RENAISSANCE

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Education Leader's Guide to Reading Growth

A research-driven guide to the most essential aspects of high-quality reading practice and the elements that accelerate reading growth, designed especially for administrators, school principals, and other education leaders.

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Why read this guide?

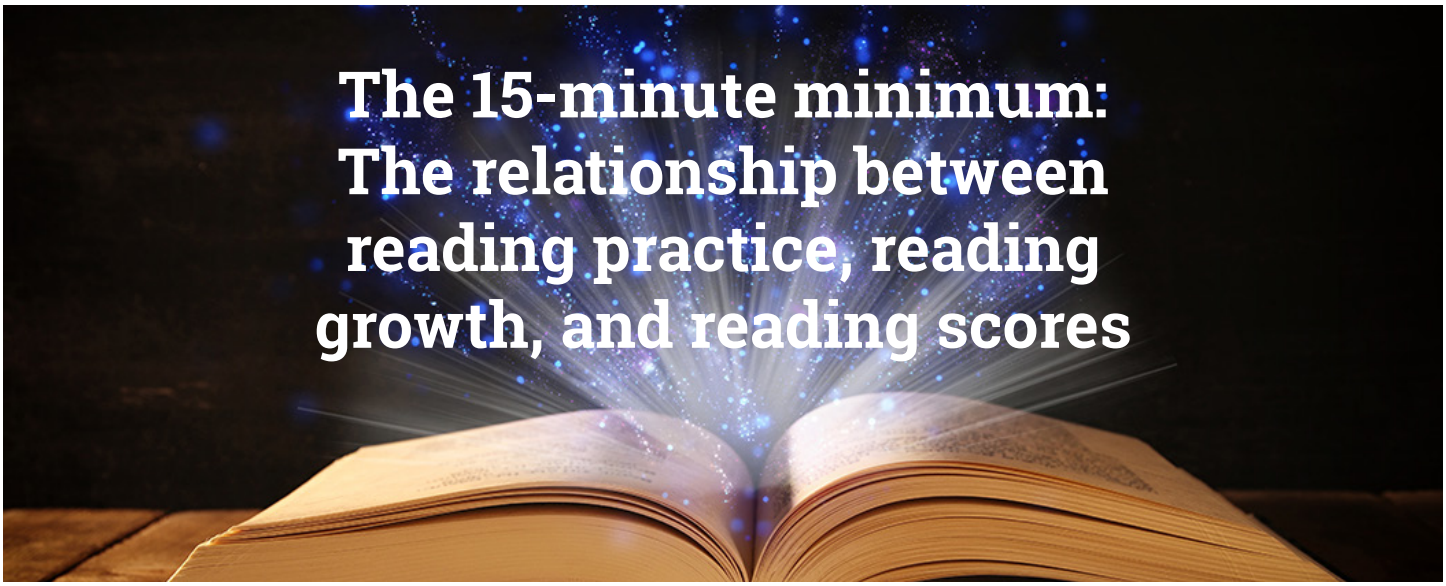
A survey of more than 2,000 educators and literacy experts found that 66% of classroom teachers, 76% of reading/literacy specialists, and 81% of literacy/instructional coaches think it's important or **extremely important that administrators act as literacy leaders in their schools**. They wanted administrators to engage in activities related to building a culture that promotes and supports literacy, such as leading literacy initiatives and providing necessary resources for effective instruction.

What do you need to know to become an effective literacy leader?

The *Education Leader's Guide to Reading Growth* is designed to help curriculum directors, principals, and other school leaders explore and enhance their roles as highly effective literacy leaders for their staff, students, and communities. This six-part guide explores **key research about reading practice, growth factors, motivation, comprehension, and other elements that you need to know to support student success**. We encourage you to share this guide with colleagues, peers, teaching staff, community members, and everyone else with an interest in advancing literacy for all learners.

Source: International Literacy Association. (2018). What's hot in literacy report. Newark, DE: Author.

Education Leader's Guide to Reading Growth

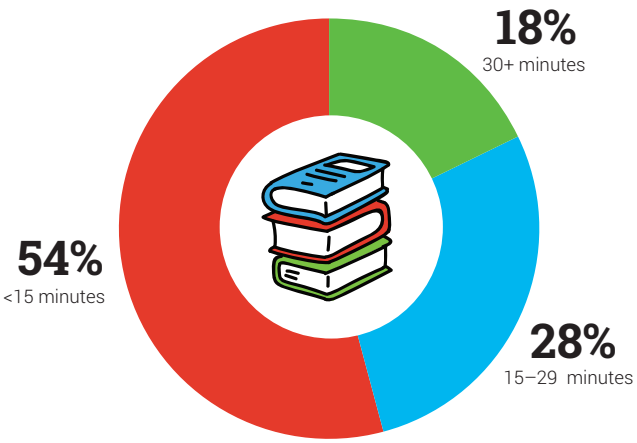


The 15-minute minimum: The relationship between reading practice, reading growth, and reading scores

Studies have shown that, among students who struggle with reading at the beginning of the school year, the ones who surge ahead to reach grade-level benchmarks by the end of the year tend to engage in more high-quality reading practice than those who start and end the year as struggling readers.

However, it's not just struggling readers who could benefit from more reading practice. A study of the reading practices of more than 9.9 million students over the 2015–2016 school year found that **more than half** of the students read less than 15 minutes per day on average.[1]

Most students read less than 15 minutes per day



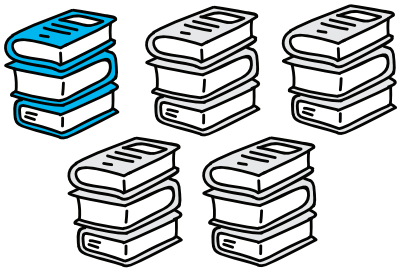
Takeaways for Education Leaders

If you want to increase reading achievement, you need to increase reading practice. Reading practice is more highly correlated with literacy achievement than time spent on homework, relationships with teachers, classroom environment, gender, family structure, or even socioeconomic status.

However, more than half of our students are not getting the amount of reading practice needed to fuel significant reading growth. Fifteen minutes is the magic number at which students start seeing substantial positive gains in reading achievement, and so at least fifteen minutes of daily reading practice should be a goal for all students at all grade levels.

This goal is especially important for older students: Not only do they have the lowest levels of reading practice, but they also have the biggest score gaps between students who practice little and students who practice a lot. It is time to put as much focus on reading practice as we do on school culture, student-educator relationships, and socioeconomic factors.

Fewer than one in five students averaged a half-hour or more of reading per day, and fewer than one in three read between 15 and 29 minutes on a daily basis.



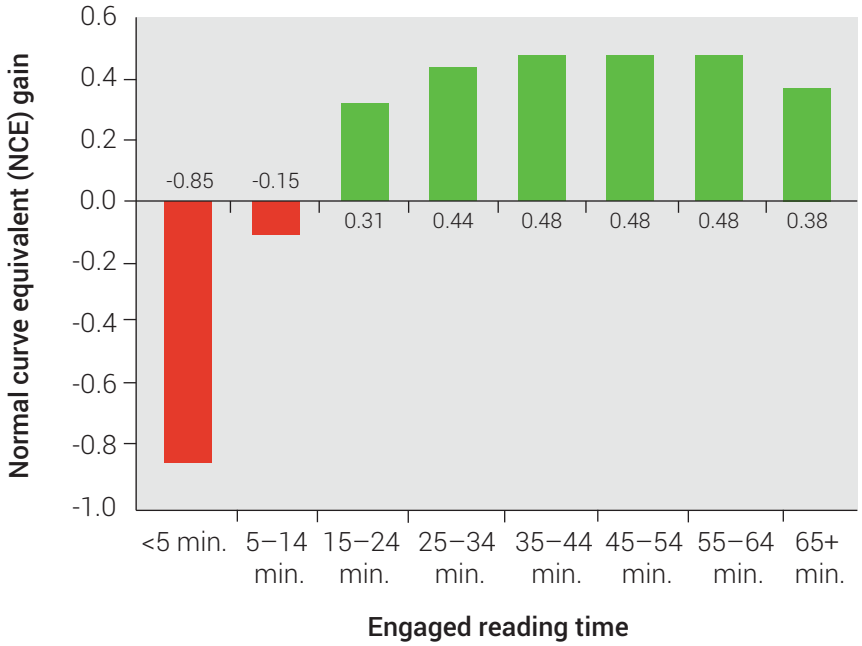
Fewer than **one in five students** reads an average of **30 or more minutes per day.**

The problem is that 15 minutes seems to be the "magic number" at which students start seeing substantial positive gains in reading achievement, yet less than half of our students are reading for that amount of time.

An analysis comparing the engaged reading time and reading scores of more than 2.2 million students found that students who read less than five minutes per day saw the lowest levels of growth, well below the national average.[2] Even students who read 5–14 minutes per day saw sluggish gains that were below the national average.

Only students who read 15 minutes or more a day saw **accelerated reading gains**—that is, gains higher than the national average—and students who read just over a half-hour to an hour per day saw the greatest gains of all.

15+ minutes of daily reading accelerates reading gains



Although many other factors—such as quality of instruction, equitable access to reading materials, and family background—also play a role in achievement, the consistent connection between time spent reading per day and reading growth cannot be ignored.

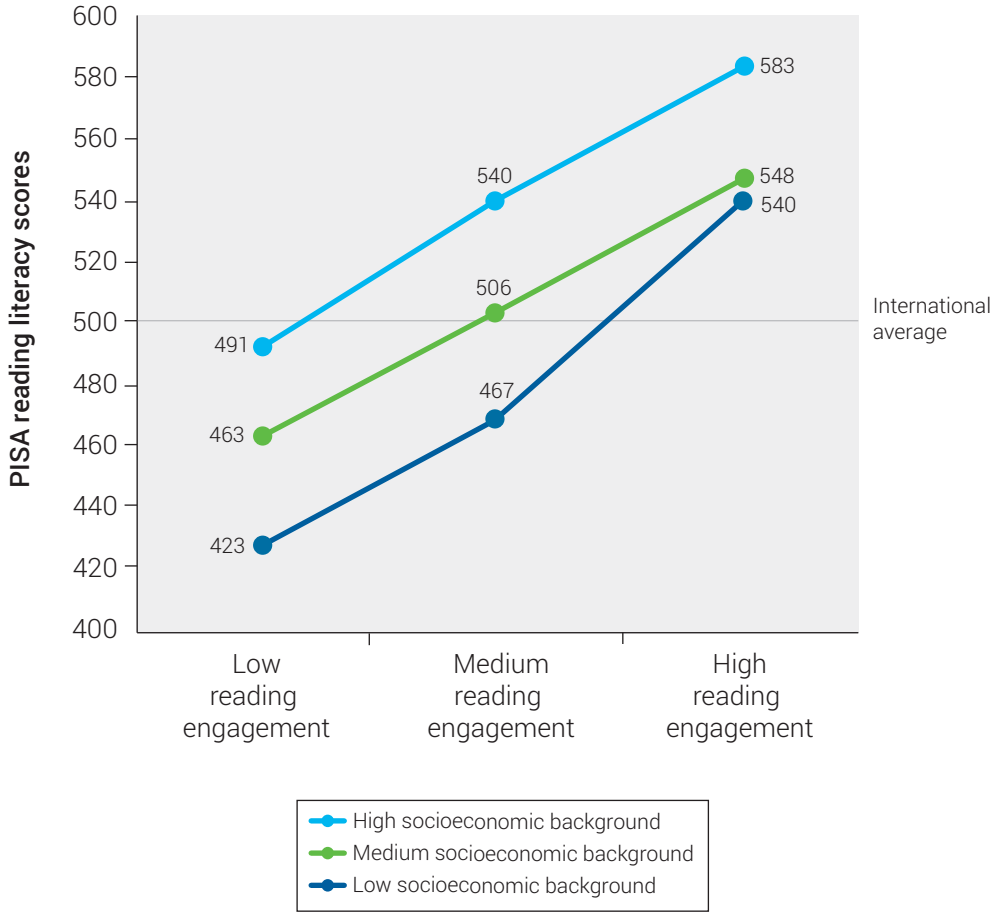
Moreover, if reading practice is linked to reading growth and achievement, then it follows that low levels of reading practice should correlate to low levels of reading performance and high levels of reading practice should connect to high levels of reading performance. This pattern is precisely what we see in student test data.

Strong connections between reading practice and achievement

An analysis of more than 174,000 students' Programme for International Student Assessment (PISA) scores revealed that **connection between reading engagement and reading performance was "moderately strong and meaningful"** in all 32 countries examined.[3] On average, students who spent more time reading, read more diverse texts, and saw reading as a valuable activity scored higher on the PISA's combined reading literacy scale.

The study also found a student's level of reading engagement was more highly correlated with their reading achievement than their socioeconomic status, gender, family structure, or time spent on homework. In fact, students with the lowest socioeconomic background but high reading engagement scored better than students with the highest socioeconomic background but low reading engagement.

High reading engagement equals high reading scores for all socioeconomic groups



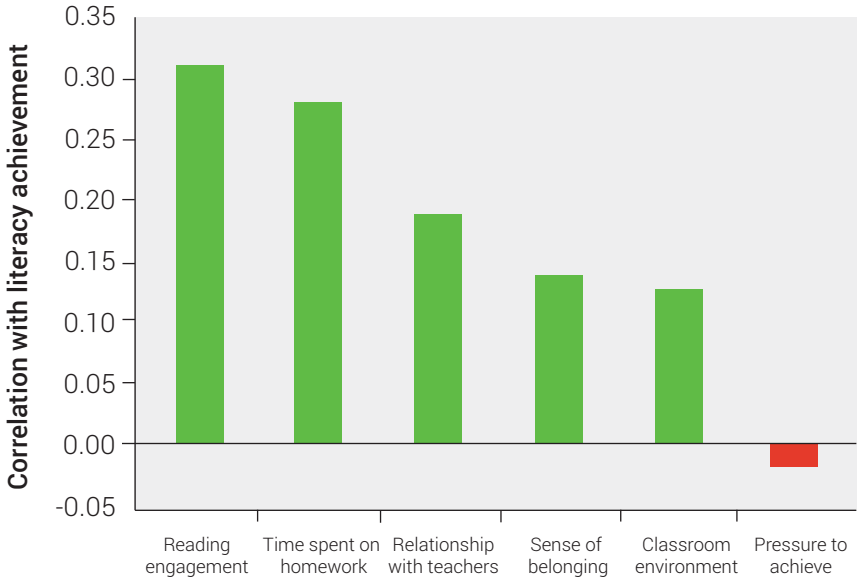
Overall, students with high reading engagement scored significantly above the international average on the combined reading literacy scale, **regardless of their family background**. The opposite was also true, with students with low reading engagement scoring significantly below the international average, no matter their socioeconomic status.

The authors suggested that reading practice can play an "important role" in **closing achievement gaps** between different socioeconomic groups. Frequent high-quality reading practice may help children compensate for—and even overcome—the challenges of being socially or economically disadvantaged, while a lack of reading practice may erase or potentially reverse the advantages of a more privileged background. In short, reading practice matters for kids from all walks of life.

For students within Australia, reading practice may not simply be more important than socioeconomic status—it may also be more important than many school factors.

Looking at students' PISA scores, we see that reading engagement had a higher correlation with reading literacy achievement than time spent on homework, relationships with teachers, a sense of belonging, classroom environment, or even pressure to achieve (which had a negative correlation). In addition, a regression analysis showed **achievement went up across all measures of reading literacy performance when reading engagement increased**.

