the Children’s Day presentation. We have to pay for all the expenses of supervising the exams every year, which includes transporting our teachers to other schools and hosting the visiting teachers. Plus, teacher training, transport and accommodation during county meetings. Then there’s the sound system, the electricity bill, the Internet bill. Each year we go further into debt just to cover these fundamental costs.” (Principal, 2032H1)

“If I had 50,000 spare RMB, first and foremost I would make the required safety improvements at our school. Safety is first, after all. So that means fixing the stairs, repairing cracked walls and windows, things of that nature. After that, I’d say we definitely need some computers and multimedia hardware. Finally, it would be improvements to the teachers’ office space, including desks and shelves and whatnot.” (Teacher, 2034T1)

Non-central rural schools are especially strained economically. Beginning in the late 1980s and early 1990s, China began to close village schools in an effort to centralize resources (Paine, 1998). As students move out of remote areas per a government effort to consolidate villagers (Chan, 2009) many of the most remote schools will likely be closed in the near future. The government may not want to invest in a school with an uncertain future. Therefore, these schools often lack support from above. Some teachers cited this as a key reason for insufficient school libraries.

“Of course the school needs equipment and investment. We need a wall around the school and other hardware investments like books. We’ve been asking the Education Bureau for things like this for ten years. But the fact of the matter is that in this area there are fewer and fewer kids and the government has probably decided that it is not worth investing in this school anymore.” (Teacher, 2022T4)

“The education bureau has a policy to combine relatively small schools. For that reason, it’s possible that this school will be shut down next year. But I’m not sure. I haven’t received any kind of concrete news even though it’s only a year away.” (Principal, 2031H2)

As shown, the financial challenges burdening rural schools appear to be significant—principals report having to cope with constrained budgets and little prospect for future funding. As such, independent reading is not of primary concern for these educators. Rather, they must focus on the costs they consider fundamental to their school’s operation. And, as
our interviews revealed, books or programs for independent reading are almost never cited as essential to a school’s functioning.

Children Whose Parents Buy Books for Them Score Worse on Tests

The multivariate analysis shows that parents purchasing books for students is significantly and negatively correlated with student test scores (Table 3). The qualitative interviews reveal two possible explanations for this phenomenon. First, parents might buy books for remediation if their child’s academic performance is poor. Second, the books that parents buy are often unsuitable for independent reading.

Books for remedial learning

Our qualitative data suggests that the correlation between purchasing books and poor test performance may occur because parents only buy books for children when they fall behind in school. That is, only the children falling behind have books purchased for them by their parents. In our third wave interviews, 80 percent of parents who bought books for their kids did so because their children were falling behind in school. This suggests that it is not book purchases that decrease test performance; rather, it is poor test performance that prompts book purchases.

"My child is not doing well in school at all and his teacher asked me to buy some books for him. So I bought him a storybook and a dictionary. I don't know if it helps improve his grades." (Student, 2021S1)

"My kid came back told me that her teacher asked her to buy some books so I gave her about 20 RMB. I didn't pay attention to what books she got. I don't know if they help her study because she can't even understand the textbooks in class." (Student, 2021S2)

In response to struggling rural students, parents seem to acknowledge the value of books in boosting learning. In accordance with our prior findings, however, parents may still lack a comprehensive understanding of the types of books and reading habits that will most effectively boost their children’s academic performance.

Books are not suited for independent reading
When parents purchase books for their children, these books may go unread. Many rural Chinese parents believe that their children should read books to supplement their academic work. Therefore, they direct their children towards classic books and poetry, which children may often be reluctant to read.

“As long as Dad agrees, we can buy the books. Sometimes, if the book is a fairy tale or something not related to school, Dad will say it is not useful. The books that we buy are those that he thinks are useful for my studies. They’re all workbooks. In addition, my parents bought me the books that were recommended by my teacher, which are the twelve classics. I have only read one of the twelve classics so far.” (Student, 2041S1)

“My son is not interested in reading and I don't know how to encourage him. I bought him a book of the dialects of one of Confucius’s disciples. But he hasn’t read it. He just wants to watch TV. I very rarely read with my kid.” (Teacher, 2022T1)

It is possible that a student may feel deterred from independent reading if their only option is a long, difficult, and complex classics from China’s antiquity. The misalignment of parent’s book preferences with their children’s reading interests may be a factor driving rural children’s low levels of reading.

