



SUPPORTING EXCELLENCE

A Framework for Developing, Implementing, and
Sustaining a High-Quality District Curriculum



JUNE 2017

FIRST EDITION

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The Council of the Great City Schools is the only national organization exclusively representing the needs of urban public schools. Composed of 70 large city school districts, its mission is to promote the cause of urban schools and to advocate for inner-city students through legislation, research, instructional support, leadership, management, technical assistance, and media relations. The organization also provides a network for school districts sharing common problems to exchange information and to collectively address new challenges as they emerge in order to deliver the best education for urban youth.

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PART I:

PURPOSE, PRINCIPLES, AND PRECONDITIONS

Overview

In the ongoing effort to improve instructional standards in our nation's urban public schools, the Council of the Great City Schools has released resources to help districts determine the quality and alignment of instructional materials at each grade level; to ensure that materials for English language learners are rigorous and aligned to district standards; to help districts provide targeted professional development for teachers, principals, and district staff; to assist districts in their outreach to parents, the media, and the community; to coordinate the adoption and implementation efforts of various central office departments and stakeholder groups; and to self-assess their progress in implementing college- and career-readiness standards systemwide. Districts, for their part, have worked to develop lessons and units that reflect new, more rigorous college- and career-readiness standards. However, there has been little guidance up to this point on what a strong, standards-aligned curriculum should look like.

In the summer of 2016, the Council of the Great City Schools gathered a team of school and district academic leaders, along with representatives from Student Achievement Partners (SAP), to develop a curriculum reference tool that lays out the criteria for developing a coherent curriculum aligned to district- and state-defined college- and career-readiness standards and capable of guiding instruction in the district.

Over the course of the two-day meeting, the team discussed the key elements that guide a district's instructional program, and what components need to be present for a district to build a shared understanding of district expectations for student learning. The discussion was interactive and fluid, and resulted in the development of a definition of curriculum that was both functional and forward-thinking. We stressed the need for a common definition that each team member could support and advocate.

The teams also met in smaller groups to discuss key components of a quality curriculum and to address issues of implementation.

Based on these discussions, as well as the experience and expertise Council staff have developed over the years working with scores of academic departments in large urban districts, this guide aims to present instructional leaders and staff with a core set of criteria for what a high-quality curriculum entails. This guide includes annotated samples and exemplars from districts around

the country. It also provides actionable recommendations for developing, implementing, and continuously improving upon a district curriculum, ensuring that it reflects shared instructional beliefs and common, high expectations for all students, and that it focuses the instructional work in every school throughout the district.

This framework is grounded in college- and career-readiness standards, but it does not repeat them except to provide clarity in the examples. The framework assumes the content taught using the curriculum will build background knowledge in core subjects, but this framework does not identify specific content. The document also does not advocate a particular format for designing curriculum. Based on the level of expertise and current content knowledge of teachers, as well as student achievement, the district would need to determine the grain size (the level of detail needed to explain district expectations) for its curriculum guidance. Some districts may choose to provide an explanation of standards or include units of study, lesson plans, and/or pacing guides to support teachers in delivering effective instruction.

Defining Curriculum

In order to provide structure to this exploration and guide for developing and implementing a high-quality curriculum, the project advisory team developed the following definition:

A district curriculum is the central guide for teachers and all instructional personnel about what is essential to teach and how deeply to teach it throughout the district so that every child has access to rigorous academic experiences and instructional support in meeting academic standards. It also provides guidance for all instructional staff who support and supervise teaching and student learning.

A district curriculum goes beyond a mere listing of standards, although it is based on the college- and career-readiness standards adopted from the state. However, it incorporates the additions the school system has made to more clearly translate the content knowledge, conceptual understanding, and skills students are expected to learn. The district's philosophy of what learning is essential, how students learn, and how to gauge student progress is central to the development of the curriculum. The curriculum itself explicitly indicates what the district requires (holds tightly) in every classroom, and acknowledges where schools and teachers have autonomy.

The district curriculum is not a textbook or a set of materials. An effective curriculum does, however, identify and connect educators to resources that the district requires, and provides guidance in the selection and use of classroom resources. The curriculum considers the time required to teach the essential content to all students. Feedback from users is incorporated in the development, revision, and implementation of the district curriculum to leverage teacher expertise and to ensure continuous reflection and refinement of the district's instructional principles and expectations.

The Purpose of a Quality Curriculum

The main purposes of developing a high-quality, standards-aligned curriculum are:

- To prepare students for college and careers
- To support teachers in delivering effective instruction
- To ensure access for all students to rigorous and meaningful educational experiences in every school and classroom throughout the district

The lack of a clear curriculum leaves teachers and administrators to individually determine what the district expects, and leads to a variety of interpretations that may or may not be aligned with district expectations. This is especially detrimental in urban settings, where high staff turnover requires structures and mechanisms for maintaining the continuity of expectations. Moreover, high student mobility in urban centers presents the challenge of ensuring that students do not miss key concepts by transferring from one school to another in the district. Given the diversity of students and learning needs in our urban classrooms, there is also the need for clarity around how to differentiate instruction while still maintaining a high level of rigor and access to core content and standards for all students.

Preconditions for Supporting a High-Quality Curriculum

A number of political, technical, and organizational preconditions are needed to support the development and implementation of a high-quality curriculum. In particular, a high-quality curriculum has the best chance of improving instruction systemwide if:

- The district has consistently communicated a strong, unifying vision for high-quality school and classroom practice that is founded on college- and career-readiness standards and high expectations for all students.
- The district has set clear, measurable goals for the academic attainment of all students.
- The district has a comprehensive professional development plan in place and communicates the message that not only teachers, but a wide variety of central office and school-based leaders and staff are expected to develop the content knowledge and skills necessary to implement district college- and career-readiness standards.
- The district ensures that both internally- and externally-provided professional development is consistent with the district's instructional vision, aligned to college- and career-readiness standards, and prioritized and logically organized to address teacher needs.
- The district continuously works to build a culture of shared accountability for student achievement across central office departments, staff, and schools.