Reading engagement is highly correlated with literacy achievement

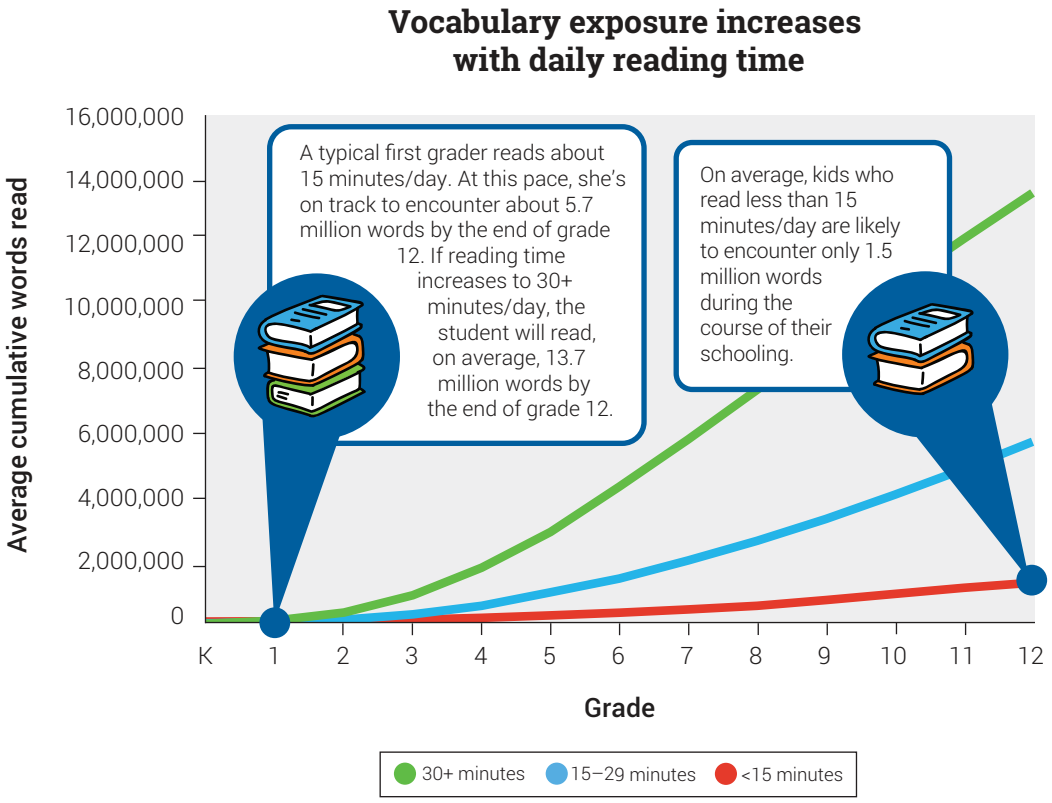


The long-term effects of reading practice

What's the difference between kids who read more than 30 minutes per day and those who read less than 15 minutes per day?

Twelve million.

Between kindergarten and twelfth grade, students with an average daily reading time of 30+ minutes are projected to encounter 13.7 million words. At graduation, their peers who averaged less than 15 minutes of reading per day are likely to be exposed to only 1.5 million words. The difference is more than 12 million words. Children in between, who read 15–29 minutes per day, will encounter an average of 5.7 million words—less than half of the high-reading group but nearly four times that of the low-reading group.[6]



Some researchers estimate students learn one new word of vocabulary for every thousand words read.[6] Using this ratio, a student who reads 1.5 million words would learn only 1,500 new vocabulary words from reading, while a student who reads 13.7 million words would learn 13,700 new vocabulary terms—more than **nine times the amount of vocabulary growth**.

This is especially important when we consider that students can learn far more words from reading than from direct instruction: Even an aggressive schedule of 20 new words taught each week will result in only 520 new words by the end of the typical 36-week school year. This does not mean that reading practice is "better" than direct instruction for building vocabulary—direction instruction is key, but teachers can only do so much of it. Instead, we ask educators to imagine the potential for vocabulary growth if direct instruction, structural analysis strategies, and reading practice are all used to reinforce one another.

Vocabulary plays a critical role in reading achievement. Research has shown that more than half the variance in students' reading comprehension scores can be explained by the depth and breadth of their vocabulary knowledge—and these two vocabulary factors can even be used to predict a student's reading performance.[7]

So what are we to do, when reading practice is so clearly connected to both vocabulary exposure and reading achievement, but not enough students are getting enough reading practice to drive substantial growth?

The answer seems clear. We need to make increasing reading practice a top priority for all students in all schools. Making reading practice a system-wide objective may be one of the most important things we can do for our students' long-term outcomes, especially when we combine it with high-quality instruction and effective reading curricula. It is time to put as much focus on reading practice as we do on school culture, student-educator relationships, and socioeconomic factors.

However, not all reading practice is built the same. Quantity matters, but so does quality. In the next section, *Growth factors: The zone of proximal development, reading material diversity, and student effort*, we explore how you can ensure your students are getting the most out of every minute of reading practice.

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Education Leader's Guide to Reading Growth

Growth factors: The zone of proximal development, reading material diversity, and student effort

Your students need more reading practice. Reading practice doesn't just help struggling readers get on track for success; it can help all students—from all walks of life—accelerate reading gains and improve performance.

However, educators don't have infinite time: There are only six or seven precious hours in a typical school day. Given how much needs to be accomplished in this narrow window, it can be hard to ask teachers and students to stuff much more into their already-packed schedules.

That's why it's so essential to get the most out of every minute of reading practice. In this section, we examine three different elements—or "growth factors"—that help contribute to high-quality reading practice.

Zone of proximal development

Reading material diversity

Student effort

Note this isn't an exhaustive list of all the variables that may influence the effectiveness of reading practice—for example, the critical element of instruction is not covered—but rather a starting point to help guide your efforts around practice in the right direction.

Takeaways for Education Leaders

Given how much needs to be accomplished in a school day, it's essential to get the most out of every minute of reading practice. Maximize reading practice by ensuring teachers and coaches know to focus on three key factors that help accelerate reading growth:

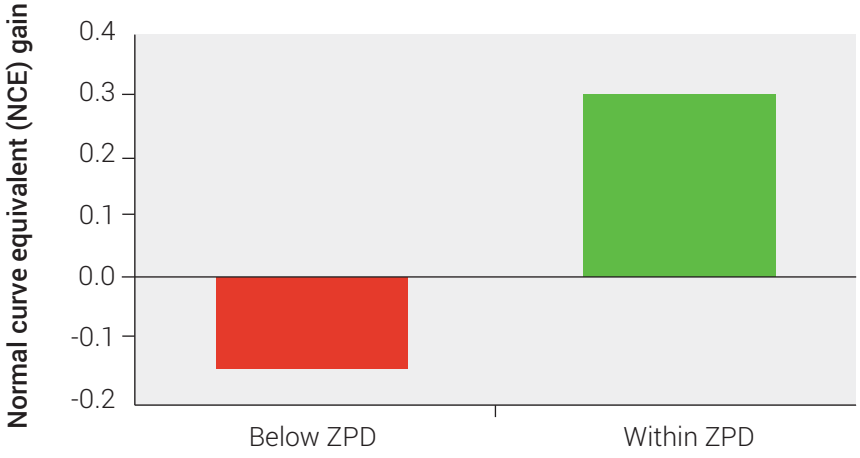
- The **zone of proximal development** matches students with "just-right" reading materials with enough of a challenge to build skills but not so challenging that they frustrate or de-motivate students. Use a valid, reliable assessment to identify each student's reading level and ZPD.
- **Books and other long, complex texts** are essential for students to become diversified readers—and diversified readers of long texts perform better than all other reader profiles. Make sure students have access to books they can take home.
- **Current effort** has a bigger impact on achievement than socioeconomic status, family structure, or peer groups. Tell students it's never too late to start trying—they'll see the effect of their efforts even if they never tried hard before.

Growth factor: The zone of proximal development

The first factor for powering growth through reading practice that we'll examine is the **zone of proximal development, or ZPD**.

A study of more than 2.2 million students showed that students achieved accelerated reading gains—that is, grew at a faster rate than the national average—when they read within their ZPD, but did not when they read below their ZPD.[1] This is only looking at students who averaged 60% or better on literal comprehension quizzes, as scores below 60% may indicate that a student did not actually read the book, did not put effort into understanding the book, or did not have the reading skills, background knowledge, or vocabulary needed to comprehend the book's topic.

Reading growth is accelerated in the zone of proximal development (ZPD)*

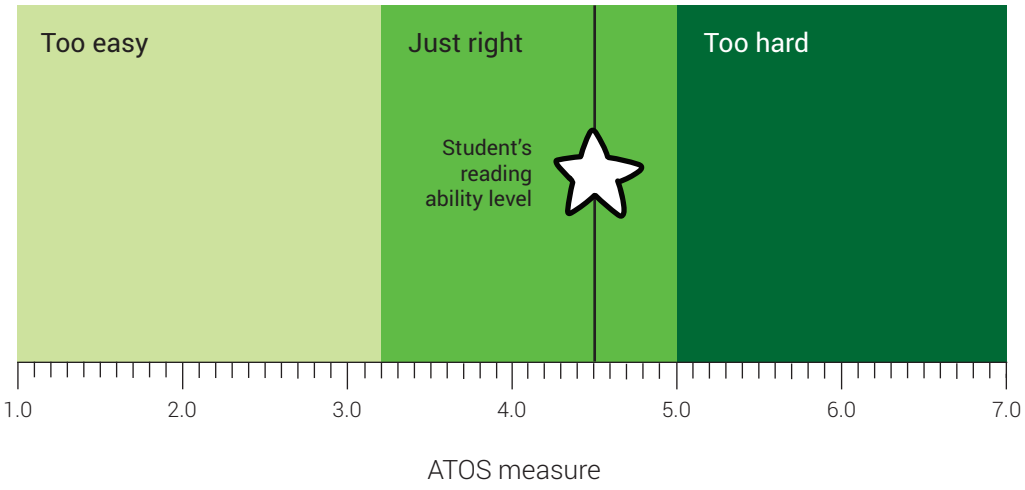


When literal reading comprehension is 60% or higher.

So what is ZPD? Russian psychologist Lev Vygotsky first introduced the concept in the late 1920s. In general terms, it describes the range between what a student is able to do independently, without assistance, and what they are unable to do, even with assistance. Tasks that fall between these points—activities that a learner can accomplish with scaffolding, guidance, or collaboration—are within a student's ZPD. A key element of ZPD is that it is specific to each learner and will change as that learner grows and refines their skills.

When it comes to reading practice, a different definition of ZPD often emerges. Frequently, ZPD is used to describe the range of text complexity that a student can **read independently but not effortlessly**—some educators may also call this a student's **"instructional level"** or **"independent reading level."** Reading materials in a student's ZPD should offer just enough challenge to help them build stronger reading skills, but not so much that they become frustrated and discouraged from further reading. Depending on the reading scale and formula used, ZPD ranges often start just below a student's measured reading ability and then extend to texts that are just above their ability level.

Visualization of a student's zone of proximal development (ZPD)

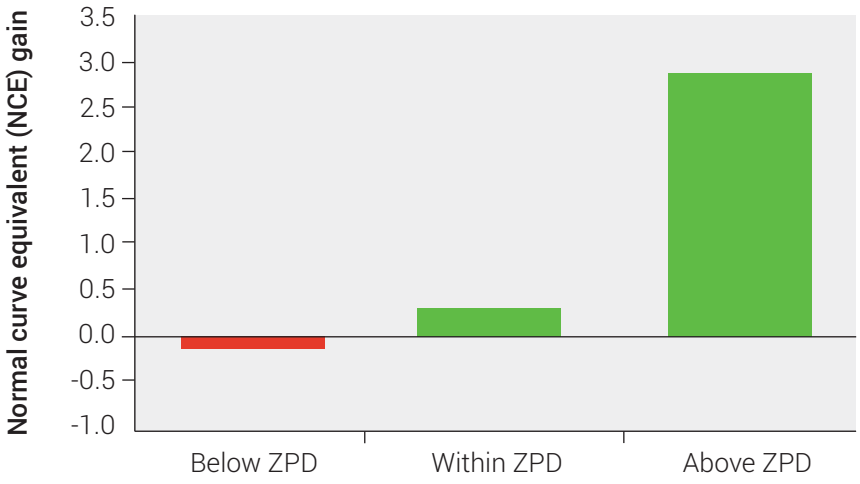


While ZPD represents an optimal range of reading challenge for a given student, it is imperative to note that not everything a student reads must be within their ZPD. Moreover, **children should not be limited to only those reading materials within their ZPD**.

Plenty of reading materials below a student's ZPD can contribute to their socioemotional learning; expand their academic vocabularies; build knowledge in science, social studies, and other content areas; and grow their love of reading. These are all important reading outcomes, even if they may not necessarily contribute to accelerating reading gains. As long as a student is reading plenty of materials within their ZPD and hitting growth goals, there is no reason to prevent them from reading some below-ZPD materials.

At the other end of the scale, there can be great benefit to exposing children to materials that are above their ZPD. When children have the skills, scaffolding, and support needed to keep literal comprehension above 60%, above-ZPD reading is associated with significant positive reading gains. Examples of scaffolding may include teaching content and concepts prior to reading, previewing vocabulary, listening to the book read aloud, or reading with a more skilled partner.

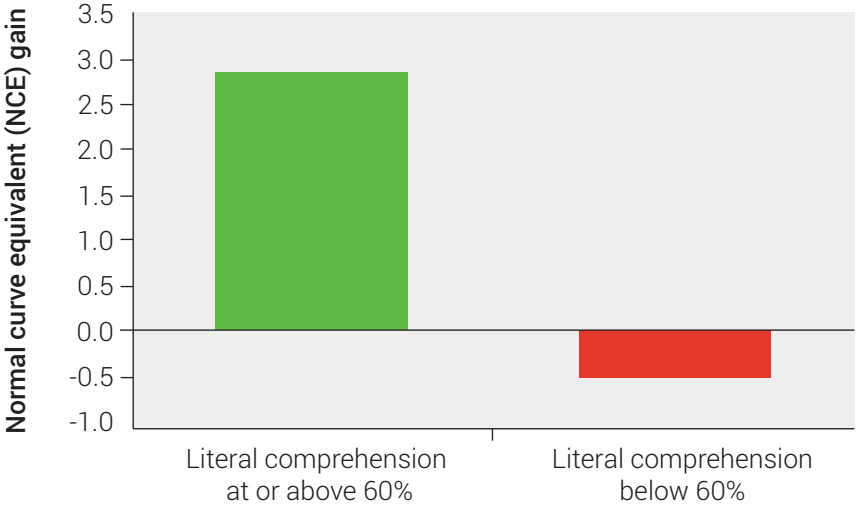
Reading above ZPD can accelerate growth*



*When literal reading comprehension is 60% or higher.

However, it should be noted that merely giving students harder books will not automatically accelerate reading gains—and could actually slow progress if they cannot understand them. To maximize gains, it is better to give students a book within their ZPD that they can understand than a book above their ZPD that they cannot.

Growth slows if a student reads above their ZPD but does not understand the text



In addition to slowing growth, pushing students to read above their ZPD may also decrease motivation. One study published in the *Journal of Educational Research* noted that students were less motivated to read and exhibited fewer on-task behaviors when they were asked to read materials far above their skill level, even when paired with more proficient readers for support.[2] Although these students saw reading level gains, further analysis found no statistically significant difference in gains between the students reading far above their instructional level and those reading at their instructional level.

