The Common Core State Standards' Quantitative Text Complexity Trajectory: Figuring Out How Much Complexity Is Enough

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What is This?
A national debate about the implementation of the Common Core State Standards (CCSS; National Governors Associate Center for Best Practices [NGACBP] & Council of Chief State School Officers [CCSSO], 2010) language arts goal for text complexity has begun (e.g., Beach, 2011; Gewertz, 2012; Hiebert, 2012; Mesmer, Cunningham, & Hiebert, 2012; Porter-Magee, 2012). The CCSS, now adopted by 46 states, set a challenging goal for all students to be able to “comprehend texts of steadily increasing complexity” as they progress through school... [so that by graduation, they can] read and comprehend independently and proficiently the kinds of complex texts commonly found in college and careers” (NGACBP & CCSSO, 2010, Appendix A, p. 2).

The standards provide both qualitative and quantitative indicators of text complexity, with the suggestion that educators should begin with a quantitative indicator and follow with qualitative criteria (National Governors Associate Center for Best Practices [NGACBP] & Council of Chief State School Officers [CCSSO], 2012). To assist educators in the first step of determining appropriate quantitative complexity levels, the CCSS authors provide a trajectory standard for text complexity exposure, giving “grade-by-grade specifications for increasing text complexity in successive years of schooling” (NGACBP & CCSSO, 2010, Appendix A, p. 4), delineating how much complexity is “enough” for different grades if students are to attain the college and career readiness (CCR) goal (see the dotted lines in Figure 1). To close a current-day gap between text complexity levels at high school graduation versus college and workplace (Williamson, 2008), the exposure specifications intentionally target higher levels of text complexity than many, if not most, students currently experience in nearly all grades (NGACBP & CCSSO, 2010, Appendix A).

One critical issue that is garnering attention centers specifically on the CCSS text complexity exposure trajectory (e.g., Hiebert, 2012). Theoretically, a text complexity exposure trajectory for a given graduation goal could take on many shapes.
instance, text complexity levels could be raised from current text complexity exposure levels proportionally across all grades, or they could be raised for students in certain grades—middle school and/or high school, for example—placing the greatest burden for text complexity exposure shifts on some students but not others. Notably, by providing grade-specific ranges of text complexity exposure, the CCSS text complexity exposure standard extends a degree of flexibility for states, districts, and teachers. However, the trajectory standard is presented without reference to how the grade-by-grade complexity ranges or the trajectory itself were determined or rationalized or to how educators should consider which ends of the grade ranges to implement for given grades, except to say that all students should be able to read independently and proficiently in the higher ranges designated for end of grades 3, 5, 8, 10, and 12. In short, little guidance is given to understand the derivation of the trajectory or to help educators know how to apply the flexible quantitative text exposure standard in their local contexts.

In the present article, we extend and elaborate the CCSS presentation and discussion of the quantitative trajectory standard for text complexity exposure. Our main purpose is to describe a methodology for trajectory creation and to propose a rigorous two-part analytical strategy for decision making surrounding the quantitative trajectory standard, a strategy that can be used primarily by state policy makers and district officials but in some situations by teachers as well. First, we submit that educators and policy makers can consider and critique the usefulness in their situation of multiple alternative text complexity exposure trajectories, trajectories that are different from one another but that are consistent with the CCSS. Borrowing methods from student growth modeling, we illustrate an analytical approach for the creation of a text complexity exposure trajectory and propose its utility for critical decision making. Second, choice of trajectory as well as day-to-day decisions about complexity levels for individual students ought to be conditioned by a set of guiding principles, including the following: consideration of the evidence base about what might be a “just-right” challenge level of text complexity in relation to anticipated reader abilities for particular readers, theoretical understanding of how reading ability develops over time and the role of text complexity challenge level during different phases of that development, and accommodation for district- and school-level local issues, such as incidence of low-performing readers and resource needs to support students and teachers.