An additional consideration is the need for a thoughtful, internally consistent approach to instructional management and oversight. Some districts are highly centralized in their control of curriculum and instruction, while others give schools a high degree of autonomy in these areas. Districts need to explicitly consider why and how their particular approach to school oversight is likely to improve instruction and advance academic achievement based on staff capacity and student performance. The most effective approach is one that tailors the level of central oversight to the needs of schools, based on where schools and the district are on the continuum of progress. In particular, if a district has low levels of achievement, a high degree of school-based instructional decision making is unlikely to provide the guidance and consistency necessary to improve school performance. Moreover, in those districts where schools earn greater autonomy through high achievement, this should not mean that such schools are free to determine instructional standards. The district should still lay out what skills and knowledge they expect students to have, and high-performing schools should be given the latitude to build on these curricular expectations.

Finally, regardless of the management approach of a district there must be checkpoints and measures for gauging whether the school system is on the right path in its instructional reform efforts. These measures should consist of a diverse set of indicators of student achievement and access to rigorous, grade-level content. Moreover, the district should ensure that all summative, formative, criterion-based assessments, as well as the systematic evaluation of student work, are aligned to the content and rigor of college- and career-readiness standards.

Principles for Design and Implementation

In developing and adopting curricula, districts often face many of the same challenges. These challenges range from the strategic to the tactical. For instance, a curriculum is unlikely to be implemented with integrity across a school system if district leaders have not communicated why it is essential for all students or its importance as a driving force behind instructional improvement. Districts must also ensure that teachers and instructional leaders share an accurate understanding of instructional expectations. At the same time, implementation can also be derailed if curricular materials are not aligned to the standards and easy to use, or if there are problems in the pace of instruction presented or in the distribution of materials or guidance. It is therefore helpful to start with a shared understanding of the principles of what a quality curriculum entails, and how it should be introduced and implemented in schools throughout the district.

- Curricular expectations should be embedded in the district’s philosophy of what learning is essential, how students learn, and how to gauge student progress.
- Curriculum guidance should explicitly indicate what instructional decisions and mandates are to be made at the district level (i.e., what the district “holds tightly”), and where schools and teachers have autonomy in making decisions about what and how to teach. Curriculum guidance should also clearly identify and link to any specific resources that the district requires to be used in a particular grade level or grade span.

- A quality curriculum plans a coherent instructional experience within and across grade levels from pre-kindergarten through high school that systematically builds student readiness for college and/or careers.
- A quality curriculum provides support for the best teaching and identifies appropriate annotated resources so that students have access to excellence every day.
- A quality curriculum incorporates culturally responsive texts and resources that respect and celebrate the cultural, ethnic, and linguistic diversity of students.
- The curriculum serves as the central guidance for all instructional staff who support and supervise teaching and student learning, as well as the selection of both required and optional classroom resources.
- The scope and sequence of the curriculum should specify what content knowledge and skills should be taught, and at approximately what point during a school year, so that students who transfer between schools have a coherent learning experience.
- The curriculum should create the floor, not the ceiling, for learning at every grade level and in every course. In this way, the curriculum can support and challenge the full range of learners, from struggling students to gifted and talented students.
- The curriculum should articulate the depth at which students need to learn, demonstrate their understanding of, and apply a given concept.
- The curriculum should realistically consider the time required to address essential content with all students.
- Curricular documents should be developed in a way that ensures broad-based access and ease of use, with deliberately chosen and clearly identified delivery models.
- Expectations should be presented in ways that reflect natural coherence within and across content areas and across grade levels.
- The curriculum should illustrate exciting learning opportunities so that students love school as they learn challenging content, skills, and concepts.
- The curriculum should explicitly identify best practices for delivering content at key points in the curriculum, particularly for concepts and skills that have traditionally proven challenging for district students.
- Curricular documents should recognize concepts and skills where large numbers of students are likely to have learning gaps, and should provide suggested guidance that will help students fill those gaps while simultaneously accessing grade-level material.
- Quality curriculum documents should explicitly indicate when and how to use assessments, including formative assessments, to determine whether students are making progress in attaining a particular standard or set of standards.
- The curriculum development process should incorporate feedback from users and leverage teacher expertise.

PART II:

SEVEN KEY FEATURES OF A STRONG, STANDARDS-ALIGNED CURRICULUM

So what do these defining principals of a high-quality curriculum look like in practice? In this section, we will provide concrete examples of district curricula that illustrate a set of seven key features of quality and alignment. In particular, we aim to illustrate how and when:

- 1** A district's curriculum documents reflect the district's beliefs and vision about student learning and achievement.
- 2** A district's curriculum documents are clear about what must be taught and at what depth to reflect college- and career-readiness standards for each grade level.
- 3** A curriculum builds instructional coherence within and across grade levels consistent with college- and career-readiness standards for each grade.
- 4** A curriculum explicitly articulates standards-aligned expectations for student work at different points during the school year.
- 5** A curriculum contains scaffolds or other supports that address gaps in student knowledge and the needs of ELLs and students with disabilities to ensure broad-based student attainment of grade-level standards.
- 6** A curriculum includes written links to adopted textbooks or computer-based products to indicate where the materials are high quality, where gaps exist, and how to fill them to meet district expectations.
- 7** A curriculum provides suggestions for the best ways to measure whether students have met specific learning expectations.

KEY FEATURE 1

The district's curriculum documents reflect the district's beliefs and vision about student learning and achievement.

Why is this important?

A school district can maximize learning when teachers and administrators readily see how their work is connected with the district's beliefs and vision for student learning and achievement, as well as respect for the cultural and linguistic backgrounds of students. If the district communicates the vision and expectation that all students will meet district standards and graduate ready for college and careers, but the curriculum guidance reflects low expectations for the types of classroom reading materials that are to be used and suggested activities and questions, then staff are receiving mixed messages. Prior to designing new curriculum guidance, curriculum writers need to carefully review the district's beliefs and vision and set criteria their guidance should reflect.

If the district has unwittingly been condoning low expectations, the curriculum needs to not only reflect higher expectations, but also provide guidance in how to advance students who have not been challenged in prior grades so they can make the necessary progress in their academic language, reading levels, and reasoning skills. If the district believes that students learn best in a particular way, then curriculum examples should reflect those approaches.

What does it look like?