In summary, the rules of thumb might be:

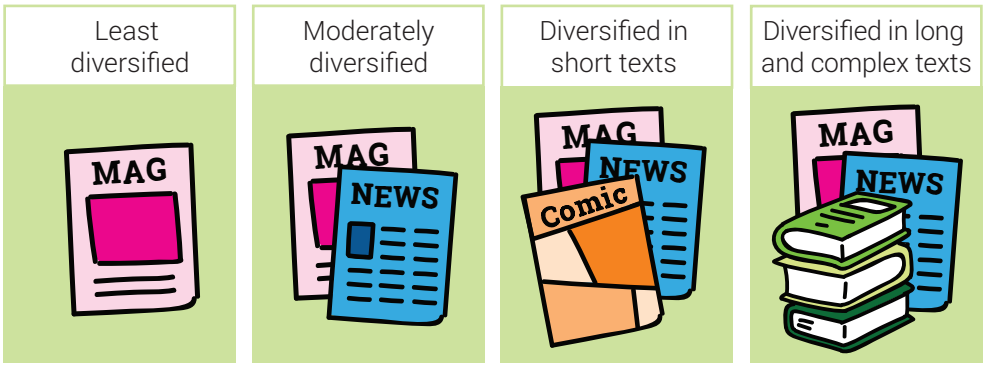
- Encourage lots and lots of within-ZPD reading to ensure reading gains.
- Encourage below-ZPD reading if the content will help a student grow in areas outside of the language arts or will increase motivation.
- Encourage above-ZPD reading if the student has both the motivation and the support/scaffolding needed to meaningfully engage with the text.

Growth factor: Quality and diversity of reading materials

An analysis of the Programme for International Student Assessment (PISA) scores looked at the reading habits of more than 174,000 students across 32 countries.[3] The study found that students generally fell into one of four categories or "reader profiles":

- "Least diversified readers," who only read one type of content with any real frequency (multiple times per month);
- "Moderately diversified readers," who read two types of content (typically magazines and newspapers) with frequency and occasionally read other content types;
- "Diversified readers in short texts," who frequently read short-form content (such as comics, magazines, and newspapers) and occasionally read long-form content; and
- "Diversified readers in long and complex texts," who frequently read both long-form and short-form content.

The four reader profiles

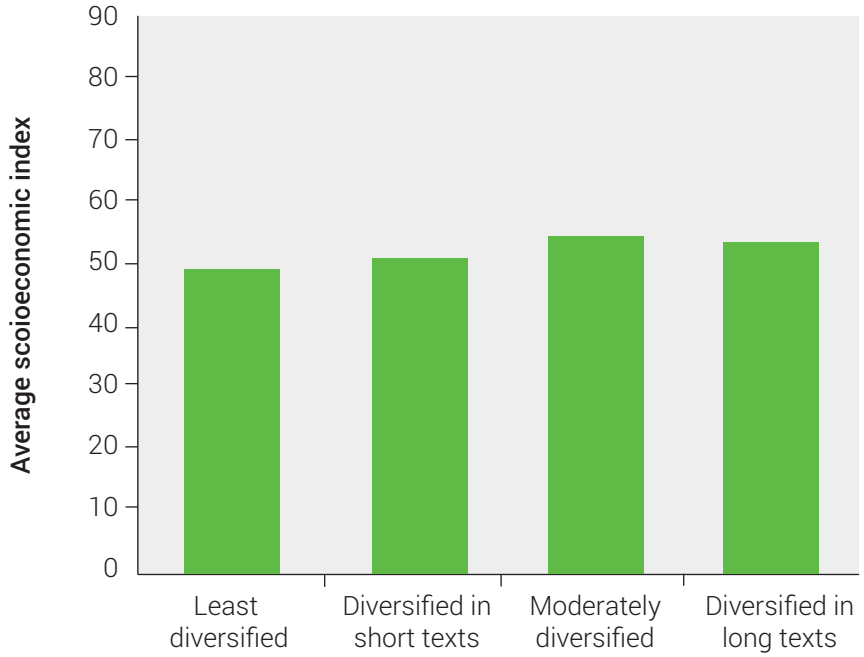


It's not just reading a lot that's connected to high scores—it's reading lots of different texts, too. Based on this data, a steady diet of only short-form content such as newspaper articles, magazine features, comic books, short stories, or book excerpts does not appear to help students reach the highest levels of reading achievement. **They need books**. Frequent reading of fiction and nonfiction books, combined with frequent or occasional reading of shorter texts, appears to be a key part of the overall recipe for reading success.

Why do long, complex texts have such an impact on achievement? Although definitive data is not available, it may be that these longer texts not only allow students to build general background knowledge, but to also **build deeper background knowledge**—to explore a single topic or concept more extensively for richer understanding. They may also grow a student's reading stamina, i.e., their ability to focus on independent reading for longer periods of time without being distracted or disengaged from the task.

Note that socioeconomic status appeared to play only a small role in which type of reader a student was. The average socioeconomic differences between the four reader profiles were found to be small in every country studied.

Reader profile has little relation to socioeconomic status



This matches the data explored in Section 2, *The 15-minute minimum: The relationship between reading practice, reading growth, and reading scores*, where a student's level of reading engagement was a stronger predictor of their reading performance than their socioeconomic status.

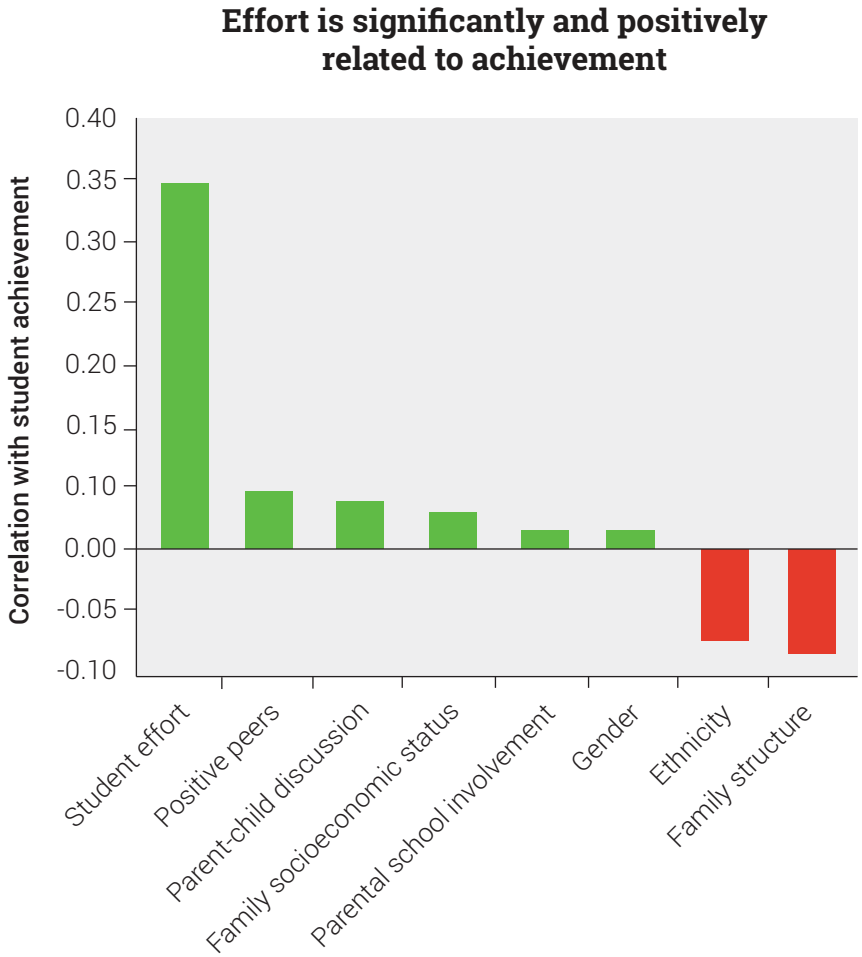
What did seem to matter, however, was a child's access to reading material at home—specifically books. Students in the "long texts" group had the highest access to books, while students in the "least diversified" group had the lowest access to books.

What does this mean for schools? While educators can't control students' home environments, they can boost equity of access by investing in school and classroom libraries and encouraging students to bring books home with them. Subscription services that offer a large catalog of online articles can also expand a child's options, but should be seen only as an addition to—and not a replacement for—actual books that children can read at home.

Growth factor: Student effort

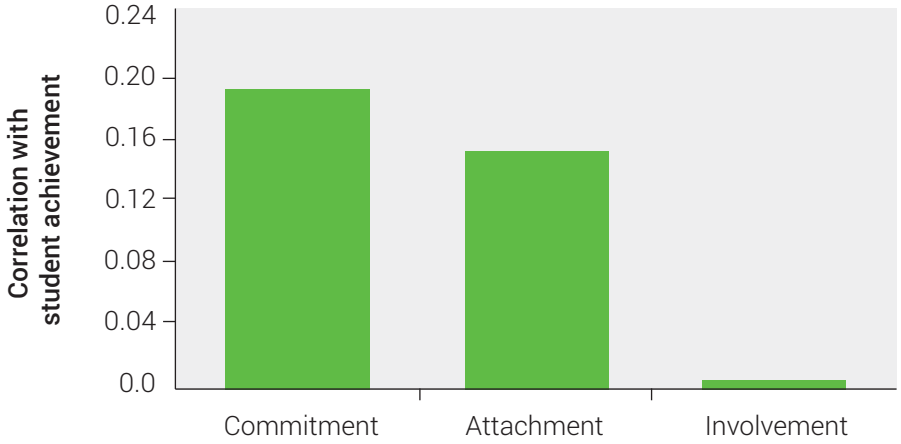
A study of 12,000 students across 715 high schools found that student effort was significantly and positively related to a student's achievement as measured by their GPA.[4]

A multilevel regression analysis further found that student effort was a better predictor of achievement than any other individual-level variable examined, including gender, family structure, ethnicity, and family socioeconomic status, as well as behavioral factors such as associating with peers who encouraged positive education-oriented behaviors (positive peers), discussing school with parents or guardians (parent-child discussion), and having parents or guardians who were involved in school activities (parental school involvement).



When examining student effort more closely, a specific type of effort—commitment—had the strongest relationship with achievement. This describes a student's commitment to their education: taking an interest in their schoolwork, trying to stay on task in class, working hard to achieve good grades, and understanding the role of education in post-school success (i.e., getting a job).

3 types of effort: Commitment is most closely correlated with achievement



Attachment, the extent to which students care about and have positive feelings for school, was the next highest. Involvement, a student's participation in extracurricular activities (e.g., band or sports), did not have a significant correlation with achievement.

It should be noted that commitment and attachment, as individual factors, each had a greater correlation with achievement (0.19 and 0.15 correspondingly) than the next-highest factor (positive peers at 0.09). Simply put, effort seems to matter a lot when it comes to achievement.

And effort appears to have a huge impact for all different types of students. A separate analysis of nearly 7,000 high school students across four different tracks—honors/advanced, academic, general (reference), and vocational/other—found that **effort had significant, positive effects on achievement in every track**. The results further indicated that the effects of effort on learning are the same for all students, regardless of their track.[5]

Another important finding was that, while prior effort did have an effect on current achievement—learning is cumulative, after all—the effect was much smaller than that of current effort. The authors concluded that students who try harder learn more, regardless of how much effort they exerted in previous years. In other words, it's never too late for students to see the benefits of trying harder, even if they didn't do so in the past.

In the context of reading practice, we suggest that students who have not previously put much time or effort into reading could still reap notable benefits by starting today—especially if they start applying themselves to a wide variety of reading materials within their ZPD. The combination of ZPD, diversified texts, and effort all help students to get more out of every minute they spend reading, with the potential to fuel greater gains and higher achievement.

We've now set our students up for accelerated reading gains. We've set aside at least 15 minutes every day for reading practice. We're encouraging students to read books that are in their zone of proximal development. We've given students access to a wide range of texts, including books, and we're making sure students can take those texts home for after-school reading. We've told students how important effort is and are motivating them to try their best when reading.

But how do we know growth is actually happening without waiting for midyear or end-of-year testing? Obviously, nonstop testing is not an option. Thankfully, there is a way to monitor high-quality reading practice—a reliable indicator of growth that's quick and easy for both students and educators. Explore the power of literal comprehension in the next section, *Literal comprehension as a meaningful predictor of overall reading achievement*.

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Education Leader's Guide to Reading Growth

Literal comprehension as a meaningful predictor of overall reading achievement

You've set your students up for the reading success they need to be college- and career-ready graduates. At least 15 minutes of every school day are reserved for reading practice. Teachers have the tools needed to identify a student's reading level and ZPD. The library is stocked full of diverse fiction and nonfiction books. You're recognising and celebrating student effort.

But is it actually working?

It's happened to all of us: After getting all the ingredients and following the recipe's steps exactly, the meal just didn't turn out as expected. But your students are infinitely more important than dinner, and you need to know that everything is working as expected now—you can't wait until the end of the year to see if the recipe was a success or failure.

So how do we monitor reading growth without hours and hours of formal testing? How do we ensure students are truly on the path to achievement?

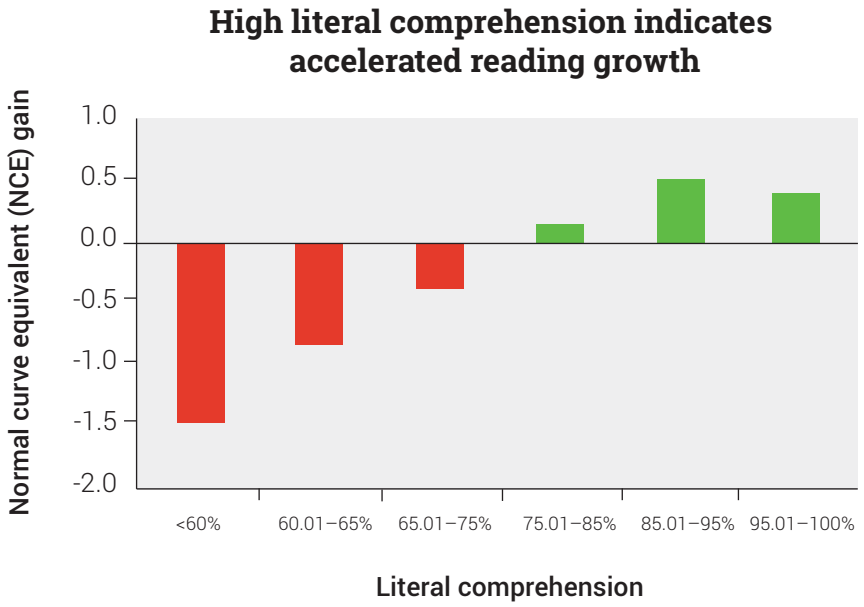
Research suggests there is a quick and easy way to do exactly that. A study of the reading habits of more than 2.2 million students using a research-based reading practice program revealed that **literal comprehension** can be used to predict reading gains. Students who averaged 75% or higher on the program's short literal comprehension quizzes throughout the school year were found to have made **accelerated, or higher-than-average, gains**.

Takeaways for Education Leaders

Rather than constantly screening or formally assessing students—or only checking on student progress a few times a year—have educators use a quick and effective predictor of overall reading achievement: literal comprehension. In only a few minutes, literal comprehension quizzes can help teachers determine if students are putting effort into their reading, reading texts at the right level of challenge, getting the most out of every minute of reading, or need support or intervention.

High literal comprehension is a predictor of accelerated reading gains, while low literal comprehension is a predictor of slowed growth. When students read with high literal comprehension, increasing reading time also increases reading growth. Conversely, when students read with low literal comprehension, reading growth remains low no matter how long students read. Research shows that students with high literal comprehension (85% or better) and high reading time (30+ minutes per day) were nearly twice as likely to achieve the college and career readiness benchmarks for their grade as typical students. If you are interested in increasing college and career readiness, then a program that provides and tracks literal comprehension quizzes is a must-have resource.