4. CONCLUSION

This paper presents mixed methods analysis of results from a large-scale survey of six rural counties in the Guizhou and Jiangxi provinces. We show that among a sample of 13,232 students, only 16.6% are considered readers, which we defined as students who read independently for more than 60 minutes a day. Furthermore, we report a strong and positive correlation between independent reading and test scores. We find no correlation between student test scores and either the existence of a school library or whether the student borrows books from the library. Students whose parents purchased books for them were found to perform worse on the tests.

Based on the findings of a total of 745 interviews with students, teachers, parents, and education bureau officials, we suggest that several mechanisms are driving low levels of
reading among rural students. Inaccessible bookstores, curriculum constraints, and unsupportive home environments may explain the low levels of reading presented in the quantitative data. The poor quality of school libraries and insufficient school investment may contribute to the nonexistent relationship between libraries and academic achievement. Finally, parents may only buy books for their children if they are performing poorly academically, and these books—often classics, poetry, or workbooks—may not pique students’ interests. These factors perhaps explain the negative correlation between parents who buy books for their children and those students’ test scores.

Based on these findings, we suggest further research into rural Chinese students’ independent reading habits. A study to measure the effect of a reading program on test scores—which would be the first of its kind in rural China—is particularly encouraged.
References


Chinese literacy study 1: http://www.cnki.net/KCMS/detail/detail.aspx?QueryID=0&CurRec=4&recid=&filename=1012434466.nh&dbname=CMFD201401&dbcode=CMFD&pr=&urlid=&yx=&v=MzEzMjIyNkhMzTddHdFhLCr/FYIBuJhliWDFMdXhZUzdEaDFUM3FucldNMUzvQ1VSTCmWU9kdZ5dm5XNzNJrkY=


savethechildren.org, “Literacy Boost,” 10 September http://www.savethechildren.org/site/c.8rKLIxMGIpl4E/b.7084483/k.8F5A/Literacy_Boost.htm Accessed 17 July 2015


USAID; Educational Quality Improvement Program. First Principles for Early Grades Reading Programs in Developing Countries. 2009. By Roskos, Strickland, Haase, and Malik. Print.


Figure 1: Map of Survey Areas

[Map of China showing survey areas with some provinces highlighted in red and others in gray.]

- Sample Provinces
- Non Sample Provinces
Figure 2: Percentage of Rural Elementary School Students that Affirm Reading Behaviors in Guizhou and Jiangxi

- Spend more than 60 mins on independent reading per day: 0.166
- Have books at home: 0.308
- Parents buy books for students: 0.0971
- School has library: 0.722
- Borrow books from school library: 0.2

n = 13,232
## Table 1: Quantitative and Qualitative Survey Respondents

<table>
<thead>
<tr>
<th></th>
<th>Student (1)</th>
<th>Head of Household (2)</th>
<th>Teacher (3)</th>
<th>Principal (4)</th>
<th>Education Bureau Official (5)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Quantitative Data</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Guizhou Survey</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Jiangxi Survey</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Total Surveys</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Qualitative Data</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Jiangxi Short In-Person Interview</td>
<td>213</td>
<td>113</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Jiangxi Short Telephone Interview (April 2015)</td>
<td>312</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Jiangxi Short Telephone Interview (July 2015)</td>
<td>46</td>
<td>10</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Guizhou Long In-Person Interview</td>
<td>16</td>
<td>10</td>
<td>18</td>
<td>4</td>
<td>3</td>
</tr>
<tr>
<td><strong>Total Interviews</strong></td>
<td>62</td>
<td>332</td>
<td>231</td>
<td>117</td>
<td>3</td>
</tr>
</tbody>
</table>
Table 2: Summary Statistics of Student Survey in Guizhou and Jiangxi