The introduction to a curriculum document should specifically reference the district's beliefs and vision about student learning and achievement, and indicate how the curriculum guidance is directly linked to those ideals. Prior to publishing the document, each suggested activity and exemplar of student work should be checked to see that they align with and support those statements. The document should also provide support to instructional staff to attain those goals.

Example, English Language Arts

The District of Columbia Public Schools (DCPS) has developed Cornerstone Units and anchor assignments for each grade level and subject. The district's published objective is to provide all of their students with a world-class education, and to deliver on this promise DCPS focuses on rigorous academic content, developing highly effective teachers, engaging families, and motivating students. These units reflect the district's beliefs and vision that "deep learning happens when students are able to understand and retain information by participating in interesting and meaningful activities" (that are anchored to academic standards).

In English Language Arts, for example, DCPS units in grade two provide students with multiple opportunities to engage in rich, rigorous text. Combined with ample opportunities to discuss text, students are supported and encouraged to become experts in the content. During the course of the unit, students will read, write, research, take part in activities, and discuss. Second grade teachers will

read aloud the majority of the texts in the beginning of the school year to increase student access to the texts. As the year progresses, however, students are expected to develop greater proficiency and independence in reading complex texts. The guidelines of the Cornerstone Unit make it clear that students should always be given opportunities to work with and in the text through annotation and discussions. A portion of the unit is shown in the following sample.

Figure 1. Sample District of Columbia Public Schools (DCPS) Cornerstone Unit: *Plants Everywhere*



UNIT FOCUS	READING, WRITING, AND RESEARCH KNOWLEDGE AND SKILLS	
<p>In this unit, students will learn that:</p> <ul style="list-style-type: none"> ■ Living things depend on their surroundings to get what they need, including food, water, shelter, and a favorable temperature. ■ Plants depend on air, water, minerals (in the soil) and light to grow. Different plants survive better in different settings because they have varied needs for water, minerals, and sunlight. <p>Duration (25 Days)</p> <p>Classrooms should use the first week of school to set up classroom procedures, expectations, etc. This gives students opportunities to practice accountable talk, responding to text, etc.</p>	<p>Knowledge</p> <p>Students will know...</p> <ul style="list-style-type: none"> ■ Text structures used in informational text: compare and contrast, sequence, cause and effect, description, problem/solution (Q & A) ■ Text features of informational/expository text ■ Thought process and language of compare and contrast ■ Main idea, key details, summary ■ Strategies to determine word meaning (context clues, prefixes, root words, compound words, dictionaries) ■ Irregular plural nouns ■ Reflexive pronouns ■ Collective nouns ■ Expected procedures for engaging in collaborative conversations 	<p>Skills</p> <p>Students will be skilled at...</p> <ul style="list-style-type: none"> ■ Using multiple resources to locate information ■ Recognizing text structures and the author's purpose of a text ■ Identifying sequential steps in informational text ■ Describing the connection between a series of scientific ideas and concepts ■ Summarizing text by reporting main ideas and identifying key details ■ Using evidence to make logical inferences about text when engaging in collaborative conversations, and in writing ■ Using illustrations, captions, and headings to clarify a text or gain more information ■ Choosing flexibly from an array of strategies to determine word meanings ■ Describing how words, phrases, and images add meaning to a text ■ Gathering and organizing relevant information about a topic
<p>DCPS units will provide students with multiple opportunities to engage in rich, rigorous text. Combined with ample opportunities to discuss text, students will aim to become experts in the content. During the course of the unit, students will read, write, research, take part in activities, and discuss.</p>		

This unit is required for all students in accordance with the DCPS Vision: Every student benefits from challenging, engaging, and memorable educational experiences.

This reflects the district's commitment to providing "access for every student to inspiring classroom experiences that connect to the real world."

Second grade teachers will read aloud the majority of the texts in the beginning of the school year to increase student access to the texts. As the year progresses, the load of the work of reading text should be shifted to students. Students should always be given opportunities to work with and in the text through annotation and discussions.

This is aligned to the district's belief that deep learning happens when students are able to understand and retain information in interesting and meaningful activities.

MAKING MEANING WITH CONTENT

Lines of Inquiry

Students will keep considering...

- What are the parts of a plant?
- How do a plant's parts work together to help the plant survive and reproduce?
- What is the relationship between the life cycle of a plant and other living things?

Understanding

Students will understand that...

- Plants need water, air, and sunlight in order to survive
- Plants have a life cycle
- Plants depend on people, pollinators, and the environment for survival

UNIT VOCABULARY

WRITING FOCUS

To evaluate student writing, teachers should use the DCPS PARCC-aligned rubric, and students should have access to the DCPS student-friendly checklists.

Content Vocabulary

Relationship, cycle, energy, process, nutrients

Academic Vocabulary (from standards)

demonstrate, describe, fiction, identify, text

The three modes of writing are: Narrative Writing, Informational Writing, and Opinion Writing. These are briefly introduced.

This series of lessons will mainly focus on introducing the writing process through informative writing. Student will write an informative/explanatory piece in which they:

- Introduce a topic
- Supply facts and information
- Provide a concluding statement

Example, Mathematics

Similarly, the Cornerstone Units in mathematics are designed to engage students in understanding and applying mathematics. The Standards for Mathematical Practice become visible as students apply their mathematical understanding by engaging in real-world problems where the solution process is not easily defined. For example, a third grade Cornerstone Unit, *Area Architects*, requires that students play the role of architects redesigning national landmark structures for clients. They redesign the room sizes in the structure to meet client needs while preserving the total floor area. Students create new floor plans and justify their design mathematically and in terms of meeting the client's requirements. The unit, *Area Architects*, comes directly from *Eureka Math*, Grade 3, Module 4 – Lessons 15 and 16, and includes italicized text created by the Cornerstone developer. A portion of the unit is shown in the following sample.