Why a Text Complexity Exposure Standard Is Needed

The CCSS rationale for emphasizing increasingly complex texts throughout schooling is primarily rooted in evidence that suggests that college-text difficulty has increased since 1962 and current-day workplace material typically exceeds 12th-grade level (e.g., Adams, 2009), whereas text difficulty in elementary
through high school has decreased (e.g., Hayes, Wolfer, & Wolfe, 1996), resulting in a gap between the text complexity levels at end of high school and in college and the workplace (Williamson, 2008). Moreover, in at least one study, students who performed better in college were differentiated from those who performed more poorly by ability to answer questions associated with complex texts (ACT, 2006). As well, some evidence suggests that few students are prepared for postsecondary reading (ACT, 2006, 2009), and the 2011 National Assessment of Educational Progress (NAEP; U.S. Department of Education, n.d.) results suggest that many students are not on a path to be able to read college and workplace complex texts in that only 34% of 8th graders performed at or above a proficient reading level.

Printed texts are central curricular components of learning to read and reading to learn. Raising text complexity expectations throughout schooling therefore takes on critical significance for students’ academic growth. Most literacy and language arts researchers and practitioners, including ourselves, would agree that the CCSS text complexity focus on deep, sustained reading that results in sophisticated, nuanced, and rich meaning for many texts for all students is laudable (cf. Fisher, Frey, & Lapp, 2012).

At the same time, any text exposure trajectory standard that raises the text complexity bar might also have significant negative ramifications for at least some students, depending on educators’ interpretations and implementation(s) of the standard (Hiebert, 2012). For instance, teachers and administrators may think that students can “bootstrap” their reading ability, lifting themselves to a higher level of reading ability with material that involves more difficult vocabulary and more complex knowledge structures (Carver & Leibert, 1995). Indeed, anecdotal evidence suggests that many teachers are interpreting the quantitative text complexity standard to mean they should simply give students more difficult text (Gunning, 2012). Pushing the challenge level too high for some students, especially struggling readers, could lead to frustration and decreased motivation, which in turn could stall, or even curtail, their reading growth.

Because printed texts play such a critical role in students’ learning, careful attention to the meaning and interpretation of a quantitative trajectory standard for text complexity is essential. Educators who are aware of the CCSS’s built-in flexibility for modulating text complexity exposure for different individuals or groups of students and who are aware that multiple trajectories can result in the same end goal have a more sophisticated understanding of quantitative indicators of text complexity exposure, are more likely to take a critical stance, and are better equipped to capitalize on and accommodate the nuances involved in the standard’s built-in flexibility. Moreover, the educator who takes a critical stance will use important research-based principles to guide decisions.

**Situating a Quantitative Trajectory Standard for Text Complexity Exposure**

A quantitative trajectory is a useful but clearly not sufficient means of guiding educators. The standards’ authors situate the quantitative trajectory by additionally pointing to the need for qualitative assessment and modulation for particular students. At the same time, any consideration of a quantitative text exposure standard should be grounded in a theoretical definition of text complexity. In the following sections, first we give our own outlook on text complexity, one that is commensurate with the CCSS definition. Next, we contextualize the creation and use of a quantitative text exposure standard by reviewing the CCSS text complexity measures, highlighting the quantitative measures especially in relation to the definition of text complexity but also in relation to their utility for creating alternative text complexity trajectories.

**Defining Text Complexity**

The standards’ text complexity definition is “the inherent difficulty of reading and comprehending a text combined with consideration of reader and task variables” (NGACBP & CCSSO, 2010, Appendix A, Glossary of Key Terms, p. 43). The stance reflected in the definition is a transactional one in which complexity arises between reader, printed text, and situation during the whole of a reading act as opposed to being bound up in the printed text alone (Rosenblatt, 2005). It is a stance that is similar to the NAEP outlook on reading, where the reading act is defined in part by using meaning as appropriate to the type of text and situation. A transactional outlook is distinctly different from a text-centric one in which meaning is contained in the text and the reader’s job is to “get it out” (cf. Merline-Barbaresi, 2003, on a theory of complexity as inherent in text). Instead, “the inherent difficulty of reading and comprehending a text” (NGACBP & CCSSO, 2010, Appendix A, p. 43) happens in the experience, the transaction of the reader, the printed text, and the unseen author of the printed text. The transactional outlook on reading fundamentally undergirds the CCSS tripartite measurement model, reviewed in the next section, as well as guiding principles we explore in the following sections.