The greatest gains were seen when students averaged 85% to 95% on quizzes. On the other hand, students with lower average scores in literal comprehension saw lower-than-average gains.[1]

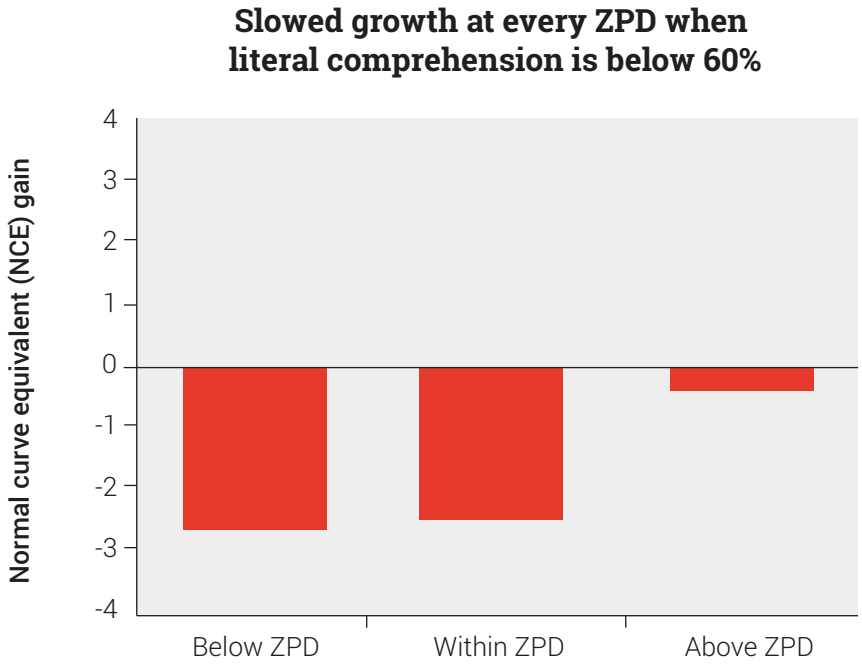


To be clear, literal comprehension is not the end goal of reading instruction and practice, especially in the middle and upper grades. Inferential comprehension, evaluative comprehension, and other higher-order thinking skills are all critical for students to be successful in school and in life. However, these competencies cannot occur in the absence of literal comprehension—and they are often much more difficult and time-consuming to measure than literal comprehension.

High literal comprehension is the solid foundation students need to build higher-order skills. Low literal comprehension indicates that the fundamentals are missing and deeper comprehension cannot take place. This study found that literal comprehension was a meaningful predictor of overall reading achievement—and thus a very helpful way for educators to monitor students' reading in the months or weeks between lengthier formal assessments.

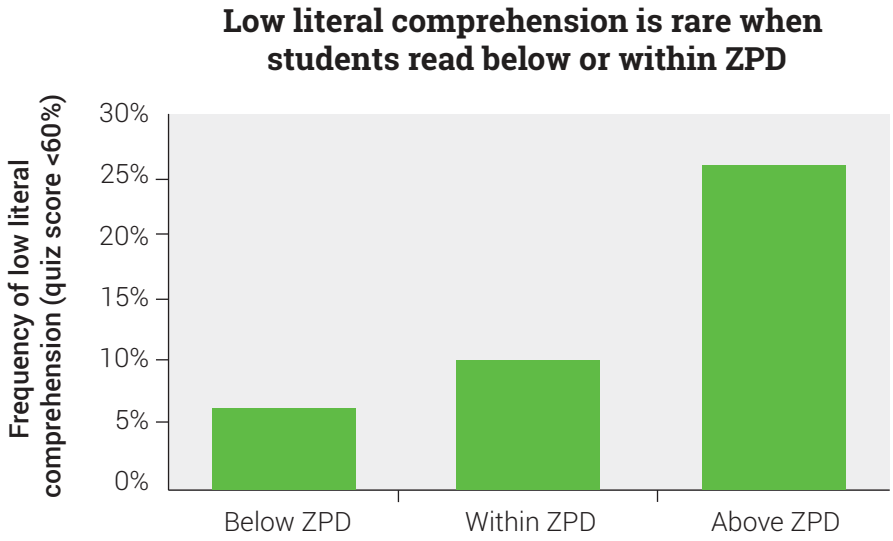
Literal comprehension, ZPD, and growth

The same study also found that, when literal comprehension dips below 60%, reading growth slows regardless of whether a student is reading below, within, or above their zone of proximal development (ZPD).



As discussed in Section 2, *Growth factors: The zone of proximal development, reading material diversity, and student effort*, lower literal comprehension scores may indicate a student did not actually read the text, did not put effort into understanding the text, chose or was assigned a text well above their skill level, needed more instruction and guidance around using comprehension strategies, or did not have the background knowledge or vocabulary needed to comprehend the text's topic.

However, literal comprehension below 60% is quite rare when students read below or within their ZPD. Looking at more than 112 million quizzes, the study found that students scored below 60% on only 6% of quizzes when reading below their ZPD and on only 10% of quizzes when reading within their ZPD.

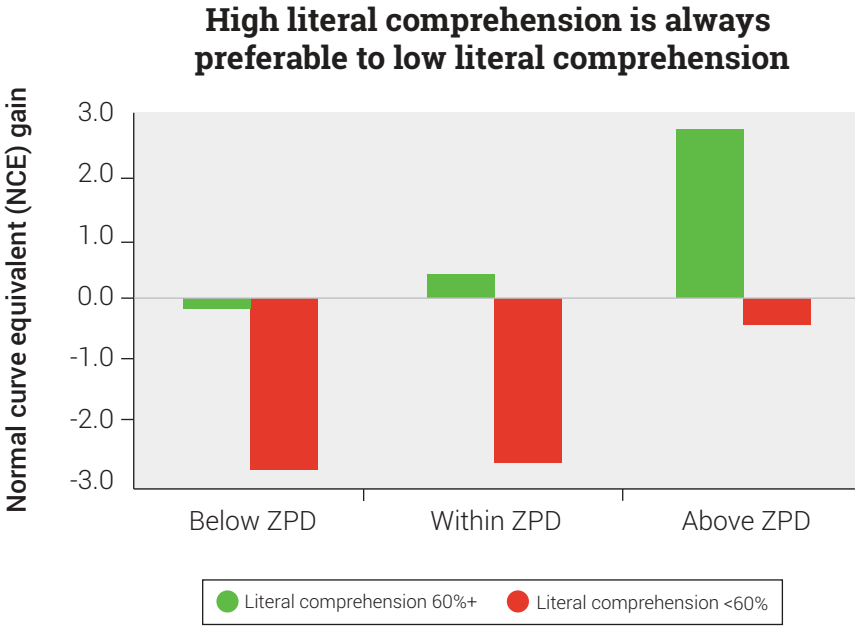


As a result, when it comes to texts within or below a student's ZPD, teachers can use literal comprehension scores as a quick accountability check to ensure students are truly putting effort into their reading and not skimming or entirely skipping texts. If a student is putting forth effort, low average literal comprehension with these texts could be a **"red flag"** indicating that the student is struggling with a specific concept, idea, or vocabulary term, or that the student's reading level has been misidentified and their ZPD set too high. In all cases, teachers should intervene—and the low score is the early "tip off" that empowers them to do so in a timely manner.

Low literal comprehension scores are more common when students read above their ZPD, with students scoring below 60% on more than a quarter of these quizzes. From Section 2, we know that gains are not accelerated when students struggle to comprehend these harder texts; instead the reverse happens and gains decrease.

It may be that a low score on above-ZPD reading is less likely caused by a lack of effort—although that may still happen—and more likely a sign that a student simply needs greater scaffolding or support to engage with the more challenging reading material. Once again, teachers should intervene quickly and the low score is the signal they need in order to do so right away instead of after midyear screening.

When we compare low literal comprehension to higher literal comprehension across all three ZPD levels—below, within, and above—we see **accelerated gains occurred in only two scenarios: when comprehension was above 60% on within-ZPD and above-ZPD texts**.



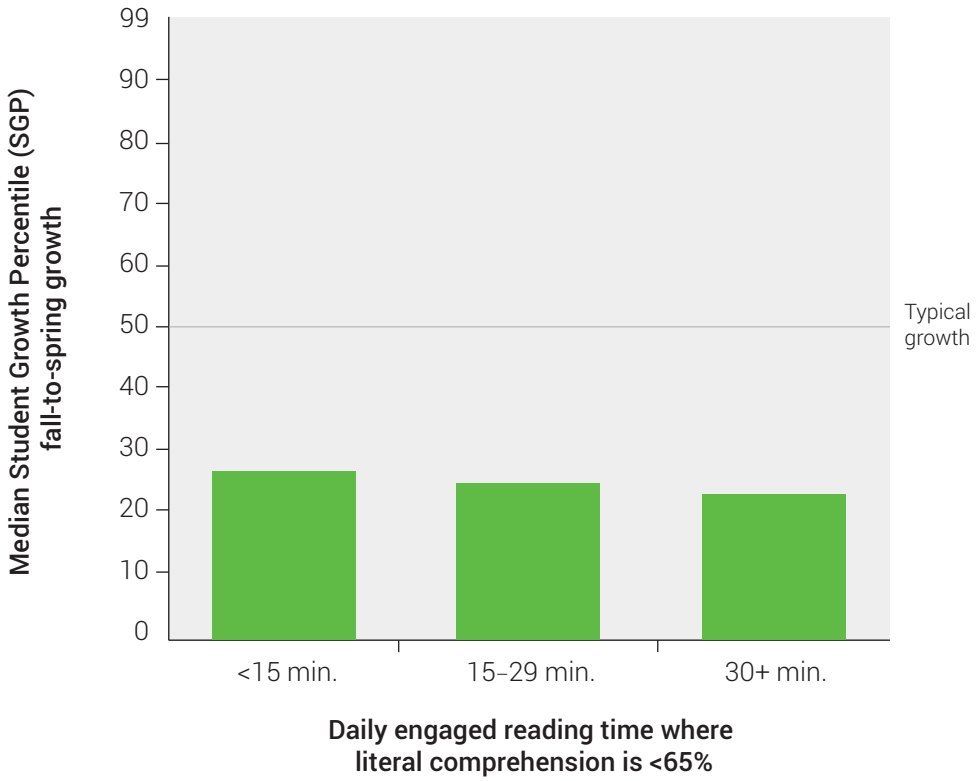
(The greatest growth occurs when students have higher comprehension on an above-ZPD text, but this is less likely to happen—as seen above—and above-ZPD reading may decrease motivation. For high growth and high motivation, we encourage educators to follow the ZPD "rules of thumb" from Section 3 where the majority of a student's reading is within their ZPD.)

Literal comprehension, engaged reading time, and growth

Educators can also use literal comprehension to monitor the quality of reading time—helping to maximise the impact of every minute spent reading. Looking at a comparison of the reading time, literal comprehension, and reading growth of more than half a million students, we see that high literal comprehension is critical for getting the most growth out of each minute spent reading.[1] Based on this data, we offer three main takeaways for the reader.

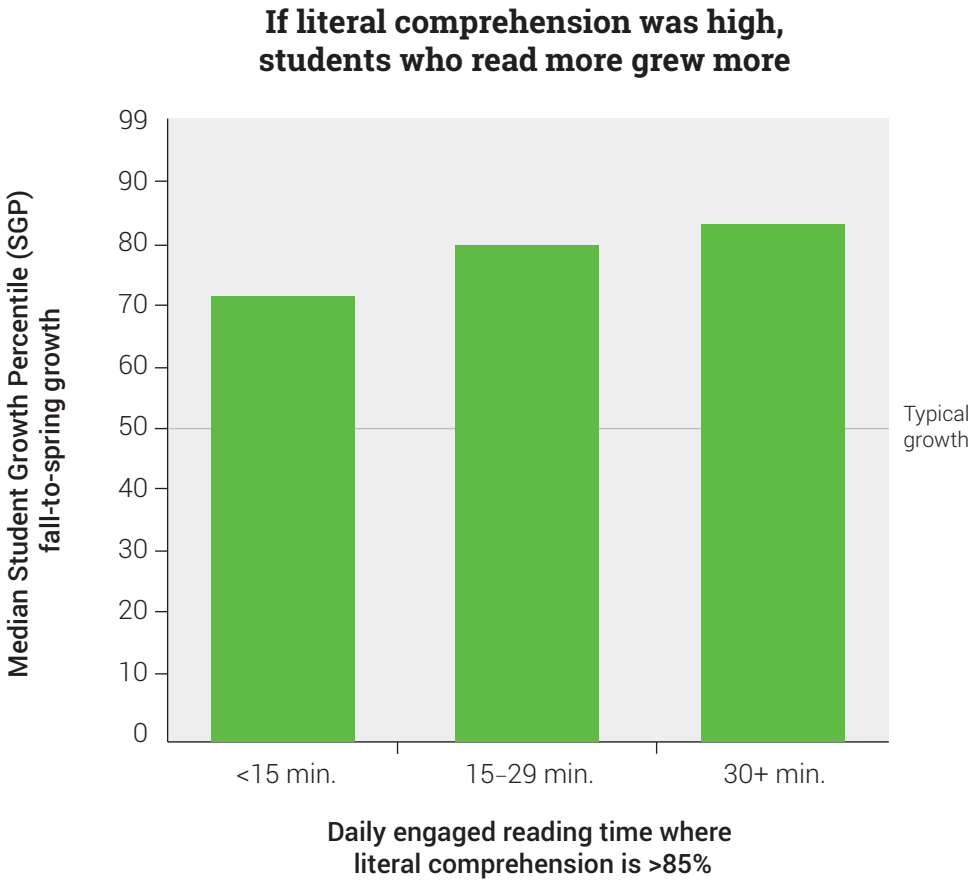
First, when literal comprehension was low, it didn't matter how much time a child spent reading—growth stayed low. Increasing engaged reading time from less than 15 minutes to more than 30 minutes had almost no impact on Student Growth Percentile (SGP) gains if literal comprehension remained low. In other words, if students aren't able to understand what they are reading, spending more time reading won't significantly boost growth. In all three scenarios, growth remained well below average.

If literal comprehension was low, students who read more did not grow more



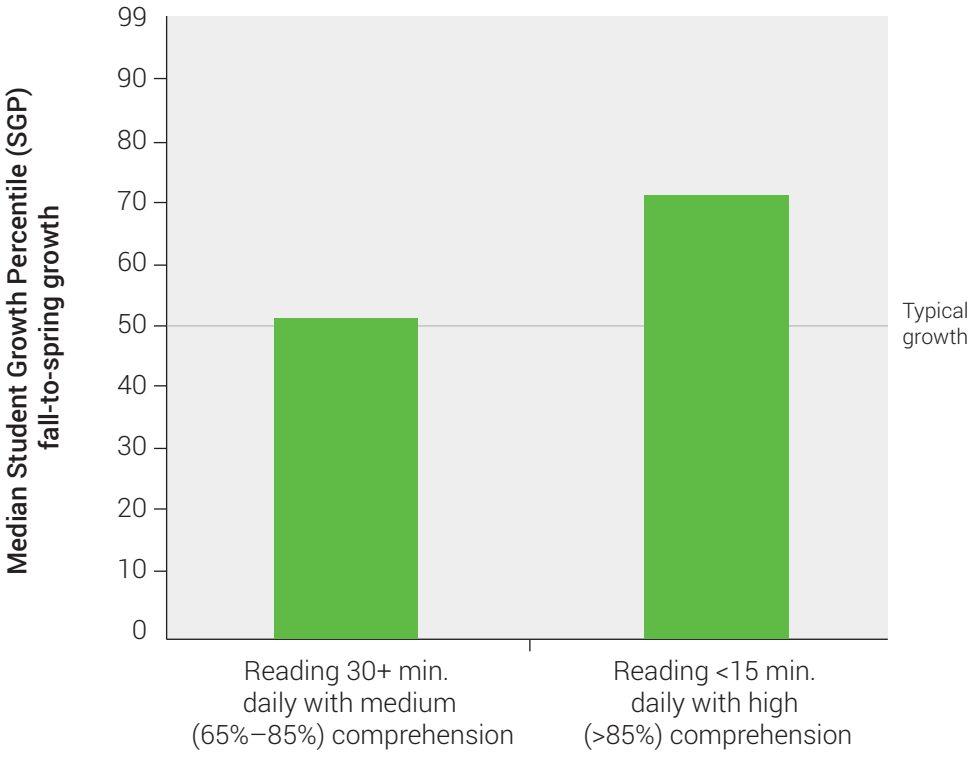
It should be noted that if a student scores below 60% on an individual book quiz, time spent reading that book is not considered "engaged reading time" as the student was not able to meaningfully engage with the book. A student who spends hours and hours reading but consistently scores below 60% on quizzes will have zero minutes of engaged reading time. This student would be included in the <15 min. group in the graph above. If anything, the graph understates how little impact additional reading has when literal comprehension is low.