Figure 2. Sample District of Columbia Public Schools (DCPS) Cornerstone Unit: *Area Architects*

PLACEMENT IN THE UNIT

Before the Cornerstone – Prior to this Cornerstone, students have engaged in fourteen lessons focused on area. Students have:

- Understood area as an attribute of plane figures (Lesson 1)
- Decomposed and recomposed shapes to compare areas (Lesson 2)
- Modeled tiling with centimeter and inch unit squares as a strategy to measure area (Lesson 3)
- Related side lengths with the number of tiles on a side (Lesson 4)
- Formed rectangles by tiling with unit squares to make arrays (Lesson 5)
- Drawn rows and columns to determine the area of a rectangle given an incomplete array (Lesson 6)
- Interpreted area models to form rectangular arrays (Lesson 7)
- Found the area of a rectangle through multiplication of the side lengths (Lesson 8)

The unit includes a description of the standards and learning experiences that occurred prior to the unit and what all students are expected to understand and experience during the Cornerstone Unit. This allows the teacher to address unfinished learning while also introducing challenging concepts so that all students are able to access a world-class education for their grade level.

The unit is designed for three days and includes student discussions, creating and connecting multiple representations, and prompts requiring students to compare and contrast their findings. It is a district expectation that all students develop a deeper understanding of mathematical concepts rather than seeing them in isolation. In this case, they are linking the concept of multiplication and area to a real-life experience.

STUDENT LEARNING GOALS TIME LINE

PROJECT TIMELINE		
Day 1	Day 2	Day 3
Analyze a floor plan by using side lengths to determine the area of each room and the area of the entire house.	Design a new floor plan; keep the area the same, but manipulate the side lengths to change the shape of each room.	Evaluate peers' floor plans. Did they maintain the correct area? How do their side lengths make their floor plan different from yours?

UNIVERSAL DESIGN FOR LEARNING

The suggestions for multiple means of engagement, representation, and expression are meant to make the lessons accessible to all learners. All suggestions are embedded into the natural flow of the lessons and are bolded for emphasis. Some of the suggestions come directly from the *Eureka Math* lessons and are noted as such. Teachers may add alternative ways to make the lessons more accessible based on student needs.

The district has intentionally designed units of study that embrace the district vision of rigorous content, engaging students, and strategically considering the needs of special populations so that they have access to the grade-level Cornerstone Unit. This particular unit includes opportunities for students to express their reasoning and use multiple representations (including pictures, diagrams, and math symbols of their thinking) for models that may have multiple solutions. The unit also requires that teachers honor the language of their students as well as help students transition to using increasingly sophisticated academic language. There are public displays and discussions where all students are expected to justify their reasoning and critique the reasoning of their peers.

KEY FEATURE 2:

The district's curriculum documents are clear about what must be taught *and* at what depth to reflect college- and career-readiness standards for each grade level.

Why is this important?

Curriculum leaders have the advantage of examining the pre-kindergarten through grade twelve curriculum from a broad perspective. They know what has come before and can see into the horizon about where a particular objective is positioned. Based on walk-throughs, student work, and student achievement data, they can also identify which aspects of a learning objective need to be amended or need greater emphasis.

It is the duty of curriculum leaders to support teachers and administrators by translating this overarching vision into a coherent, systemic set of learning expectations by grade level and subject so instructional staff can devote their energies to helping students learn essential knowledge and skills. Clarifying district expectations for student learning creates the basis for building shared understanding of where to focus teaching efforts. This common ground enables all students in every classroom and in every school to have access to the concepts, knowledge, and skills they need to meet district expectations and be prepared for ever more complex learning in higher grade levels and courses.

Without such clarity, individual teachers and school planning teams may misinterpret broad statements, creating a range of well-meaning goals that result in some students working on low-level assignments and missing the opportunity to learn the rigorous content and skills the district intended. This can create and expand gaps in student learning—gaps that become increasingly evident as students move into higher grade levels. Indeed, problems in student achievement in Algebra I, for example, might be traced to incomplete or unclear coursework and instruction in elementary school concepts that teachers could have taught, but did not realize that they needed to.

Finding the right level of granularity to ensure that district curricular expectations are clear is a district decision that must be made based on the content expertise and skill level of the end users. A district with high teacher turnover rates, for instance, may choose a smaller grain size than those with a stable, knowledgeable teaching force.

What does this look like?

A majority of the district curricula reviewed for this guide provided a list of the standards to be taught at each grade level, without providing any guidance as to the precise content or the depth of knowledge and rigor with which to teach these concepts. Instead, the district curriculum should clarify in detail what it expects teachers to teach and students to learn. So in order to illustrate how a district could provide clarity not only around what needs to be taught, but at what depth, we have developed the following sample unit overview based on a template from a member district and using information posted on the Edmodo website in the Basal Alignment Project Group.

To illustrate this key feature, we start by describing a key grade four English language arts standard (comparing the points of view of different narrators, including the difference between first- and third-person narrations) and how instructional rigor and student understanding should build over the course of the year. Importantly, this overview also explicitly addresses the prior learning that the unit will build on and how to make connections to this foundational knowledge. In order to assist teachers as they work with students to make meaning of this new content, the overview then addresses steps to take and things to consider before teaching, during teaching, and after teaching (assessment considerations). This document also lays out the connections to the overall goal of college- and career-readiness for all students.

However, it is important to note that the level of detail and guidance provided here assumes a fair amount of expertise in the standards. For example, when we refer to the use of “text-dependent questions” we are assuming that teachers are skilled in the concept and use of this instructional practice. A district that has not provided substantial professional development in the instructional shifts called for by college- and career-readiness standards may want to consider providing an even more detailed description or pairing the unit overview with more explicit guidance on this concept.