**Measuring Text Complexity**

The standards provide a triangular measurement model for text complexity that is isomorphic to the text complexity definition in that it includes attention to reader and task considerations. Integration of the three legs of the triangle—reader and task consideration with qualitative and quantitative indicators—is recommended (NGACBP & CCSSO, 2012, p. 4). By including reader and task, the CCSS text complexity definition is also philosophically similar to the student reading assessment framework as defined in the NAEP. The NAEP assessment includes three contexts for student reading—reading for literary experience, for information, and to perform a task that requires application of understanding from what was read—signaling acknowledgement that reader, text, and task all contribute to meaning creation and that meaning creation may vary according to text and task. Still, a significant difference between the CCSS measurement model and the NAEP assessment is that the NAEP focuses on the student during the reading act, whereas the CCSS text complexity standard focuses on the printed text.

As the CCSS authors state, qualitative and quantitative measurement tools for text complexity are “at once useful and imperfect,” and each type of measure has disadvantages and advantages (NGACBP & CCSSO, 2010, Appendix A, p. 8). One leg of the triangle addresses the particular reader and task situation that educators should take into account as they consider text selection, for example, student motivation and background
knowledge for the topic, purpose, and difficulty of the required reading task. A second leg of the model is qualitative measurement, or “those aspects of text complexity best measured or only measurable by an attentive human reader” (NGACBP & CCSSO, 2010, Appendix A, p. 4)—meaning or purpose, structure, language conventionality and clarity, and knowledge demands (NGACBP & CCSSO, 2012). A third leg is quantitative measurement. The concordant quantitative grade-level upper and lower bounds are shown in the CCSS text complexity trajectory for several quantitative measures. All of the quantitative measures produce a single summative measure of a text’s complexity—a grade equivalent or a continuous measure—and all correlate dependably with measures that involve student outcomes (CCSS Initiative, 2012).

Because the present article features the quantitative text complexity exposure trajectory, we further elaborate quantitative measurement by discussing both negative and positive qualities. First, commonly discussed quantitative measures do not, in themselves, entirely reflect a transactional stance on reader-with-printed-text complexity, although some are more consistent with a transactional stance than others. That is, some quantitative measures are more “textcentric” than others in that they examine only text characteristics to determine complexity, with no consideration of reader involvement. However, measures that are developed from study of readers’ encounters with texts are in at least one way related to the transactional stance. For example, a first step in the Lexile measure development was to determine a wide range of texts’ complexities by having a wide range of readers read multiple texts (Stenner & Swartz, 2012). Through Rasch modeling (Bond & Fox, 2007), a text’s complexity level was represented using central tendency for comprehensibility levels when many readers of different ages read the text (cf. Paris, Pearson, Cervetti, Carpenter, Paris, DeGroot, et al., 2004 on the potential of item response theory). Later, a predictor equation was used to determine which of many characteristics in printed texts best predicted the complexity levels of the texts read by those many original readers. As well, conjoint measurement theory using Rasch modeling also enabled location of reader ability on the same scale, representing a reader’s ability as central tendency for comprehension when reading many different texts. Such a method for determining text complexity is theoretically and practically different from measures created wholly by examining printed text characteristics through principal components analysis, factor analysis, or other methods that do not involve readers in their development. Still, even measures originally based on readers’ encounters with texts have used only one reader task, and consequently, to our knowledge, no evidence exists about their stability across many types of reader tasks.

Second, a single summative measure of text complexity level does not offer educators multiple kinds of information that could be useful to teachers for instruction, such as presence of difficult vocabulary or depth of thematic overlay (Connor, Morrison, Fishman, Schatschneider, & Underwood, 2007). However, a single summative measure of text complexity is useful for other purposes (Graesser, McNamara, & Kulikowich, 2011). For instance, a teacher may wish to challenge a particular group of students to react to multiple layers of meaning with a text that has a higher quantitative text complexity level, or he or she may assign the same group of students a lower-complexity-level text, asking them to read orally and fluently.