Second, if literal comprehension was high, indicating high-quality reading practice, even a few minutes of reading were extremely valuable. Even students who read less than 15 minutes with high literal comprehension saw greater than typical growth, and growth increased the longer students spent reading. Students who had 30+ minutes of high-quality reading practice per day saw the greatest growth out of all groups analysed with a median SGP of 83—far above typical growth (SGP of 50).



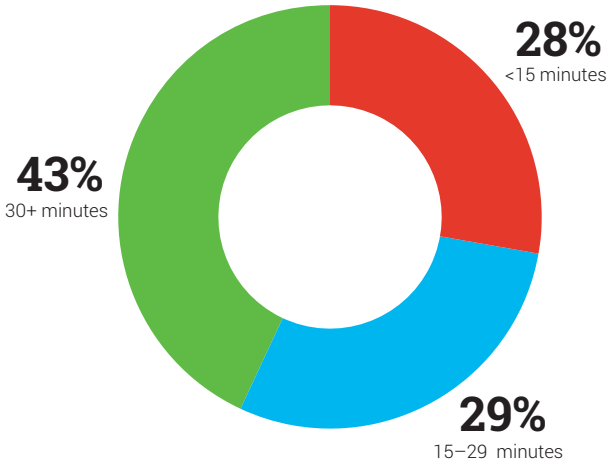
Furthermore, students who read for even a few minutes (less than 15) with high comprehension showed greater growth than those who read more than twice as long (30+ minutes) with medium comprehension. The high-comprehension, short-time group had a median SGP of 71, well above typical growth, while the medium-comprehension, long-time group had an SGP of 51—essentially typical growth (50). Based on this data, educators may want to put as much attention on comprehension as they do on reading time, if not more.

Less reading time at high comprehension saw higher growth than more reading time at medium comprehension



Third, high literal comprehension is most commonly associated with longer engaged reading times. When looking at only those students who averaged 85% or better on literal comprehension quizzes, we see most (72%) had at least 15 minutes of engaged reading time per day. The largest group (43%) had 30 or more minutes of engaged reading time per day.

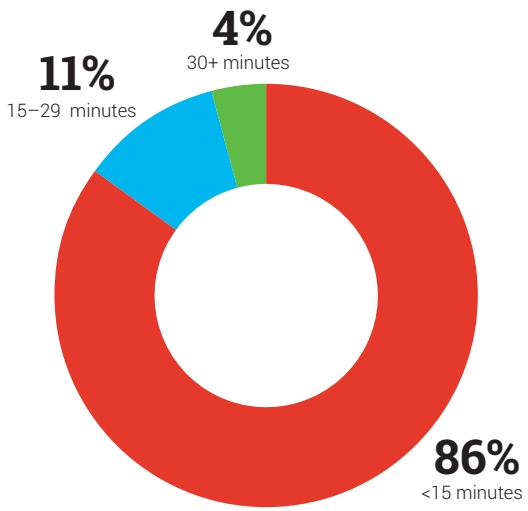
The majority of students with high literal comprehension read at least 15 minutes per day



At the opposite end of the spectrum, when looking at only those students who averaged less than 65% on literal comprehension quizzes, we see the vast majority have less than 15 minutes of engaged reading time per day. As explained earlier, comprehension is used to calculate engaged reading time, so it's not surprising this group had low engaged reading time.

However, it's not impossible to have low average literal comprehension and high engaged reading time—15% of this group had 15 or more minutes of engaged reading time per day, including the 4% that even managed 30+ minutes—it's just incredibly rare.

Students with low literal comprehension are unlikely to have high engaged reading time



For students in this group, focusing on increasing comprehension would be a better option than simply reading for longer at the same low level of comprehension. The typical Student Growth Percentile (SGP) of students with low literal comprehension and less than 15 minutes of engaged reading time was 13; the SGP of students with low literal comprehension and 30+ minutes of reading time was 11. Even when reading stayed under 15 minutes per day, going from low literal comprehension (<65%) to medium literal comprehension (65%–85%) increased SGP from 13 to 30; increasing literal comprehension further to high levels (>85%) brought SGP up to 71.

That's not to say reading time doesn't matter. Reading time does matter quite a lot, as we saw in the Section 1, *The 15-minute minimum: The relationship between reading practice, reading growth, and reading scores*, but it needs to go hand-in-hand with comprehension.

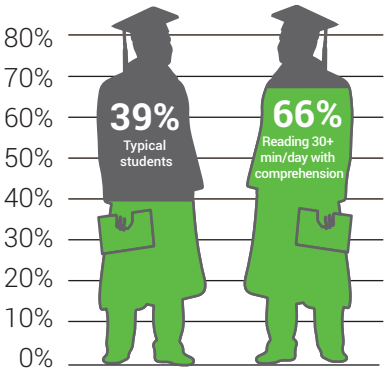
We would guess that the relationship between comprehension and reading is not a simple causal one, but more intertwined—improved comprehension skills may inspire a student to spend more time reading, while an increase in engaged reading time may help students hone and improve newly learned comprehension skills. We would recommend that educators spend time teaching reading comprehension strategies and also make sure that students have enough time to practice and master those strategies.

Reading practice and university and career readiness

Students who spend lots of time reading and read with high comprehension are more likely to have higher levels of growth. They are also more likely to have higher levels of university and career readiness.

A study of 2.8 million students found that students who read 30+ minutes per day with high comprehension (85% or higher) were **nearly twice as likely to achieve the university and career readiness benchmarks** for their year as typical students.

Nearly twice as likely to achieve university and career readiness benchmarks



Students in special populations saw an even greater increase in the percentage of students achieving readiness benchmarks

Struggling readers:
2.8 times
more likely

English learners:
4.8 times
more likely

Free/reduced lunch:
2.5 times
more likely

What's especially impressive is how easy this approach is, requiring only simple literal comprehension quizzes that students can complete in minutes after reading a text, without teachers needing to go through the time-consuming process of scheduling or administering a formal screener or assessment on a weekly or biweekly basis. However, teachers can't be expected to read every book their students read and write corresponding quizzes, so a high-quality reading practice program that provides quizzes for lots of different texts, automatic scoring, and easy reporting is absolutely essential for this growth-accelerating approach.

A quick note about those literal comprehension quizzes. While it may be tempting to use these quizzes to both monitor ongoing growth and provide students with letter grades, educators should be very cautious about the latter.

Consider a student who chooses to read a book about airplanes that's above her ZPD because she wants to better understand her father's favorite hobby. She might struggle comprehending the whole text, faltering on words like *aerodynamics* and *fuselage* and not fully understanding the concept of wingtip vortices. However, at the end of the book she's proud and excited about what she has learned—and can't wait to surprise her dad with her new knowledge—despite scoring 65% on a literal comprehension quiz.

Her teacher has two options. He can give the girl a low mark based on her literal comprehension score, which may discourage her from reading further about STEM topics or risking any books above her ZPD for fear of lowering

her grades. Or he can view the low comprehension score as a learning opportunity and guide her to a kid-friendly resource—like NASA's student site—to help her learn the vocabulary and concepts. This can also help instill the idea that failure isn't the end of learning, but sometimes just step upon the path to mastery, and build up the student's resiliency and growth mindset.

In theory, the teacher could do both, but research shows that when students get both grades and feedback, they focus only on the grades and the feedback doesn't really register.[3, 4]

However, we recognise that grades may be needed in many situations. For these, **a better option might be grading students based on progress toward a set of personalised goals**. For example, if a teacher sets a goal of 7.5 hours of reading per month (about 15 minutes per day) and a child reads 6.0 hours, he might receive a grade of 80%. Teachers could also set goals for maintaining a certain level of average literal comprehension across multiple texts, keeping reading logs, or reading a certain number or percentage of texts within or above a student's ZPD. All of these options would allow our airplane-loving student to try harder texts on occasion, while encouraging her to keep the majority of her reading within her ZPD, and to always try her best to comprehend what she reads.

This prompts our next big question: How can educators set appropriate reading goals and keep students motivated to read? In the next section, *Motivating readers: Goal setting, student choice, and reading growth*, we take a look at the surprising relationship between motivation and achievement, the role of personalised goals, and the many dimensions of motivation.

References

[1] Renaissance Learning. (2015). *The research foundation for Accelerated Reader 360.* Wisconsin Rapids, WI: Author.

[2] Renaissance Learning. (2017). *Trends in student outcome measures: The role of individualized reading practice*. Wisconsin Rapids, WI: Author.

[3] William, D. (2011). *Embedded formative assessment*. Bloomington, IN: Solution Tree.

[4] Brookhart, S. M. (2008). *How to give effective feedback to your students*. Alexandria, VA: ASCD.

Education Leader's Guide to Reading Growth

Motivating readers: Goal setting, student choice, and reading growth

By now, we hope that you're convinced that increasing high-quality reading practice is crucial. But how do you, in turn, convince your students to engage in that high-quality reading practice?

Motivation is the key.

It makes sense that students who are motivated to read will read more. One study even found that motivation, not past reading history, was a better predictor of a student's current and future amount and breadth of reading.[1] The authors concluded that **motivation increases reading frequency**, rather than reading frequency causing an increase in motivation. In other words, to get our students reading, we have to motivate them first.

If motivation affects reading practice, how does it affect reading achievement? Two separate studies have examined the "temporal-interactive effect" that a positive attitude toward reading has on reading achievement. This means motivation interacts more and more with achievement as time goes on—and even if motivation doesn't impact a student's *current* reading achievement, it may have a significant impact on their *future* reading achievement.

Takeaways for Education Leaders

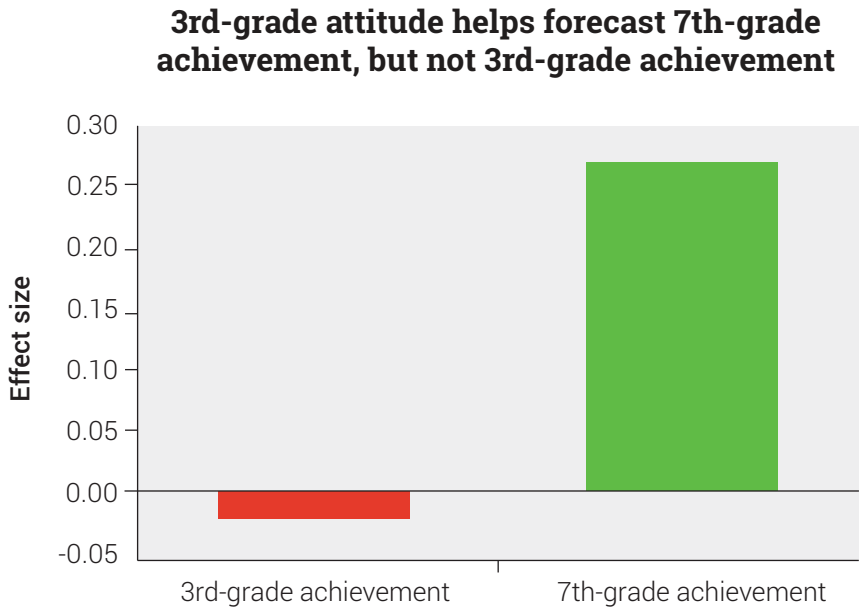
While the relationship between motivation and reading frequency is quite straightforward (motivated readers read more), the relationship between motivation and achievement is a complex, long-term one. Although motivation may not appear to have an immediate impact on student success, it can be critical for their future success.

In order to motivate students to engage in high-quality reading practice, educators need to focus on three key steps:

- Establish and socialise a definition of high-quality reading practice that includes time spent reading, long and complex texts within a student's ZPD, and student effort.
- Set personalised goals for students that include reading at least 15 minutes per day, reading books and articles within their ZPD, and scoring 85% or above on literal comprehension quizzes.
- Motivate students to read by reserving part of the school day for independent reading or read-aloud activities. Give students access to a wide variety of high-quality reading materials and encourage students to choose which ones to read. Make sure teachers and other educators can suggest interesting titles when students struggle to find reading materials they enjoy.

By taking these key steps, you can boost motivation—and achievement—for all learners.

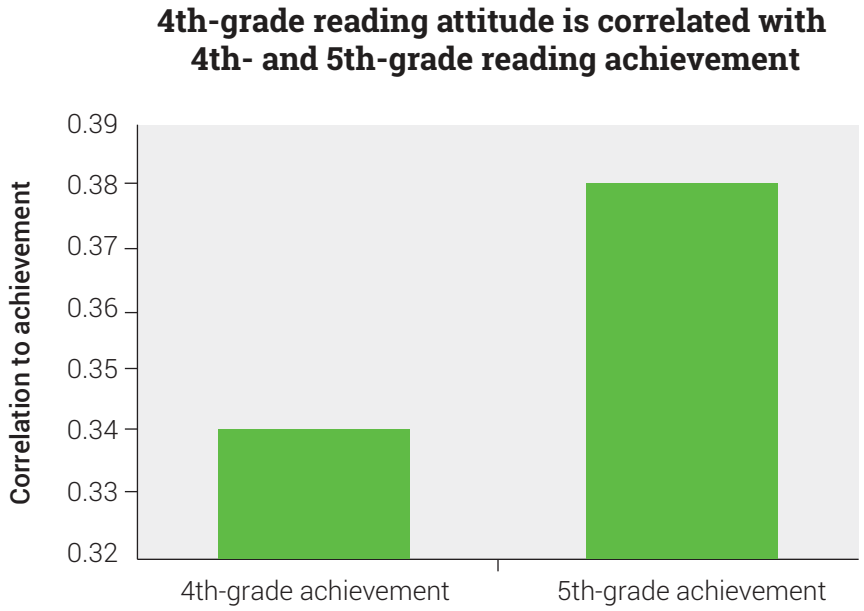
The first study found that a student's attitude toward reading at the beginning of third grade was not significantly related to their reading achievement in second and third grades. Achievement in third grade was the best predictor of achievement in seventh grade—not surprising given the cumulative nature of learning. However, a student's reading attitude at the beginning of third grade also had **significant power in forecasting achievement in the spring of seventh grade—almost five years later!**[2]



The study's authors proposed that the relationship between reading attitude and reading achievement is a complex, long-term one. Thus, in early elementary grades, there may be little or no correlation. The connection then grows over time and, by early adolescence, reading attitude turns into an important causal determinant of reading achievement.

The second study looked at slightly older students. It found a significant positive relationship between reading attitudes in fourth grade and reading achievement in fourth and fifth grades.[3] The authors suggested that reading attitudes and reading achievement are significantly related by the time students enter the upper elementary grades—matching the first study's suggestion that the relationship between the two grows closer over time.

The strongest attitude-achievement correlation was between a student's reading attitude in fourth grade and their achievement in fifth grade, indicating there is a stronger relationship between current motivation and future achievement than between current motivation and current achievement.



What can be learned from these studies? We'd suggest two key takeaways. First, it's important to motivate students to read, even if we cannot detect any immediate impact on achievement—the biggest effects might not be seen until months or even years later. Second, motivation gets more important as students age, not less, so keeping students motivated to read in middle and high school is essential.