Example, English Language Arts

Figure 3. Sample Grade Four English Language Arts Unit Overview

<p>CCSS RL 4.6 Compare and contrast the point of view from which different stories are narrated, including the difference between first- and third-person narrations.</p>		
<p>Instructional Notes</p> <p>This standard can be addressed as a natural complement to other standards and an extension of learning from prior grades.</p> <p>In grade four, students are expected to refer to explicit details when explaining the meaning of what they have read or when they are making inferences based on information from the text.</p> <p>As they progress through this school year, students will respond to a range of questions that require them to use their knowledge and skills in finding key ideas and details in order to analyze the author’s language as a vehicle for conveying meaning in increasingly challenging texts.</p> <p>This year students not only answer questions and complete tasks that will require them to compare and contrast points of view, they must also note the difference between first- and third-person narrations in literary texts. (CCSS RL 4.6)</p>	<p>Using prior knowledge to make explicit connections to new learning</p> <p>In grade three, students learned how to distinguish their own point of view in a text from that of the narrator or those of characters. (CCSS RL. 3.6) Students also learned that point of view is how the author feels about a particular topic (for/against, pro/con).</p>	
	<p>Acquisition and Applications</p> <table border="1"> <tr> <td> <p>Knowledge</p> <p>Students will build their awareness of how author’s use of language and writing structures impact the reader and reveal the author’s point of view about a character or topic.</p> <p>Students will know that different narrators can present the same events in different ways</p> <ul style="list-style-type: none"> First-person narrator describes his/her own thoughts and feelings and may take part in or retell an event as if he or she was a participant First-person narration uses I, me, my, and we (Note: Show students the difference between when a narrator is speaking versus when a character’s words in dialogue use the pronoun “I”. (e.g., <i>I was so surprised to see the wonderful gift before me.</i> Versus, <i>Tom said, “I was so surprised to see the wonderful gift before me.”</i>) </td> <td> <p>Skills</p> <p>Students in grade four will be able to:</p> <ul style="list-style-type: none"> Recognize the author’s point of view by attending to what the characters say and do and the word choices the author makes Recognize the author’s viewpoint revealed in the information he/she chooses to provide or omit and the word choices the author makes Recall that comparisons are based on similarities and contrasts are based on differences </td> </tr> </table>	<p>Knowledge</p> <p>Students will build their awareness of how author’s use of language and writing structures impact the reader and reveal the author’s point of view about a character or topic.</p> <p>Students will know that different narrators can present the same events in different ways</p> <ul style="list-style-type: none"> First-person narrator describes his/her own thoughts and feelings and may take part in or retell an event as if he or she was a participant First-person narration uses I, me, my, and we (Note: Show students the difference between when a narrator is speaking versus when a character’s words in dialogue use the pronoun “I”. (e.g., <i>I was so surprised to see the wonderful gift before me.</i> Versus, <i>Tom said, “I was so surprised to see the wonderful gift before me.”</i>)
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This summary of grade three work helps to clarify the depth expected from grade four instruction and learning.

Here the district lays out a systemic set of grade four learning expectations and the essential knowledge and skills they expect students to develop at this grade level.

These statements make it clear what must be taught at this grade level and how the concept is developed from prior grade levels.

These bulleted notes alert teachers to areas where students commonly experience confusion. This guide for learning will prevent future misconceptions.

Instructional Notes, cont.

Now, the fourth grade teacher is building on this prior learning and expanding the concept of point of view to include first- and third-person narration. Also, the students' ability to distinguish their own points of view from that of the author is further extended to learning how to compare and contrast points of view from different stories.

Reaching proficiency, use for this standard is not an isolated step, but requires a series of instructional experiences that include all of the strands—reading, writing, speaking and listening and language—in the teaching and learning process.

Using read-alouds to model and provide examples of how to analyze first- and third-person narrations and use them as springboards to comparing points of view—using text-dependent questions that draw students back to the text—will provide the practice and scaffolding needed for all students to reach proficiency of this standard. Graphic organizers can also be used to help students organize and structure their thoughts and evidence from the text to support their responses.

Knowledge, cont.

- Third-person narrator describes how other characters think and feel and does not take part in an event
- Third-person narration uses he, she, they, him or her
- Understand the effect of the author's choice to write in first person or third person narration

Skills, cont.

- Distinguish and cite examples of how the author's selection of first or third person narrative impacted the student as a reader, to show that they understand the advantages and disadvantages of the writer's choice.
- Use accurate vocabulary and academic language in summaries or other writing assignments to compare and contrast points of view in the texts under discussion
- Evaluate the use of accurate vocabulary in summaries or other writing assignments students write to compare and contrast points of view in the texts under discussion
- Use evidence from the text for how the character thinks and feels as the story progresses.
- Use small groups for peer editing before revision and final drafts.
- Write a story from the view point of one of the characters in the texts.

	<i>Helping Students Make Meaning</i>
<p data-bbox="267 604 544 772">This builds shared understanding of where to focus teaching efforts.</p> <p data-bbox="77 997 544 1165">It would be useful for the district to provide access to samples showing the level of student work that would meet these expectations.</p> <p data-bbox="272 1528 544 1774">This requires connections and extensions, high cognitive demand, and complex reasoning.</p>	<p data-bbox="613 258 808 289">Before Teaching</p> <ul data-bbox="613 310 1421 562" style="list-style-type: none"> ■ Select two texts on a particular topic or theme that share similar big ideas and understandings—one with first-person narration and the other with third person narration. ■ Note stopping points in the texts that are key for determining author’s point of view and create text-dependent questions that will require students to provide evidence from the text to support their responses. <p data-bbox="613 594 1380 657">Text-dependent questions for reaching proficiency in this content standard require students to:</p> <ul data-bbox="613 678 1396 877" style="list-style-type: none"> ■ Determine the point of view of the author (for/against, pro/con, first and third person) and provide examples from the text that support their conclusion: <ul data-bbox="649 798 1380 877" style="list-style-type: none"> ● Provide key details from the texts that support comparisons ● Recognize key details from the texts that support contrast <p data-bbox="613 930 808 961">During Teaching</p> <ul data-bbox="613 982 1421 1791" style="list-style-type: none"> ■ Provide models of comparisons and contrasts of points of view in student work or other instructional materials ■ Provide opportunities for multiple readings of both texts separately through structured reading and discussion of student responses to text-dependent questions. (A variety of methods can include: whole class discussion, think-pair-share, independent written response, small group, etc.) ■ Expect students to make comparisons. Structure discussions and writing opportunities so that students meet this content standard. ■ Use graphic organizers or other visuals to structure/record discussions regarding comparison and contrast of the author’s point of view in both texts (i.e., A Venn diagram or table can be constructed easily and provides reinforcement for content learning.) ■ Provide multiple opportunities for students to demonstrate their level of understanding and achievement of the standard (i.e., create a grid with multiple columns and rows to create side by side comparisons of multiple texts on the same topic, event or experience noting similarities and differences in points of view; compare communication in different forms such as contrasting a dramatic performance with a print version of the same story and variants in points of view)