Third, many of the commonly used quantitative measures employ either readability formulae or predictor equations that have been shown to predict reader comprehension. The readability formulae and predictor equations tend to rely on lower linguistic levels—features of words or sentences (e.g., syntactic complexity) that do not adequately reflect the multiple levels of language used in reader-with-printed-text transactions (Graesser et al., 2011). At the same time, word and sentence variables have also been shown to predict as much as 94% of the variance in readers’ comprehension levels during encounters with texts (Stenner & Swartz, 2012; cf. Graesser et al., 2011), possibly because the lower linguistic level variables such as words and sentences are highly correlated with, or are proxies for, many other variables, including higher-level linguistic variables such as cohesive devices that bind meanings across sentences (Graesser et al., 2011; Perfetti, 1998). The strength of word frequency and sentence length or syntactic complexity as indicators of text complexity is supported by a verbal efficiency theory in which reading is constrained by readers’ limited processing capacity (Perfetti, 1985). Rare words and more-complex or longer sentences require longer processing time and can cause reader comprehension to break down.

Finally, most quantitative measures depend on printed-text computer-analytic tools. Computer-analytic measures of complexity cannot begin to capture the actual complexity of reader-with-printed-text transactions because that complexity is bound up in the particular situation—the particular person reading a particular text for a particular purpose (e.g., Luke, 1988). Also, to date, computational linguistic techniques do not measure factors such as metaphor, literary devices, or theme, but recent advances suggest such possibilities for the future. For example, Graesser and colleagues (Graesser & D’Mello, in press) have used computational linguistics to identify readers’ emotions. However, some studies have shown that computer-based software can be as reliable as, or more reliable than, human judgment (Graesser et al., 2011).

Clearly, tensions exist between quantitative and qualitative measurement of text complexity, between text centricity and reader centricity, between the “simplicity” of a single summative measure and the complexity of reading, between measurement of lower and higher linguistic levels, and between machine versus human determinations. The CCSS quantitative text complexity trajectory is couched within these tensions.

A Method for Creating Alternative Text Complexity Exposure Trajectories

The parametric-modification approach proposed in the present article to creating alternative pathways to the CCSS text complexity CCR goal is an adaptation of traditional parametric methods of modeling human growth for physical or cognitive variables (e.g., Haupsie & Molinari, 2010).

Selecting a Measure

The growth-curve approach requires a quantitative measure imbued with certain characteristics. Each trajectory is modeled as a polynomial function of time, so the measure used to create the
to the same end goal, the best-fit polynomial is found for the current-day text complexity exposure levels. The grade-level median curve for current-day text complexity exposure is very well modeled ($R^2 = .99$) by a fifth-degree polynomial given by the equation $y = 9.0909 + 364.76x - 67.61x^2 + 6.9919x^3 - 348x^4 + .0065x^5$, where $y$ stands for the Lexile measure of text at the end of the grade given by $x$.

Next, the CCSS CCR graduation target, 1,385 Lexiles, is set as the end point for the new alternative curves, and six new aspirational curves are created by modifying each of the six parameters of the current-day curve while holding the other parameters constant (using the constraint that the value of $y$ when $x = 12$ should be 1,385 Lexiles). Each parametric modification alters the original curve so that the new curve reaches the CCR text complexity target. As shown in Figure 2, modifying the first parameter, 9.0909, changes the intercept, the estimated originating ($x = 0$ implies kindergarten) text complexity level and produces the highest (red) curve in the figure. Modifying the second parameter, 364.76, changes the baseline velocity of the text complexity continuum, that is, the instantaneous “growth” rate of text complexity when $x = 0$ (kindergarten), the second-highest (green) curve in the figure. Modifying the next parameter, -67.61, changes the acceleration rate at the origin and produces the third (purple) curve (moving from top to bottom in Figure 2.) The three modifications are analogous to modifying the height, velocity, or acceleration, respectively, of a projectile launched in the physical world. Modifying the subsequent parameters associated with higher-degree terms in the text continuum equation produces similar, though dampened, effects on the aspirational trajectory, as can be seen in the bottommost curves in Figure 2. Any combination of parameters could also be changed simultaneously, leading to many additional alternative aspirational curves.

As can be seen in Figure 2, parameter changes can dramatically affect the shape of the aspirational curve, showing shifts in burden on specific grades. Changing the intercept represents the most dramatic shift, as it moves the entire (top, red) curve upward at every grade. Changing each of the successive parameters, and only that parameter, results in later and later departure from the current-day complexity curve, affecting older children more than younger ones. Note as well that none of the six aspirational curves in Figure 2 is identical to the smoothed CCSS standard trajectory curve in Figure 1.