Three steps to motivate reading practice

To motivate high-quality reading practice, three key steps are required. First, we must identify the reading activities and behaviors that we want to promote among students—in other words, what does high-quality reading practice look like? Second, we have to decide how much of those activities and behaviors are needed—what does success look like? Third, we have to look at what makes students more likely to reach those goals—what are the key motivational factors?

Thankfully, we've already done the work for the first step. As detailed in our sections about reading quantity (Section 2) and reading quality (Section 3), we know exactly what we want students to do. We want them to spend more time reading. We want them to read a variety of texts within their zone of proximal development (ZPD). And we want them to put effort into their reading.

This knowledge helps considerably with the second step as well. Before we get started, let us emphasise that success may look different for every student. Instead of defaulting to grade-level expectations, we suggest setting **personalised goals** for students.

Setting personalised reading goals for students

The first personalised goal we want to set is around reading time. We know students should be reading at least 15 minutes a day in order to avoid slowed growth, so that is an excellent starting point. For struggling readers and other students who need additional growth, we might want to increase the goal to 20, 30, or even 60 minutes of daily practice. An educator should rely on their expertise and knowledge of the student as well as any assessment data they have (including growth history) to judge which time goal is most appropriate.

The second personalised goal we want to set is around reading materials. We know the reader profile with the highest average reading achievement is the one that is diversified in long and complex texts, so we want our students to read a healthy number of books in addition to shorter works such as newspaper articles, magazine features, or graphic novels. We also know that below-ZPD reading is associated with slowed growth, so we want most of those titles to be within or above a student's ZPD.

Remember that each student will have a unique ZPD based on their individual reading level and that their ZPD will change as they learn and grow. The goal of having the majority of texts be "within or above ZPD" will stay the same throughout a child's schooling, but what is and isn't "within or above ZPD" will change from year to year and even during the course of the school year. Once again, educators should rely on their knowledge and expertise to decide how much reading should be within the student's ZPD. Note that below-ZPD texts should not be banned entirely.

The third personalised goal we want to set is around effort. This might seem the hardest of the goals to set and monitor, but it's actually not—as discussed in Section 4, *Literal comprehension as a meaningful predictor of overall reading achievement*, literal comprehension is connected to effort. High literal comprehension is a strong sign that a student is putting effort into their work (it may also be a sign that a student is reading texts that are too easy, so keep an eye out for students who always score 100%).

However, be very cautious when scores indicate low literal comprehension. It may be a sign of low effort, but it may also be a sign that a student's ZPD is set too high, that they've chosen a text that's too hard, that they need more instruction around reading skills or comprehension strategies, or that they do not have the background knowledge or vocabulary required to understand a specific text.

Consider literal comprehension a reflection of both the student's effort and the teacher's instruction: High literal comprehension signals that multiple factors are all coming together and growth is being accelerated. But if just one factor is missing—whether on the student's or teacher's end—then low literal comprehension might result. Set a goal that students maintain high literal comprehension; we recommend 85% or higher to support accelerated growth. When students fall below that goal, be sure to thoroughly investigate the cause before making decisions or taking action.

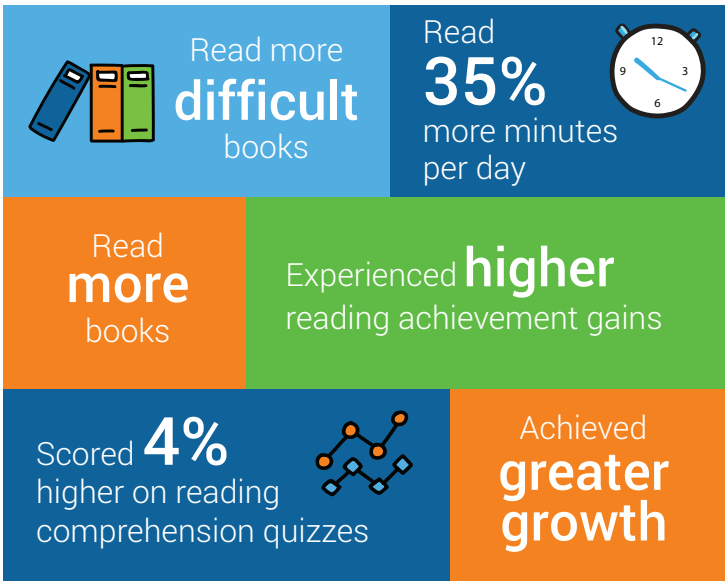
Personalised goals as reading motivation

Now that we've defined high-quality reading practice and set goals, how do we motivate students to reach those goals?

The good news is that you've already started! Personalised goal setting is a very powerful motivation tool.

A study that examined the reading practice habits and reading achievement of more than 4.2 million students in grades 1–12 found that students with personalised goals read more and achieved better outcomes. Students with personalised goals set as part of a research-based reading practice program read 35% more minutes per day, read more difficult books, and had 4% higher literal comprehension scores than students who used the same program but without set goals. It shouldn't be surprising, then, that the students with goals also experienced higher reading achievement growth.[4]

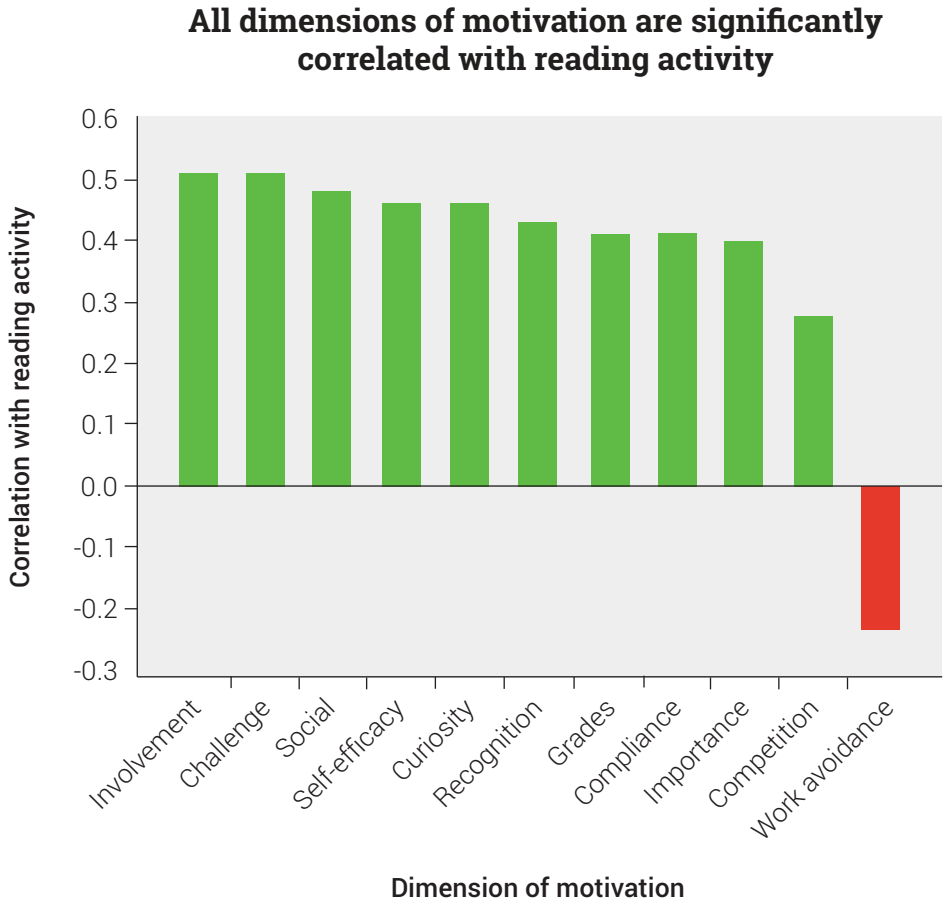
On average, students with personalised goals
(vs. those using the same reading program without set goals)



Multiple dimensions of motivation

What other factors help motivate high-quality reading practice?

The answer is many. Motivation is a huge topic—one could dedicate an entire library to the subject. For example, a study examining 11 different dimensions of reading motivation found that all of them had statistically significant correlations with reading activity.[5]



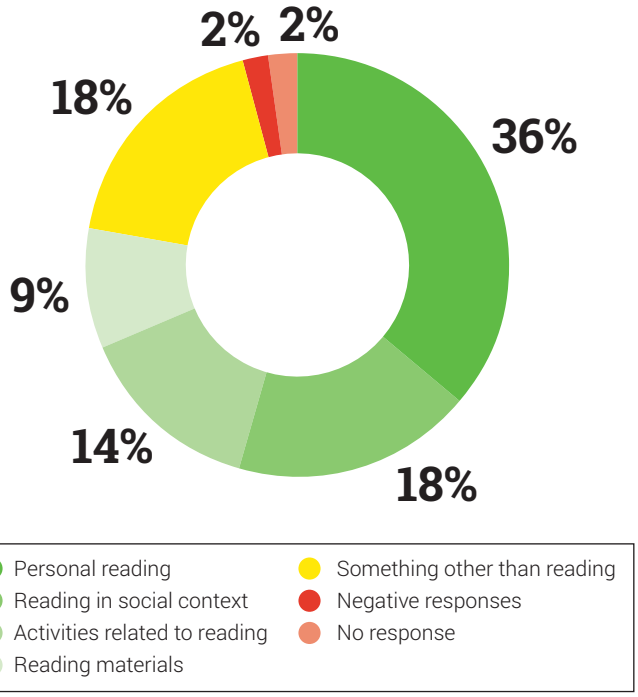
The authors emphasised that reading **motivation should be viewed as multifaceted, rather than as a single thing.** Students are not simply "motivated" or "not motivated." They might be motivated in one dimension but not another—and not all dimensions are equal.

Keeping this in mind, a guide like this one could never hope to provide a comprehensive list of *everything* that motivates students to read. Instead, for this section, we'll narrow our focus to look at what kids say motivates them as a helpful starting point.

One survey that asked more than 1,700 middle school students in 23 schools—a mix of urban schools and rural/small-city schools—about their reading or language arts classes revealed that **reading, in and of itself, can be motivating.** When students were asked an open-ended question about what they enjoyed most about these classes, reading made up 77% of the reasons provided.[6]

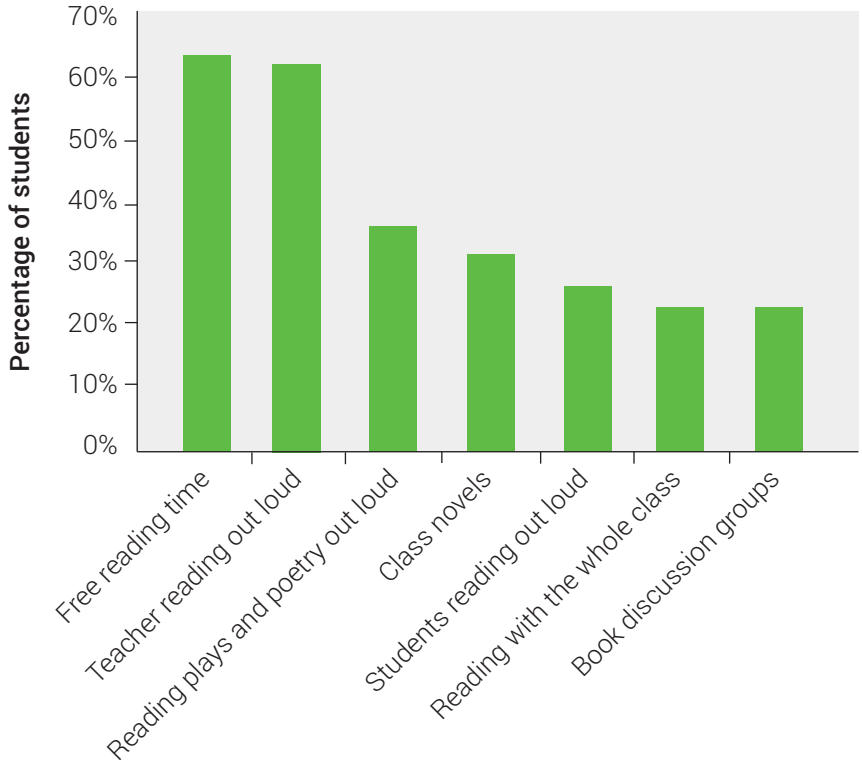
After the study's authors organised the responses into categories, personal reading (reading for personal reasons such as reading for enjoyment or to learn something new) was the most popular, followed by reading in a social context (reading, or talking about reading, with peers or the teacher), activities related to reading (such as watching a movie after reading the book), and reading materials (specific titles or genres). Many students provided more than one reason, reflecting the multifaceted nature of motivation—for example, personal reading made up 36% of the reasons provided but was mentioned by 41% of students.

Reading is what students enjoy most in reading and language arts classes



When asked a checklist question about what reading activities they enjoyed most, there were two clear winners: **free reading time and the teacher reading out loud**. To a lesser degree, students also enjoyed reading plays and poetry out loud, reading teacher-selected class novels, listening to other students reading out loud, reading with the whole class, and participating in book discussion groups. Students were twice as likely to enjoy reading books they chose (free reading time, 63%) as reading books selected by the teacher (class novels, 31%).

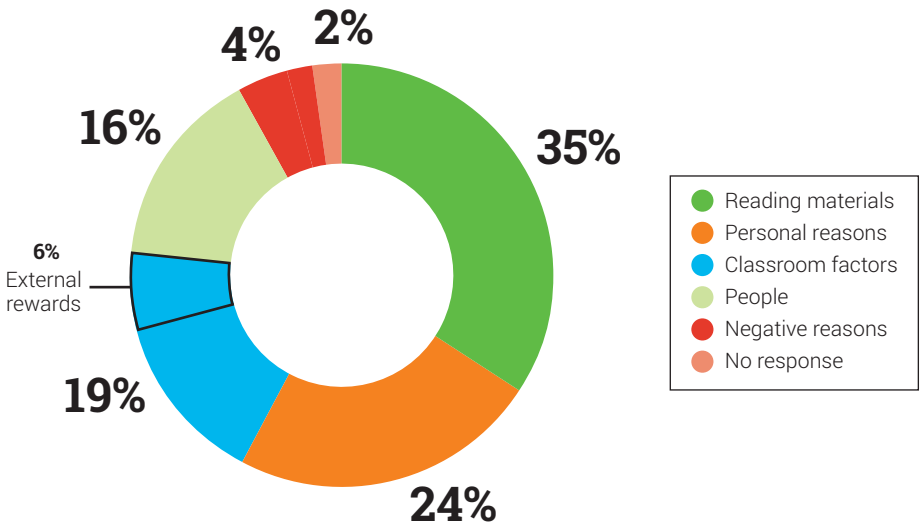
Most students enjoy free reading time and having their teacher read aloud



Another open-ended question directly asked students what made them want to read. Once again motivation was multifaceted, with many students providing more than one reason. The most common was the reading materials themselves. **High-quality materials, interesting topics, specific genres and types, and other text-related elements were all factors that made kids want to read**.

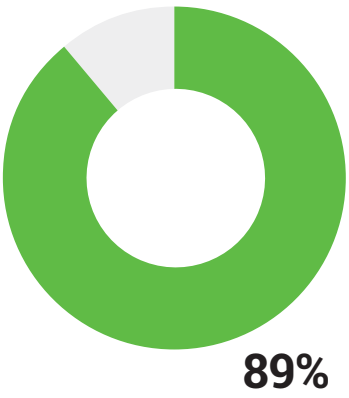
Personal reasons came next—such as a desire to learn or a general enjoyment of reading as an activity—followed closely by classroom factors, which included a quiet environment for reading and class projects related to reading. Note that external rewards, a type of classroom factor that includes grades and prizes, made up only 6% of total reasons and was mentioned by only 7% of students. The final category was people, which included encouragement from the teacher or discussing texts with peers.