Example, Mathematics

In this curriculum excerpt in mathematics, Baltimore City Public Schools (BCPS) has incorporated public domain materials from [Illustrative Mathematics](#), as well as the CGCS [Parent Roadmaps](#) and Grade-Level Instructional Materials Evaluation Tool ([GIMET-QR](#)). They have customized this information to provide their K-2 teachers with an overview of the progression of addition and subtraction problems according to the expectations of the standards and district expectations. The district intentionally shows teachers the progression of standards and the growing sophistication in the problem types from kindergarten to grade two for operations and algebraic thinking. Providing teachers with concrete examples of the types of problems students are to experience is much more helpful than a general statement such as “Add and subtract two single-digit numbers.” In a given grade level, the teacher can check to see that students are practicing with all the required forms single-digit addition and subtraction can take. This is how the district attempts to show at what depth these concepts need to be taught to reflect college- and career- readiness standards for this grade level.

This example also fits well with Feature 3 that deals with coherence across grade levels. This illustrates that a district can address the seven features of a quality curriculum without having to develop separate sections within their curriculum documents. In the example below, the light red reflects proficiency expectations for kindergarten while the light blue and yellow refer to proficiencies for grades one and two respectively. However, this does not preclude students exploring different variations in the K-2 continuum.

Figure 4. Baltimore City Public Schools Grades K-2 Unit Addressing Operations and Algebraic Thinking

	Result Unknown	Change Unknown	Start Unknown
Add to (join)	Two bunnies sat on the grass. Three more bunnies hopped there. How many bunnies are on the grass now? $2 + 3 = ?$	Two bunnies were sitting on the grass. Some more bunnies hopped there. Then there were five bunnies. How many bunnies hopped over to the first two? $2 + ? = 5$	Some bunnies were sitting on the grass. Three more bunnies hopped there. Then there were five bunnies. How many bunnies were on the grass before? $? + 3 = 5$
Take from (separate)	Five apples were on the table. I ate two apples. How many apples are on the table now? $5 - 2 = ?$	Five apples were on the table. I ate some apples. Then there were three apples. How many apples did I eat? $5 - ? = 3$	Some apples were on the table. I ate two apples. Then there were three apples. How many apples were on the table before? $? - 2 = 3$

This level of detail is important so that students aren't merely assigned $5 + 2 = \square$ or $5 - 2 = \square$. Practice with these two types of problems is not sufficient. Teachers can clearly see the different variations of a problem. In the later grades a persistent problem is that students fixate on finding an answer - either adding or subtracting because they see two numbers- and seldom reading to understand the quantities in relation to the context of the problem. Taking time to investigate the similarities and differences between each problem variation provides teachers with a rationale for having students focus upon linking language and mathematics.

	Total Unknown	Addend Unknown	Both Addends Unknown
Put Together/ Take Apart (Part-Part-Whole)	Three red apples and two green apples are on the table. How many apples are on the table? $3 + 2 = ?$	Five apples are on the table. Three are red and the rest are green. How many apples are green? $3 + ? = 5, 5 - 3 = ?$	Grandma has five flowers. How many can she put in her red vase and how many in her blue vase? $5 = 0 + 5, 5 = 5 + 0$ $5 = 1 + 4, 5 = 4 + 1$ $5 = 2 + 3, 5 = 3 + 2$
	Difference Unknown	Bigger Unknown	Smaller Unknown
Compare	("How many more?"): Lucy has two apples. Julie has five apples. How many more apples does Julie have than Lucy? ("How many fewer?"): Lucy has two apples. Julie has five apples. How many fewer apples does Lucy have than Julie? $2 + ? = 5, 5 - 2 = ?$	(Version with "more"): Julie has three more apples than Lucy. Lucy has two apples. How many apples does Julie have? (Version with "fewer" suggests wrong operation): Lucy has 3 fewer apples than Julie. Lucy has two apples. How many apples does Julie have? $2 + 3 = ?, 3 + 2 = ?$	(Version with "fewer"): Lucy has 3 fewer apples than Julie. Julie has five apples. How many apples does Lucy have? (Version with "more" suggests wrong operation): Julie has three more apples than Lucy. Julie has five apples. How many apples does Lucy have? $5 - 3 = ?, ? + 3 = 5$

This section shaded in light red illustrates the four kindergarten problem subtypes. Grade one and grade two students work with all subtypes and variants.

The yellow-shaded section problems are the four difficult subtypes or variants that students should work with in grade one but need not develop proficiency until grade two.

Adapted from Box 2–4 of Mathematics Learning in Early Childhood, National Research Council (2009, pp. 32, 33).

KEY FEATURE 3:

The curriculum builds instructional coherence within and across grade levels consistent with college- and career-readiness standards for each grade.

Why is this important?

Instructional coherence within a grade level is important so that students are able to make connections between concepts, knowledge, and ideas. It is through coherence within a grade level that students develop a strong foundation that will enable them to both acquire the depth of knowledge needed to meet grade-level expectations and to progress through ever more sophisticated learning. Seeing how concepts and learning are interconnected builds students' content knowledge, skills, and perseverance.

Instructional coherence across grade levels, meanwhile, means attending to how concepts and skills are developed over time. It begins by considering what students should know and be able to do to be college- and career-ready, and then determining how students will acquire and develop knowledge and skills throughout their K-12 experience.

Since the responsibility of the curriculum is to support the teacher, a quality curriculum should alert teachers to typical student misconceptions and incomplete learning that has been seen in student performance in previous years. At the same time, the curriculum should also provide teachers with guidance for supporting and further enhancing learning opportunities for gifted and talented students. This will save teachers time and research, and will maximize the likelihood of students performing at grade level and beyond.

What does this look like?

Within a grade level, the curriculum should show explicit links between multiple clusters, standards, concepts, or skills to support teachers in making these connections in the classroom. For example, in mathematics the curriculum may explicitly inform the teacher that when working with multiplication of a two-digit and a one-digit number, they should connect it to finding areas of a rectangle. In English language arts, guidance for preparing students to write an opinion piece should include sufficient texts and questions on a given topic in order to provide an opportunity for students to explicitly connect their developing writing skills to the ability to cite evidence from multiple texts.