**Limitations of the Approach**

Several limitations of the parametric method to fashioning trajectories should be considered. First, it does not have the sophistication of standard-setting procedures that are available for student achievement tests, for which there are multiple standard-setting protocols available for educators to consider.

Second, the potential risks of overemphasizing any single quantitative measure when creating a text exposure trajectory are serious. For instance, the intersection of task types that are optimal fits for the transactional view and a text complexity measurement model has not yet been definitively established. It is important to keep in mind that only one task was used to assess text complexity in the original Lexile study—reading to provide, through multiple choice, an overall summation of the printed text. It remains possible, though not empirically verified, that other predictors might weigh more heavily for different reading tasks.
Third, the approach is wholly quantitative, and the criticisms of quantitative measurement of text complexity could pertain to the approach, especially if it is used in isolation. Fourth, for illustrative purposes, we used the current-day CCR text complexity exposure level provided in the CCSS as the end point. Critique of the research base for that end goal could result in qualifications on its use. Finally, any trajectory should be considered in light of its impact when implemented. At present, we have no impact data to judge the appropriateness of any of the various text complexity exposure trajectories.

Making Educational Decisions: Contextualizing a Quantitative Standard for Text Complexity Exposure

Realization of Alternative Trajectories Is Useful

The realization that alternative trajectories exist provides educators and policy makers with a greater appreciation of the variety of pathways to CCR that are available, many of which fit the CCSS trajectory standard grade-specific ranges for text complexity exposure. It also leads to deeper understanding of how different text exposure trajectories place more burden on some groups of students than others.

Given that the standards provide some flexibility in text complexity exposure within grade levels, as educators make decisions at the state, district, or school level, they could use parametric modulation to create their own alternative pathways, or they could consider one of the alternative curves in Figure 2 that would place more or less burden on younger versus older students but also would fit within the grade ranges suggested in the Common Core. (Steps for educators to use to create additional curves are shown in a Figure 2 note, and the data used to produce Figure 2 are available as ancillary material at http://edr.sagepub.com/supplemental.) As shown in Figure 2, several of the alternative curves lie entirely, or almost entirely, within the CCSS aspirational ranges by grade. So, for instance, the third (purple) alternative median curve from the top in Figure 2 is situated entirely within the CCSS aspirational ranges by grade. It projects virtually no change through third grade in text complexity exposure from current-day exposure and very little change in fourth and fifth grades. However, as students move through middle and high school, they would be gradually exposed to more-complex texts. The dispersion of student burden in that pathway contrasts sharply to the median curve of the CCSS projection (shown in Figure 1), where some increased burden is placed on students beginning as early as second or third grade. The main point...
here is that exploration of multiple pathways to the end goal, combined with the built-in flexibility allowed in the CCSS, provides educators a means to systematically adjust targets for complexity exposure at different grade levels while still meeting the standard.

An additional advantage of the parametric method for determining alternate trajectories obtains when states or districts have collected student reading performance data over time. Individual or group student reading growth could be plotted as trajectories, and that past growth could be compared with any aspirational text complexity exposure curve. States or districts could then explore the potential impact on student comprehension of adopting any particular text exposure trajectory.

Critical Considerations for Quantitative Text Complexity Trajectory Selection and Decision Making

The quantitative parametric-modification approach generates a collection of rationally determined alternative trajectories that may be critiqued and evaluated in light of specific student populations. When critiquing alternative quantitative trajectories, educators’ decisions about choice of trajectory should be guided by additional considerations. We propose three basic principles.