Grades and prizes account for only a small fracion of students' reasons for wanting to read

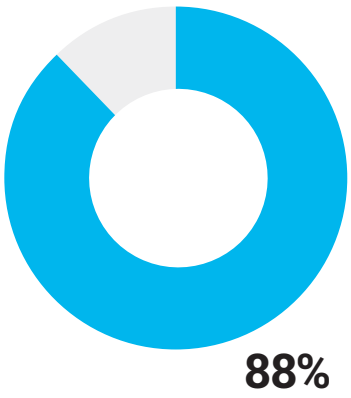


Another survey, this one of more than 1,000 children ages 6–17, also found kids had a strong preference for choosing their own reading materials.[7] Nearly nine out of ten said their favorite books were the ones they had picked out themselves. A similar number said they were more likely to finish books they had chosen. However, less than two-thirds of children said they usually got to choose which books they read for fun.

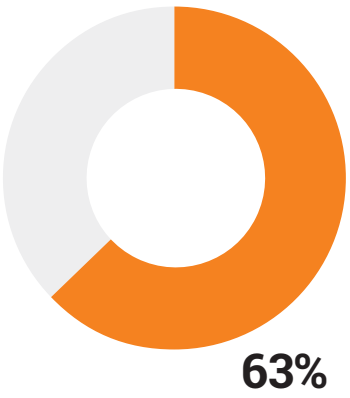
My favorite books are the ones that I have picked out myself



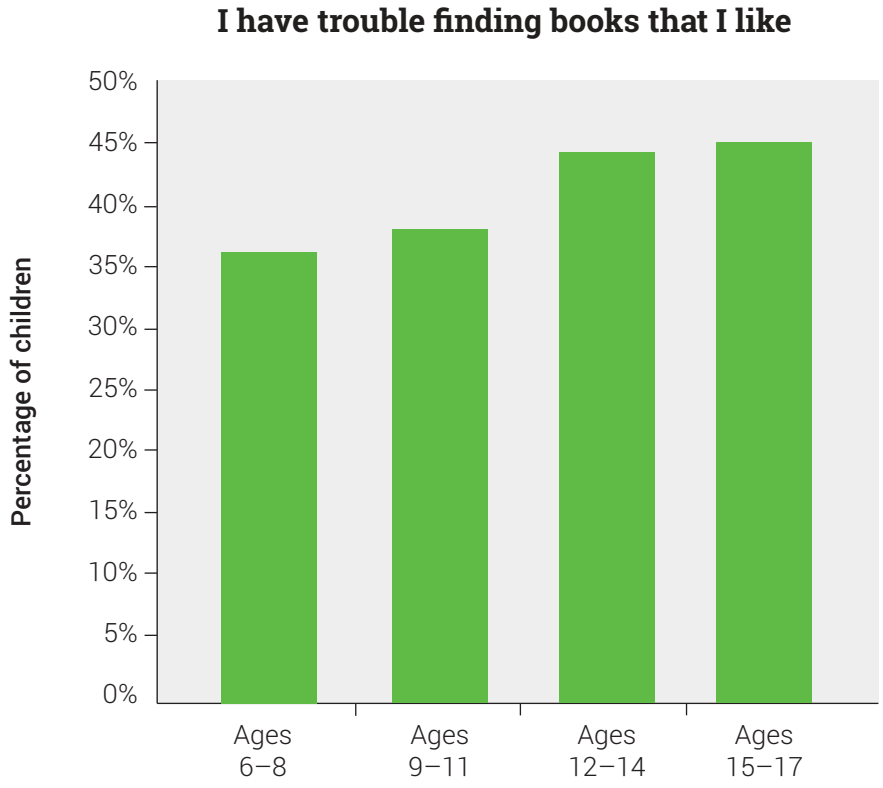
I am more likely to finish reading a book that I have picked out myself



I pick out the books I read for fun all or most of the time



Some students also reported difficulty with finding good reading materials. Three-quarters said they knew they should read more books for fun and nearly six in ten reported liking or loving reading books for fun, but many had trouble finding books they liked—with the number increasing as children grew older.



Since "reading materials" was the top response for what made students want to read in the first survey examined, it's concerning that so many children have trouble finding texts they enjoy. Children reported that educators provided the best ideas about books to read for fun, followed by friends, adult family members, and school book clubs/book fairs. As educators, we should encourage student choice—and be prepared to offer plenty of choices when children struggle to find engaging reading materials.

In addition, similar to the pattern we saw when examining reader profiles in Section 3, there was a relationship between a child's access to reading material at home—specifically books—and the frequency with which they read for fun. Frequent readers had access to more than twice as many books as infrequent readers. Kids also revealed that print matters: Among children who had read an eBook in the past year, only 16% said they preferred eBooks. Overall, 65% of children said they will always want to read books on paper, even when eBooks are available.

We see four key takeaways from these surveys:

- The majority of children find reading and reading-related activities to be enjoyable, so engaging students in reading can, itself, be motivating.
- The best ways for educators to engage students in reading at school is to set aside time for independent reading and to read aloud to students, as these were the preferred activities by a large margin.
- Giving students access to a wide variety of high-quality texts, connecting reading to students' personal interests or learning goals, making reading a key part of school and classroom activities, and turning reading into a social activity were all good ways to motivate reading.
- Students should be encouraged to choose their own books and other reading materials—but educators should be prepared to help kids find good book choices.

Returning to the question posed at the beginning of this section, the answer now seems clear. How do we convince students to engage in that high-quality reading practice? Set personalised goals. Dedicate time to reading activities. Provide access to a wide variety of high-quality reading materials (especially print ones). Support student choice. Socialise reading and make it part of school culture. And be patient—just like students, motivation needs time to grow and succeed.

Thus far, this guide has examined reading quantity, reading quality, and reading motivation. In the next section, we expand our horizons and explore how reading success relates to success in science and math.

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Education Leader's Guide to Reading Growth

The surprising relationship between reading skills and science and math achievement

Struggles in science? Low math scores? Maybe your students need more reading practice.

At first, "reading practice" may seem an odd answer to questions about science and math achievement, but upon closer examination, the interwoven nature of achievement is revealed.

As discussed in the first section of this guide, *Transforming struggling readers and the long-term impact of reading achievement on student success*, research has shown that students with strong reading skills are much more likely to graduate high school on time and enroll in college. As we're about to see, multiple studies have also shown that students with strong reading skills are more likely to perform well in science and math, too.

Higher reading achievement, higher science achievement

The connection between reading achievement and science achievement can perhaps be most clearly seen in PISA results, where it's consistent both geographically and temporally. The Programme for International Student Assessment (PISA) is the world's largest assessment of teenage students, assessing students in dozens of countries every three years.

Takeaways for Education Leaders

Students with strong reading skills are not only more likely to graduate high school on time and enroll in college; they're also more likely to succeed in science and math.

For science, there is a very strong correlation between reading achievement and science achievement—a much stronger relationship, in fact, than the one between interest and enjoyment of science and science achievement. Reading skills actually help students compensate for gaps in science knowledge to such a degree that students with strong reading skills but low science knowledge actually score as high or higher than students with weak reading skills but high science knowledge in all measures of science achievement.

For math, there is a similar strong relationship between reading achievement and math achievement. Regardless of whether math test items have low, medium, or high reading difficulty, students with strong reading skills outperform students with weak reading skills. Researchers suggest that a solid foundation in reading may even directly affect the growth of mathematic skills.

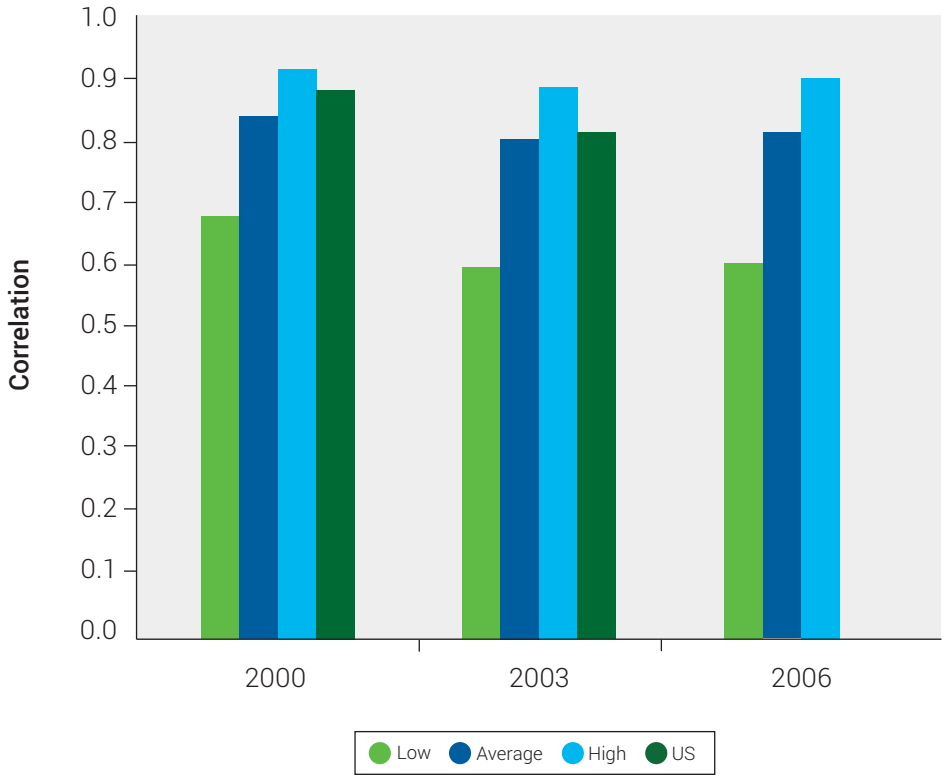
Consider incorporating reading as a key element of math and science initiatives and your students may see increased achievement as well as higher levels of empathy, motivation, and confidence.

One researcher analysed three different sets of PISA scores, representing more than 800,000 students in more than 50 countries.[1] For the 2000 data set, there was a statistically significant correlation between reading and science achievement in all 43 countries examined, with correlations ranging from 0.675 to 0.916. The average for all countries was 0.840.

For the 2003 data set, the results were similar. The correlation between reading and science achievement was statistically significant in all 41 countries examined, ranging from 0.599 to 0.892, with an average correlation of 0.805.

The correlation appeared once more in the 2006 data set, where all 56 countries had a significant correlation between reading and science achievement, ranging from 0.603 to 0.902. The average correlation (0.819) was higher than it had been in 2003 (0.805), which is notable, as several countries that year piloted a new version of the science assessment that was specifically designed to reduce the reading difficulty or reading load of the questions while retaining the science content.

The correlation between reading and science achievement is statistically significant for all countries across multiple years



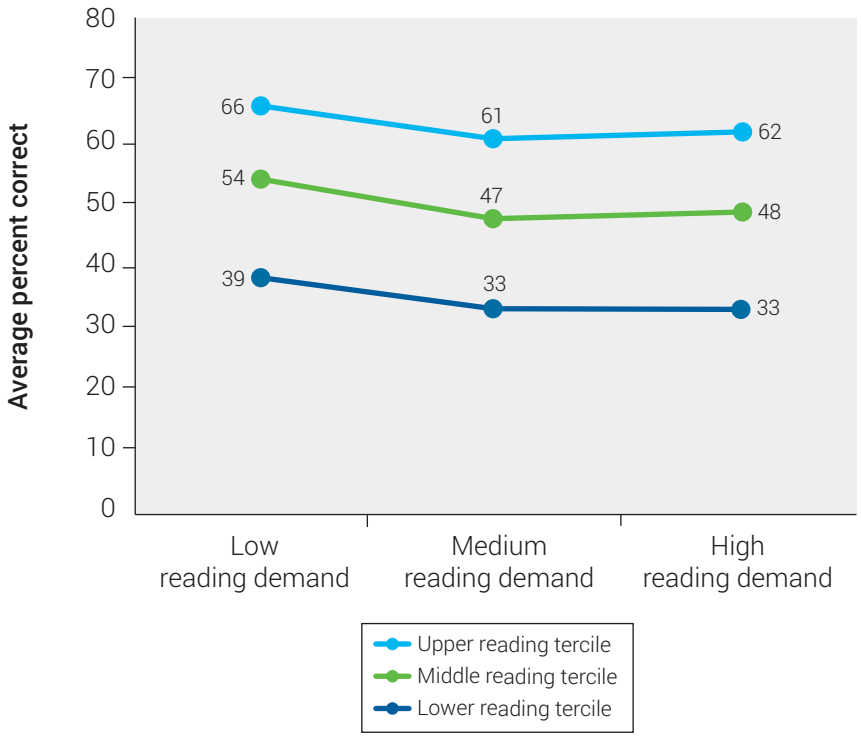
In the PISA's own analysis of the 2006 tests, they found the correlation between the regular PISA science and PISA reading assessments was higher still, at 0.83. The new test—the one designed with a lower reading load—had a smaller, but still quite notable, correlation of 0.73. In comparison, the correlation between general interest in science and student performance was 0.13, and the correlation between enjoyment of science and performance was 0.19.[2] Even with the revised test, the relationship between reading skill and science achievement was much closer than the one between interest and enjoyment of science and science achievement.

Another study dug deeper into the relationship between reading achievement and science achievement to look more closely at how reading difficulty affects scores. This one analysed the Progress in International Reading Literacy Study (PIRLS) and the Trends in International Mathematics and Science Study (TIMSS) achievement scores of 185,475 fourth-grade students in 34 countries.[3]

The researchers categorised questions on the TIMSS assessment by their reading difficulty or reading demand level: low (32% of all questions), medium (38%), or high (30%). They also split students into three equal groups according to their PIRLS scores: an upper tercile, a middle tercile, and a lower tercile.

In all countries, **students in the upper tercile of reading achievement answered more science questions correctly**, on average, than students in the other two terciles. Students in the lowest reading tercile averaged the fewest number of correct science answers.

Students with better reading skills have higher science achievement at all levels of reading difficulty



This pattern was true regardless of the level of reading difficulty—and the average percent correct for each group did not drop precipitously as the reading demand increased. Students in the upper reading tercile answered 66% of the low reading demand questions correctly and 62% of the high reading demands, a decrease of only 4%. For both the middle and the lower reading terciles, the decrease in average percent correct between low reading demand and high reading demand was only 6%.

In both cases, the connection between reading achievement and science achievement seems to be more than just an artifact of reading difficulty of the science questions, as it remains high even when reading difficulty decreases.

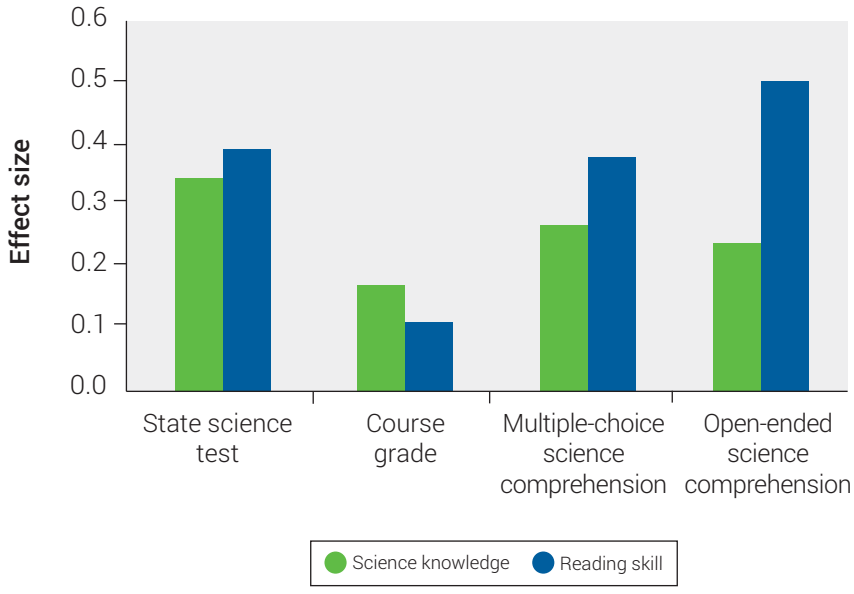
The author who analysed the PISA scores felt there wasn't necessarily a direct cause-and-effect relationship between reading and science—that reading comprehension did not directly cause science proficiency, nor did science proficiency cause reading comprehension. Rather, she preferred the explanation that **it's the products of extensive reading practice (e.g., background knowledge, reading strategies, and general vocabulary) that drive higher science proficiency**.[1]

However, it's not just that students who are better readers tend to have higher science knowledge. A third study examined these two variables—reading skill and science knowledge—and found some quite surprising results.