To build coherence across grade levels, some districts include notations on each grade-level curriculum guide to indicate what learning students had the previous year and where that learning will progress in subsequent grade levels. Additionally, districts have also provided teachers with information about typical misconceptions and common learning gaps, and how to address those issues while simultaneously working on grade-level concepts and skills. In Denver Public Schools, for example, the Algebra I curriculum includes an overview of students'

prior learning as well as subsequent learning in the “unit learning trajectory,” clarifying how current learning is situated in the overall Algebra I curriculum. The district clearly identifies strategies that may work for getting an answer but that do not help students understand how to solve equations (and later, inequalities).

This example attends to coherence across grades (explicitly indicating the standards addressing proportions in grades seven and eight) as well as coherence within the algebra course. Intentionally communicating how students should begin solving equations with proportions allows students to begin their focus on “look for and make use of structure,” so that they see how applying and solving proportions links to solving equations algebraically, which appears in later units. (“Look for and make use of structure” is one of the standards for mathematical practice).

Example, Mathematics

Figure 5. Section from Denver Public Schools Algebra I Unit

Unit of Study	I: Proportional Reasoning	Length of Unit: 10 days (August 22–September 2, 2016)
Unit Learning Trajectory	<ul style="list-style-type: none"> Students focus on solving equations with proportions. Because cross-multiplication works only in limited situations, avoid teaching cross multiplication as a strategy to solve proportions and focus instead on multiplying both sides of equations by the same number. This method supports the concept of equations as balances so students make meaning of the process of solving equations. Unit 2 continues work on solving equations; fluency with solving equations can be expected at the end of Unit 2. Students’ work with proportions then moves into dimensional analysis. Students extend their previous work in eighth grade with two types of proportions: direct variation and inverse variation. As students write and graph equations to model direct and inverse variations, ensure that they can describe the graphs of each. 	
Focus Essential Learning Goals/Standards	<ul style="list-style-type: none"> Use units as a way to understand problems and to guide the solution of multi-step problems; choose and interpret units consistently in formulas; choose and interpret the scale and the origin in graphs and data displays. (Year-long Standard: CCSS N-Q.A.1) Define appropriate quantities for the purpose of descriptive modeling. (Year-long Standard: CCSS N-Q.A.2) Reason quantitatively and use units to solve problems. (ELG.MA.HS.N.3) Create equations in two or more variables to represent relationships between quantities; graph equations on coordinate axes with labels and scales. (Year-long Standard: CCSS A-CED.A.2) 	
Standards	<p>Content Standards</p> <p>Quantities (N-Q)</p> <p>Reason quantitatively and use units to solve problems. (Supporting)</p> <p>[ELG.MA.HS.N.3]</p> <p>CCSS N-Q.A.3: Choose a level of accuracy appropriate to limitations on measurement when reporting quantities.</p> <p>Standards for Mathematical Practice</p> <p>2. Reason abstractly and quantitatively.</p> <p>6. Attend to precision.</p>	
Fluency Recommendations	N/A	

Note that the curriculum is continuously linked back to standards.

Generalizations (Conceptual Understanding)	Guiding Questions to Build Conceptual Understanding	
My students Understand that...	Factual	Conceptual
<ul style="list-style-type: none"> Proportional relationships can be modeled with equations of the form $y = kx$ or $y = k/x$ (A-CED.A.2) 	<ul style="list-style-type: none"> What is a proportional relationship? How do we know when proportional relationships involve direct variations or inverse variations? 	<ul style="list-style-type: none"> Why are proportional relationships important?
<ul style="list-style-type: none"> Precision with units is key to dimensional analysis. (N-Q.A.1) 	<ul style="list-style-type: none"> What is dimensional analysis? How is dimensional analysis used in science? 	<ul style="list-style-type: none"> How is dimensional analysis related to precision? How do ratios connect with dimensional analysis?
Misconceptions	<ul style="list-style-type: none"> Students think all in/out tables operate the same as direct variation tables. Students do not realize the importance of unit conversions along with computation when solving problems involving measurements. Students express answers to a greater degree of precision than required when using calculating devices' display of eight to 10 decimal places. 	

Instructional coherence is created by considering standards and student learning along a progression. Sometimes this progression occurs evenly where students are able to make explicit connections between and among varied concepts. However, for some students who over-generalize, the learning progression appears uneven or has gaps. Denver addresses this concern by making explicit some of the over-generalizations that teachers attend to and eliminate during the various instructional segments.

Example, English Language Arts

The English Language Arts resource below has been adapted from EngageNY. Notice how it assists teachers' understanding and supports instruction of this College and Career Readiness (CCR) standard in grade seven while illustrating instructional coherence across grade levels. The unit activities have been omitted from this example in order to focus on how teachers can easily see where the grade seven learning fits coherently into the development of the standards across grade levels.

Figure 6: Excerpt from Grade Seven Instructional Unit, Adapted from EngageNY

VERTICAL PROGRESSION

Students will have recurring instructional experiences with reading literature and informational texts from various genres to study how authors present various viewpoints of events, people, places, and time periods in fictional and nonfictional accounts. Each instructional experience will add more depth of knowledge for students as they grapple with the authors' viewpoints in texts and why they choose to present information based on facts, embellishments, biases or a combination of any of these approaches in order to impact the reader's response to the ideas presented in the text. The culmination of these kinds of analyses will enable students to be adept and discerning readers and thinkers who can recognize bias and subjective perspectives and draw conclusions based on sound and reasonable evidence.

Anchor Standard R.CCR.9 Analyze how two or more texts address similar themes or topics in order to build knowledge or to compare the approaches the authors take.

Grade Six	Grade Seven	Grade Eight
CCSS RL.6.9 – Compare and contrast texts in different forms or genres (e.g., stories and poems; historical novels and fantasy stories) in terms of their approaches to similar themes and topics.	Standard: CCSS RL.7.9 – Compare and contrast a fictional portrayal of a time, place, or character and a historical account of the same period as a means of understanding how authors of fiction use or alter history.	CCSS RL.8.9 – Analyze how a modern work of fiction draws on themes, patterns of events, or character types from myths, traditional stories, or religious works such as the Bible, including describing how the material is rendered new.