The evidence base for the challenge-level “sweet spot.” Consideration of the appropriate challenge level for groups of students or individual students ought to take into account an evidence-based understanding about how much challenge is beneficial to students for particular reading outcomes. For decades, conventional wisdom among reading researchers and practitioners has pointed to a “sweet spot” that situates printed text level in relation to reader level (Betts, 1946). Unfortunately, the reading research literature on the specific issue of maximal or optimal text complexity challenge level is sparse and, in the main, limited to elementary grades and only a handful of varied reading outcomes (Allington, 2009). A few studies have supported the contention that reading printed texts with higher levels of word recognition accuracy (easier texts) tends to promote stronger levels of reading engagement and reading growth than does reading texts with lower levels of accuracy (e.g., Ehri, Dreyer, Flugman, & Gross, 2007; Gambrell, Wilson, & Gantt, 1981). On the other hand, a small set of researchers found that in certain circumstances, such as strong teacher scaffolding with the goal of improving students’ oral reading fluency, even frustration-level texts could be advantageous (e.g., Stahl & Heubach, 2005). Particularly absent is evidence related to the CCSS reading outcome goal that focuses on advancing students’ abilities to enrich the meanings they create during reading.

What should educators do, then, to make decisions about appropriate challenge levels for text complexity? First, they should be aware that the empirical evidence base is scant. Second, erring on the conservative side of accumulated professional wisdom, they can use texts for which students’ word-reading accuracy is in the range of 95% to 99% (cf. Allington, 2009). Third, they should take into account the particular reading situations. Locating the text-level-to-reader-level sweet spot is complicated by several situational factors, such as degree of teacher support during the reading activity; the match between reader background knowledge, interest, motivation, and the text content; whether a reader is advanced for his or her age or struggling as compared to typically developing readers; and/or the situated task, that is, the purpose for reading in the particular situation, in conjunction with the desired demonstrated student outcome (e.g., fluency, word-reading accuracy, or comprehension; cf. Allington, 2009). Stretching challenge levels for text during classroom instruction when teachers are providing scaffolding and other forms of support presents a very different challenge to many students than stretching challenge levels for text when they are reading independently.

The meaning of complexity in relation to developmental phases of reading. Attention should be given to the impact of raising text complexity expectations at specific grade levels in relation to what is known about how learning to read develops over time. Learning how to read, learning about reading, and reading to learn are cumulative processes that continue even into adulthood (e.g., Ehri & Snowling, 2004; Fitzgerald & Shanahan, 2000). However, particular reading skills predominate at different stages or phases of reading development, and as a consequence, discontinuities in development can occur at different points in an individual’s reading development (e.g., Adams, 1990; Chall, 1996; Ehri & Snowling, 2004). The emergence and elevation of the features that are critical at different developmental periods interface with printed-text features and should therefore be considered in text complexity discussions. That is, the critical features for particular developmental phases help to focus the concept of text complexity and how much and what type of complexity are beneficial to readers in those particular phases. By knowing “when to teach what to whom,” [students can formulate multiple connections] that result in richer, deeper representations, increasing refinements in lexical organization, and ultimately, to more-automatic word recognition, fluent reading, and comprehension” (Invernizzi & Hayes, 2011, p. 205). When considering text complexity exposure trajectories, key questions to ask are as follows: What do we know from research-based theory about reading development that would be related to the impact of increased text complexity on typically developing students at particular grade levels and/or related to the impact of increased text complexity on struggling readers at this grade level? And what research-based evidence is there that shifting the challenge level of complexity to this particular degree for these particular students will either encourage or inhibit student-reading growth?

Local considerations. As a text complexity exposure trajectory is considered, local issues ought to be taken into account, addressing situational issues such as the following: Which students would be most affected by the text complexity exposure shift, and for those most negatively affected, what kind of instructional scaffolding would be required to assist them? For the students most affected by the text complexity level shift, would motivation, self-esteem, or resilience be positively or negatively affected? If negative effects might ensue, then specific interventions might be needed for specific groups of students, or ways of adjusting instruction might be needed to avoid or ease that negative effect. Another local consideration is the degree to which professional development would be required to support teachers’ instructional modifications. An equally important factor is the extent to
which additional human and financial resources would be required to achieve instructional modifications.

**Applying the Guiding Principles: A Brief Illustration**

To illustrate how application of the guiding principles can aid decisions about choice of quantitative text complexity exposure trajectory, we select just one of the aspirational curves shown in Figure 2: the top curve (red) for which the intercept was shifted upward. We address the guiding principles for considering the implications of the curve first for beginning readers and second for older students. As reflected in Figure 2, the net effect of shifting the intercept upward is that on the whole, students in every grade would be asked to read more-complex texts than they apparently currently read.