<table>
<thead>
<tr>
<th>Variables</th>
<th>Mean (1)</th>
<th>SD  (2)</th>
<th>Min (3)</th>
<th>Max (4)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Student Characteristics</strong></td>
<td>n = 13,232</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1. Grade. 3-6</td>
<td>4.515</td>
<td>0.652</td>
<td>3</td>
<td>6</td>
</tr>
<tr>
<td>2. Age (Years)</td>
<td>11.15</td>
<td>1.060</td>
<td>7</td>
<td>18</td>
</tr>
<tr>
<td>3. Male (1=Yes)</td>
<td>0.520</td>
<td>0.500</td>
<td>0</td>
<td>1</td>
</tr>
<tr>
<td>4. Spend more than 60mins on independent reading per day, 1=Yes</td>
<td>0.166</td>
<td>0.372</td>
<td>0</td>
<td>1</td>
</tr>
<tr>
<td>5. Have books at home. 1=Yes</td>
<td>0.308</td>
<td>0.462</td>
<td>0</td>
<td>1</td>
</tr>
<tr>
<td>6. Parents buy books for students. 1=Yes</td>
<td>0.0971</td>
<td>0.296</td>
<td>0</td>
<td>1</td>
</tr>
<tr>
<td>7. School has library. 1=Yes</td>
<td>0.722</td>
<td>0.448</td>
<td>0</td>
<td>1</td>
</tr>
<tr>
<td>8. Borrow books from school library, 1=Yes</td>
<td>0.200</td>
<td>0.400</td>
<td>0</td>
<td>1</td>
</tr>
</tbody>
</table>

*Notes:*

Data source: Authors' survey, 2015
Table 3: OLS Estimation of Correlation between Reading and Academic Performance

<table>
<thead>
<tr>
<th>Dependent Variable Standardized Test Score</th>
<th>Math</th>
<th>Chinese</th>
<th>Reading</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>(1)</td>
<td>(2)</td>
<td>(3)</td>
</tr>
<tr>
<td>1. Spend more than 60mins on reading per day, 1=Yes</td>
<td>0.11***</td>
<td>0.09***</td>
<td>0.16***</td>
</tr>
<tr>
<td></td>
<td>(0.04)</td>
<td>(0.03)</td>
<td>(0.04)</td>
</tr>
<tr>
<td>2. Read books at home. 1=Yes</td>
<td>0.20***</td>
<td>0.21***</td>
<td>0.21***</td>
</tr>
<tr>
<td></td>
<td>(0.03)</td>
<td>(0.03)</td>
<td>(0.02)</td>
</tr>
<tr>
<td>3. Like reading. 1=Yes</td>
<td>0.32***</td>
<td>0.49***</td>
<td>0.35***</td>
</tr>
<tr>
<td></td>
<td>(0.03)</td>
<td>(0.03)</td>
<td>(0.03)</td>
</tr>
<tr>
<td>4. Borrow books from school library, 1=Yes</td>
<td>-0.04</td>
<td>0.00</td>
<td>-0.01</td>
</tr>
<tr>
<td></td>
<td>(0.04)</td>
<td>(0.06)</td>
<td>(0.04)</td>
</tr>
<tr>
<td>5. School has library. 1=Yes</td>
<td>0.07</td>
<td>0.03</td>
<td>0.06</td>
</tr>
<tr>
<td></td>
<td>(0.05)</td>
<td>(0.06)</td>
<td>(0.05)</td>
</tr>
<tr>
<td>6. Parents buy books for students. 1=Yes</td>
<td>-0.38***</td>
<td>-0.26***</td>
<td>-0.28***</td>
</tr>
<tr>
<td></td>
<td>(0.04)</td>
<td>(0.04)</td>
<td>(0.03)</td>
</tr>
<tr>
<td>Constant</td>
<td>0.18***</td>
<td>-0.11</td>
<td>0.20***</td>
</tr>
<tr>
<td></td>
<td>(0.01)</td>
<td>(0.16)</td>
<td>(0.01)</td>
</tr>
<tr>
<td>Observations</td>
<td>6,944</td>
<td>6,944</td>
<td>6,288</td>
</tr>
<tr>
<td>R-squared</td>
<td>0.023</td>
<td>0.086</td>
<td>0.044</td>
</tr>
</tbody>
</table>

Notes:

Cluster-robust standard errors adjusted for clustering at the school level in parentheses. *significant at 10%; **significant at 5%; ***significant at 1%.

County dummies and school fixed effects are used.

Data source: Authors' survey, 2015