This study looked at more than 1,600 high school students (grades 9–12) from suburban, rural, and urban schools. Researchers used separate assessments to measure students' reading skills and science knowledge. They then compared those to four different measures of science achievement: score on state science test, grade in the science course, score on a multiple-choice science comprehension test, and score on an open-ended science comprehension test.

Across all age groups, both reading skill and science knowledge were significant predictors of all four science achievement measures. However, a further regression analysis found **reading skill had a *larger* effect than science knowledge** on three of the four science achievement measures.[4]

Reading skill had a larger effect on three of the four science achievement measures



The data revealed that reading skill actually helped students compensate for gaps in science knowledge for most measures of science achievement. In fact, for all four achievement measures, **students with higher reading skills but lower science knowledge scored as high or higher than students with lower reading skills but higher science knowledge**.

Furthermore, while the effect of reading skill was noteworthy for students with lower science knowledge, it was even greater for students with higher science knowledge. It **significantly enhanced their performance** on all four measures of science achievement. The authors recommend reading—specifically books and science articles—to help students gain more science knowledge.

Higher reading achievement, higher math achievement

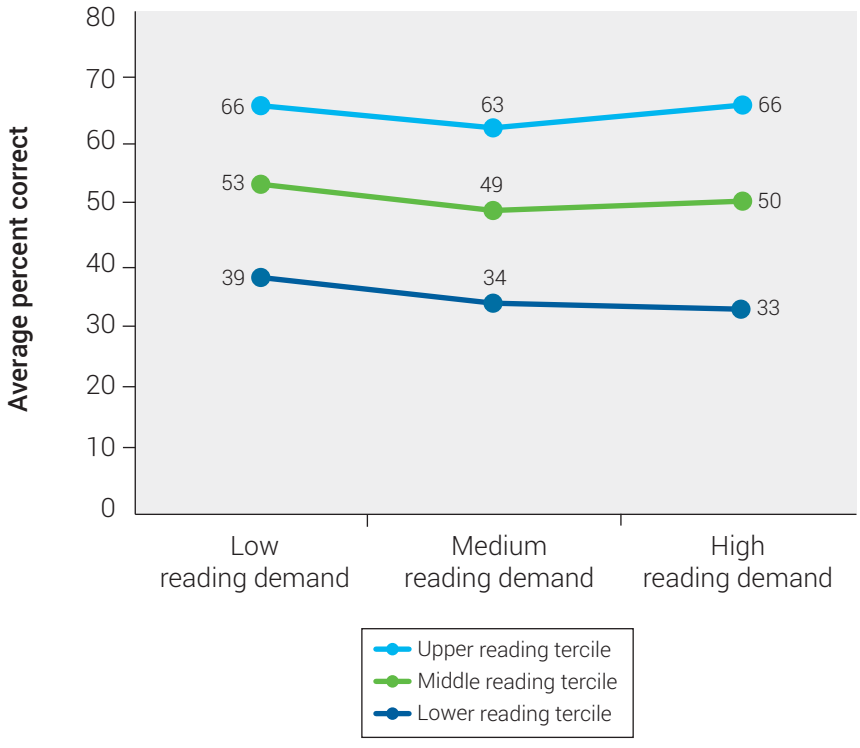
In comparison to science—even the hard sciences—math seems like it should involve more numbers and fewer words, so does reading skill still matter?

Several studies say it matters quite a lot.

Returning to the TIMSS and PIRLS analyses, this time comparing reading and math, a familiar pattern emerges.[3] Once again, the researchers categorised questions on the TIMSS assessment by their reading difficulty. For the math questions, 35% fell into the low category, 34% in medium, and 31% in high.

Looking at the three reading terciles, the top third of readers answered more math questions correctly than the middle tercile, which in turn had a higher percent correct than those in the lowest tercile. This pattern held across all three levels of reading difficulty in all 34 countries.

Students with better reading skills have higher math achievement at all levels of reading difficulty



The authors noted that, unlike with science, it seemed **students with lower reading skills were additionally disadvantaged on the math questions that required more reading**. The performance of students in the upper tercile of reading skill changed very little as the reading demand increased—this group averaged 66% correct on both low reading demand and high reading demand questions, dropping slightly to 63% with medium reading demand questions.

There was more variation with the middle reading tercile, whose average percent correct decreased by 3% between low reading demand and high reading demand questions. For the lowest reading tercile, the decrease was even larger at 6%. Further analysis found the inter-tercile difference for high reading demand questions was significantly different from the inter-tercile difference for low reading demand. Based on this data, reading difficulty does play a role in math achievement—but even at the lowest levels of reading difficulty, the connection between high reading achievement and math achievement persists.

Another study of fourth-grade students suggested that "**reading may be a necessary and important component in overall math competence** and should not be overlooked in drawing conclusions about mathematics skills."[5] An analysis showed that reading performance was highly correlated with the two main components of mathematics, computation and applications. Students who performed well in reading tended to perform well in mathematics; students who were not proficient in reading did not perform well on math measures.

A different study followed students from fourth to seventh grades to see how reading achievement and math achievement interacted over time. The results showed that not only were reading and math achievement highly corrected in fourth grade, but that there was a tendency for students with higher initial reading scores to have higher *mathematics* growth rates over time. Students with higher growth rates in reading also tended to have higher growth rates in mathematics.[6]

The authors concluded that "a solid foundation in reading may facilitate gains in more than just reading and would directly affect the growth of mathematics."

Looking at these researchers' recommendations—**that reading is a good way to gain science knowledge and that reading may directly affect math growth**—it seems that increases in reading practice may affect much more than just reading scores. In fact, students may even see benefits beyond improved school achievement: Studies have shown that reading practice can also enhance students' empathy for others, self-confidence as readers, motivation to read throughout their lives, and positive attitudes toward reading.[7]

So if you have students who are struggling with low achievement in science or math—or if you have advanced students looking to further boost their science or math performance—then you may want weave in high-quality reading practice as a key element in your intervention or enrichment programs.

What are the tools you need to start infusing high-quality reading practice throughout your educational programs or initiatives? In the next section, *Activate your knowledge: Reading resources and action steps*, you'll find a clear checklist of the must-have resources and must-take action steps for supporting high-quality reading practice.

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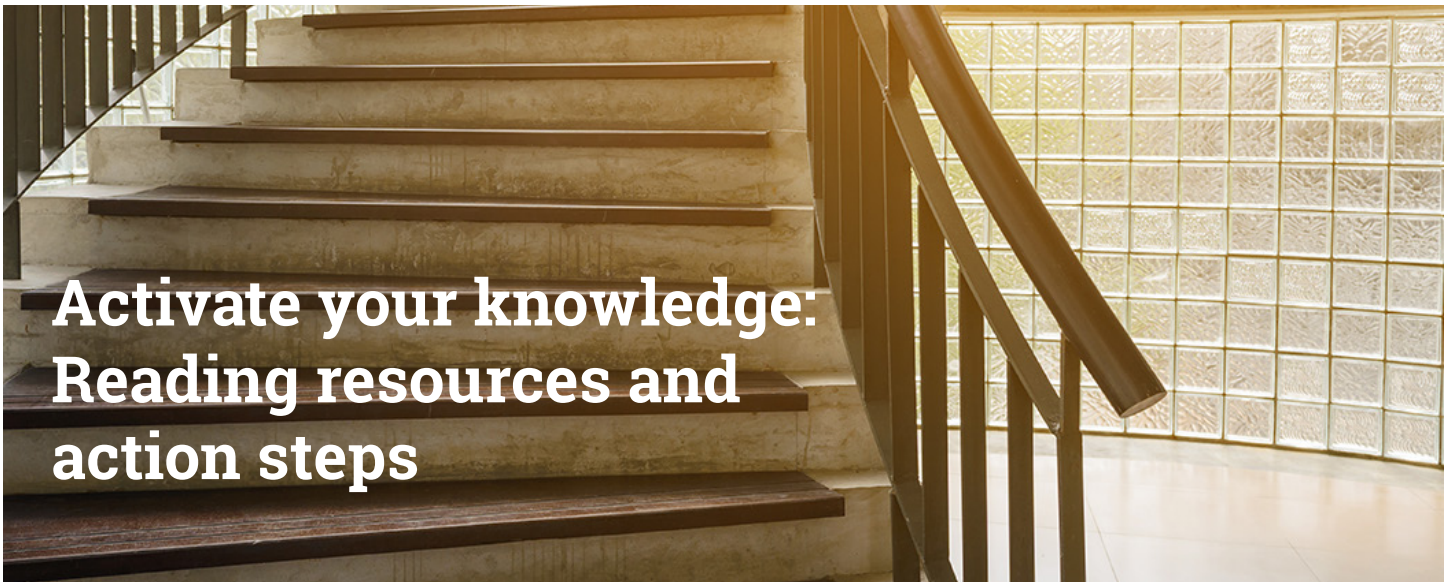
Education Leader's Guide to Reading Growth



Activate your knowledge: Reading resources and action steps

Struggling readers. Reading time. ZPD. Text variety. Effort. Comprehension. Motivation. Relations with science and math. This guide looked at reading practice and reading growth from a lot of different angles. What we haven't yet looked at, though, are the resources education leaders need in order to turn these concepts into reality and the top action steps that will support high-quality reading practice in their schools and districts.

Resources

In order to implement a reading practice strategy that accelerates reading growth, educators need two key resources: a reliable assessment and a high-quality reading practice program.

Reading assessment
A solid assessment will provide the reliable, valid data and rich insights you need for an effective reading practice strategy. At a minimum, your reading assessment should:

- ✓ Accurately identify the reading level of each student.
- ✓ Indicate whether a student's reading level is at, above, or below benchmark.
- ✓ Provide reports that allow you to track reading achievement (gains) over time.
- ✓ Be administered at least three times per year (beginning, middle, and end).

For the most impactful reading practice strategy, an ideal reading assessment will:

- ✓ Accurately identify both a student's reading level and their zone of proximal development (ZPD).
- ✓ Allow you to compare student scores against multiple benchmarks (such as state, district, or school benchmarks).
- ✓ Identify which reading skills a student has mastered and which ones they are ready to learn next via an empirically validated learning progression (which should be aligned to your state standards).
- ✓ Measure a student's reading growth, in addition to their reading achievement.
- ✓ Cover all grades (pre-K–12), using a consistent scoring scale so that you can track a student's reading progress over their entire academic career.
- ✓ Provide interactive reports that track student progress throughout the school year and from year to year.

- ✓ Forecast future achievement and skills mastery.
- ✓ Allow for flexible and easy administration, so educators can assess students as frequently as needed.
- ✓ Integrate and share data with your selected reading practice program.

Reading practice program
There's much more to effective reading practice than setting a student in front of a book and telling them to read. A good reading practice program will help ensure students are engaging in the type of practice that fuels growth. At minimum, it should:

- ✓ Provide a method to track student reading time.
- ✓ Help students find texts that are within their zone of proximal development (ZPD).
- ✓ Measure a student's literal comprehension of the texts they have read.
- ✓ Include a personalised goal-setting feature.

A robust, research-based reading practice program will be much more than just an "add-on" to your overall reading strategy; it will serve as a core resource that supports both educators and students on a daily basis. An ideal reading practice program will:

- ✓ Provide reports that allow both educators and students to visually track reading time as well as monitor other key reading factors (such as literal comprehension) on a daily basis.
- ✓ Allow students to choose the titles they want to read, rather than assigning only teacher-selected titles or limiting students to only a narrow band of text complexity.
- ✓ Offer students personalised recommendations and encourage them to discover new fiction and nonfiction titles that are age-appropriate, matched to their individual interests, and within their ZPD.
- ✓ Include thousands of literal comprehension quizzes for a wide variety of fiction and nonfiction titles at all different reading levels and maturity/interest levels.
- ✓ Automatically score literal comprehension quizzes and make it easy for educators to monitor the average literal comprehension level of each student.
- ✓ Help educators set specific personalised goals around average text complexity level (according to a child's ZPD), daily engaged reading time, and average literal comprehension scores.
- ✓ Show each student their personalised goals as well as their progress toward those goals.
- ✓ Have a parent/guardian portal or other platform that empowers family members to view their child's most recent activity, monitor their progress, and support at-home reading practice.
- ✓ Integrate and share data with your selected reading assessment.

Action Steps

Entire books could be—and have been—written about the steps needed to implement a successful reading strategy. The reality is that there is no one recipe or magic formula that will work for every student in every school in every district. However, there are key steps that we recommend all education leaders take to support high-quality reading practice, reading growth, and student success.

- ✓ Ensure your selected reading assessment and reading practice program are implemented with fidelity. Initial and ongoing professional development for educators using these resources is highly recommended to ensure best-practice usage.

- ✓ Reserve *at least* 15 minutes of every school day for independent reading practice at *all* grade levels—especially middle and high school.
- ✓ Make sure students have equitable access to texts that they can read at home and on the go. Remember that online materials work only if students have both digital devices and Internet access outside of school, so aim to have lots of print materials available too.
- ✓ Turn reading into a core part of your district and school culture. Fill classrooms and hallways with words, book posters, and more. Encourage all educators and staff—not just language arts teachers—to talk about what they're reading, ask kids what they're reading, be seen reading, and share their favorite reads.
- ✓ Engage parents, guardians, and families. Make it easy for them to support their child's reading practice by supplying them with suggested texts to read and discuss at home, equipping them with information about what factors contribute to high-quality reading practice, and sharing the personalised reading goals you've set for their children.
- ✓ Stay curious. There are always new discoveries being made, new research being published, and new insights being shared. Make it a habit to read blogs, magazines, or journals that keep you up to date with the latest reading news. Subscribe to your favorites!

If you'd like to explore how Renaissance® can help you put these recommendations into action, we encourage you to contact us. Please call us at 02 4225 9698, email us at enquiries@renaissance.com, or use the live chat feature on our website at www.renaissance.com.au.

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Reading resources by Renaissance

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RENAISSANCE Star Early Literacy

Renaissance Star Assessments® is the most comprehensive pre-K–12 interim and formative assessment suite available. It provides educators with two reliable, valid reading assessments: Renaissance Star Early Literacy® for grades pre-K–3 and Renaissance Star Reading® for grades K–12.

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- Quickly and accurately identify the reading level and ZPD of each student
- Compare a student's reading skills and reading gains to grade-level benchmarks, personalsed goals, and academic peers
- Provide robust reporting to track achievement and growth over time—and forecast future growth and mastery
- Use a unified scale for consistent scoring across all years
- Integrates and shares data with Accelerated Reader to provide a overview of student mastery

RENAISSANCE Accelerated Reader™

Renaissance Accelerated Reader® is one of the most heavily researched K–12 reading practice programs in the world. It transforms decades of data about student learning into rich insights for educators, helping them to engage all students in high-quality reading practice that accelerates reading growth.

Accelerated Reader:

- Provide visual reports to help educators and students track reading time, book difficulty level, and literal comprehension
- Include automatically scored literal comprehension quizzes for nearly 55,000 fiction and nonfiction titles
- Encourage student choice, with personalised recommendations based on a student's ZPD and reading history
- Support personalised goal setting and help students see progress toward goals
- Offer Home Connect for families
- Integrate and share data with Star Assessments® to provide a overview of student mastery

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