**Impact of the shift for beginning readers.** Focusing on the beginning-reading years of the curve, research is quite clear that the early phases of learning to read are crucial ones that set the stage for later years (Chall, 1996; Fitzgerald & Shanahan, 2000). Achieving a just-right challenge level of material for optimal reading growth is likely to be even more critical at the beginning-reader level than at other stages of reading development for at least two reasons: (a) Children who are unable to establish fundamental reading abilities during the early years often experience cumulative challenges that are extremely difficult to overcome across years of learning to read (Torgesen et al., 2011). Additional risks associated with a slow start are high, including later association with poor academic performance in content areas, high rate of school dropout, increased participation in crime, increased drug use, and teen pregnancy (Lipsey & Derzon, 1998). (b) As well, if challenge levels are set too high, younger students, as compared to older students, are less able to analyze reasons for failure to progress, and they may not have developed strategic coping mechanisms to deal with the mismatch.

Serious concerns have been leveled about raising the text complexity requirement for beginning readers too high (Hiebert, 2012). Early reading development from kindergarten through about second grade is generally represented by three phases (Chall, 1996; Fitzgerald & Shanahan, 2000). One of the most critical kinds of knowledge developed in the first of the three is phonological awareness (Adams, 1990). Critical learning during the second of the three phases involves two progressions in acts of processing (Clay, 2001): continuing to develop phonological awareness and increasingly learning about the arbitrary set of letters and how they are associated with parts of spoken words, often referenced as “code breaking” (Clay, 1993). The critical learning in the third of the three early phases is procedural—integrating and consolidating strategies and processes, facilitating fluency or automaticity (Chall, 1996; Fitzgerald & Shanahan, 2000).

In the early learning-to-read phase, among many important characteristics, such as inclusion of thoughtful and meaningful stories and clear informational content, texts ought to entail particular levels of “code complexity” that facilitate young children’s learning of critical phonological awareness and word recognition strategies. For instance, sequencing texts according to progressions of known word decodability difficulty may assist students’ strategic word recognition learning. Or for example, texts with decodable words that also have easily associated meanings are even more accessible (e.g., Metsala, 1999). Especially considering that beginning readers in general tend to self-select texts that are too challenging to read independently (Donovan, Smolkin, & Lomax, 2000), raising text code complexity levels for typically developing beginning learners would mean the just-right code-learning support could disappear, potentially inhibiting student reading progress.

What kinds of local issues might be affected by increasing the text challenge level for beginning readers? When students in a school or classroom are more advanced than typical, teachers, parents, and administrators might consider more-challenging texts but primarily more-challenging text that could match well to students’ growing code-breaking abilities. Providing higher-level cognitive demand for word recognition and related meaning construction could potentially facilitate such students’ growth. On the other hand, when students in a school or classroom are less advanced than typical, raising text challenge levels likely ought not be considered. If such students were required to read more-challenging texts, district administrators and teachers would likely need to give extra consideration to when provision of the more-challenging texts would occur during the school day. For instance, a decision could be made to use the more-challenging texts only during literature response circles and never during small-group reading instruction or for independent reading. Local educators might also need to consider supplemental instructional support for at least some of the lowest-performing students, whose numbers could rise. As well, professional development programs for classroom teachers would be advisable to assist them in determining ways of modifying daily classroom structures to enable more individual and small-group reading instruction (Wixson, 2012).

**Impact of the shift on older students.** Adolescence, especially early adolescence, may be a particularly crucial developmental period. It is a period well known for the potential significant decline in student achievement and achievement motivation, including valuing of school (Wang & Pomerantz, 2009). Middle-grades students are especially vulnerable to a trajectory of school failure when school environments fail to respond to students’ needs (Eccles, Lord, & Midgley, 1991). Matching students’ reading ability levels to “best-fit” text complexity may be one key to keeping students who have previously experienced school success on a continuously positive achievement trajectory and to helping struggling readers avoid future school failure.

Although meaning creation is the focus of reading at all ages, during the middle grades, there is a dramatic turn away from the work of code breaking toward “reading and writing for learning the new” (Fitzgerald & Shanahan, 2000; Spear-Swerling, 2011). Critical at the middle-grades phase of learning to read are self-monitoring of one’s own knowledge during reading, increasingly deeper and wider background knowledge of content areas, broadening vocabulary knowledge, learning about more-complicated syntactical and organizational text structures, and procedural knowledge expansion for knowing how to read for a wider variety of purposes (Fitzgerald & Shanahan, 2000). As students move through the high school phase of learning to read, they continue to develop and enrich the same kinds of critical understandings...
from the middle grades, but more than ever before, learning to see from another’s viewpoint and knowing how to analyze and critique while reading emerge as essential factors (Chall, 1996; Fitzgerald & Shanahan, 2000).

On the whole, typically developing and advanced readers have well-established foundational reading skills for navigating code complexities, such as pronouncing multisyllabic words and knowing how to manage more-complicated, or at times even ill-formed, text structures. Their backgrounds of experience, domain knowledge, and vocabulary meanings could be sufficiently broad and deep to assist their ability to create increasingly layered and intricate meanings while reading more-complex texts. Although the evidence base to date is sparse, with sufficient teacher support, student motivation, and attention to student engagement, such students may well be advantaged by stretching the challenge levels of their texts to some degree (Guthrie & Wigfield, 2000).

On the other hand, stretching text complexity levels too far for older students who are struggling readers could spell disaster (O’Connor et al., 2002). For instance, many older struggling readers who are lagging developmentally, possibly as many as half of adolescents (Catts, Hogan, & Adlof, 2005), do not have the necessary basic or more-advanced word recognition abilities needed for comprehension (Leach, Scarborough, & Rescorla, 2003). Some have not garnered a broad or deep network of vocabulary meanings, also a necessary attribute for comprehension (Spear-Swerling, 2011). Others may have well-developed advanced word recognition abilities and strong meaning vocabularies, but they may not have advanced in understanding more-sophisticated text structures or may not have learned strategies to manage comprehension (Scarborough, 2005). Such students are most likely to make progress when they have many opportunities to read texts that match to the critical features that are best suited to their developmental reading levels and when they receive instruction targeted to their specific strengths and weaknesses (Spear-Swerling, 2011). Importantly, in general, struggling readers tend to avoid selecting books to read independently (Hasbrouck, Swerling, 2011). Importantly, in general, struggling readers tend to avoid selecting books to read independently (Hasbrouck, Swerling, 2011). When older struggling readers are faced primarily with texts that are not suited to their developmental reading levels, that is, texts that are too challenging, dropping out, either figuratively or literally, is all too often a result (Bryan, Fawson, & Reutzel, 2003).

Locally, for typically developing or advanced adolescents, school, teachers, administrators, and parents might well find that increasing the challenge levels of texts for their cognitive growth. However, given national trends in adolescent reading achievement documenting that only 37% of U.S. eighth-grade students read at or above the proficient level (National Center for Education Statistics, 2011), chances are good that many classrooms will include at least a small percentage of struggling adolescent readers, and some will include a large percentage. Moving adolescent struggling readers to a more advanced phase almost certainly would require less complex text selections than those chosen for typically developing adolescent readers. Clearly, when middle-grades and high school classrooms include a range of reader abilities, teachers are faced with both the ethical complication and the impracticability of differentiating text selection and rearrangement of methods of classroom instruction to accommodate individual or small-group learning. As well, many teachers, especially middle-grades and high school teachers, do not currently have sufficient knowledge about reading processes or how to facilitate readers’ development (Allington & McGill-Franzen, 2008). Consequently, educators will likely need to consider focused professional development for teachers and/or supplemental instructional support structures, especially for lower-performing older students.

**Conclusion**

Decisions about shifting text complexity levels in schools requires more than simple adoption of a one-size-fits-all standard. Figuring out how much text complexity exposure is enough depends on several interrelated factors, including particularities in situ. Fortunately, the CCSS quantitative standard for text complexity exposure provides educators and policy makers some decision-making flexibility. Exploration of multiple pathways for exposing students to sufficiently high levels of text complexity, in conjunction with the application of a set of guiding principles, can help educators and policy makers adjust educational exposure to increased text complexity so that students are appropriately prepared for college and career. District officials who use the two-part strategy proposed in the present article could set internal policies based on local situations that could provide enhanced guidance to teachers about use of quantitative text complexity measures.

**REFERENCES**


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