Showing vertical coherence where the grade seven standard fits.

STUDENT-FRIENDLY LEARNING TARGETS

Knowledge Targets	Reasoning Targets
I can define fact and opinion.	I can compare a fictional portrayal of a time, place, or character with an actual historical account.
I can define story elements of portrayal of time, place, character, period, and historical account.	I can contrast a fictional portrayal of a time, place, or character with an actual historical account.
	I can determine the differences between the fictional and historical accounts.
	I can explain how authors of fiction use history within their story.
	I can determine how authors of fiction alter history with their accounts.

Instructional Synopsis:

Students will read varied accounts about court-ordered desegregation in the 1960's to evaluate the use of historical research in fiction. Comparing and contrasting viewpoints of court-ordered desegregation from different perspectives as represented in the fictional accounts and how it has been represented in real world, historical accounts will be the primary focus of instruction. Readings will include, but are not limited to:

- Coles, R. (1995). *The Story of Ruby Bridges*
- Bridges, R. (1999). *Through my Eyes*
- Morrison, T. (2004). *Remember: The Journey to School Integration*

Questions to Focus Learning

- *Why do authors use historical accounts in their stories, and how can those accounts be altered to shape events in fiction?*
- *In what ways do authors affect and alter history based on their fictional portrayals of historical accounts?*

KEY FEATURE 4:

The curriculum explicitly articulates standards-aligned expectations for all learners, by grade levels, for student work at different points during the school year.

Why is this important?

Even when a curriculum guidance document explains what each standard means at a grade level, standards are by their very nature so broad that they cannot be completely taught in a single unit. They are developed in multiple units of instruction over time. Each time the concept is revisited, more complexity is added and student performance is enhanced. A quality curriculum provides clear indicators of what student performances are likely to be at various points within the school year. Thus, it is important for teachers and administrators to know what is expected early in the year versus later in the year to know where to focus instruction and to determine how well students are progressing.

What does this look like?

Some districts may choose to use annotated exemplars of actual student work illustrating the level of performance the district expects at different points in the school year. Some districts attempt to use rubrics or pacing guides to describe expectations, but often these are broadly written and interpretations can vary widely unless professional development makes time across the school year for teachers to calibrate their use throughout the district. When the central office is aware of common areas of under-performance, they should supply suggested next steps to boost student performance while continuing to move forward in the curriculum, or establish means for teachers to share ideas that have successfully addressed those areas.

A curriculum department should prioritize areas for concentrated focus in light of competing priorities from all content areas. Working together, departments should agree on a timeline for professional development and support to move academic skills and achievement higher. This is necessary to keep from bombarding teachers and administrators with new programs and techniques without time to master any of them. It also means having a plan for ensuring that teachers successfully implement the areas of focus and that pre-determined goals for student advancement are attained. Additionally, the district needs to ensure that any teacher new to the grade level or new to the district in coming years, or those that may have missed initial training, all gain a solid knowledge of the curriculum.

To illustrate how a district might clarify standards-aligned expectations for student work at different points during the school year, a grade four mathematics unit provides teachers with examples of how student learning progresses throughout the year for standards relating the concepts of place value and multiplication of whole numbers. This document explicitly lays out the learning transition from using viable strategies based on place value to employing the standard algorithm with proficiency to show how student learning should develop. A portion of the unit is shown in the following sample.

Notice the district paraphrased the standards for this unit rather than listing them separately. This helps teachers understand how the standards connect so that students can meet learning expectations.

Figure 7: Sample Grade Four Mathematics Unit

<p>Number and Operations in Base-Ten: At grade four, students generalize their place value understanding for multi-digit whole numbers and use place value understanding and properties of operations to perform multi-digit arithmetic. As a result, students extend their work in the base-ten system to adding and subtracting using the standard algorithm to meet grade four fluency expectations (CCSS 4.NBT.4).</p>	
<p>Rationale: At the beginning of the year students in grade four reinforce place value understanding and teachers include experiences so that students are able to recognize and generalize that the value of each place is 10 times the value of the place to the immediate right. Similarly, multiplying by 10 yields a product in which each digit of the multiplicand is shifted one place to the left. During classroom instruction, these observations and generalizations should not merely be conveyed to students. Instead, as a result of the lessons and instructional experiences, students are able to grasp these ideas and generalize these concepts with supportive questioning, probing, and explicitness by the teacher.</p>	<p><i>Use prior knowledge to make explicit connections to new learning</i></p> <p>Instructional Notes</p>
	<p>In grade three, students used their place value understanding to round whole numbers to the nearest 10 or 100. Students developed an understanding that when moving to the right across the places in a number (e.g., 456), the digits represent smaller units. Students learned how to explain instances of a calculation pattern when multiplying one-digit numbers by multiples of ten (for example, the product 4×50 can be represented as 4 groups of 5 tens, which is 20 tens, which is 200. The reasoning relies on the associative property of multiplication: $4 \times 50 = 4 \times (5 \times 10) = (4 \times 5) \times 10 = 20 \times 10 = 200$). Additionally, students developed proficiency with adding and subtracting within 1000 and they achieve fluency with strategies and algorithms that are based on place value, properties of operations, and the relationship between addition and subtraction.</p> <p>At the beginning of grade four, some students will refine their computational strategies as they develop proficiency with adding and subtracting within 1000 using the standard algorithm. For example, in grade three students use strategies to find $756 + 378$. At the beginning of grade four, some students will use the standard algorithm without any difficulty, while others will still rely on one or more strategies (e.g., some students will remove 4 from 378 and give to 756 to rewrite the problem as $760 + 374 = 1134$ while other students will merely add—digits in the hundreds, tens, and ones place to find the sum—adding from left to right (e.g.),</p>
	<div style="display: flex; align-items: center;"> <div style="margin-right: 20px;"> $\begin{array}{r} 756 \\ + 378 \\ \hline 1000 \\ 120 \\ \underline{14} \\ 1134 \end{array}$ </div> <div> <p>At the beginning of the year, students explain their solution by relating it to place value. Early in the year, students may add from left to right or right to left using this strategy. For example, they state: 7 hundreds + 3 hundreds = 10 hundreds = 1000; 5 tens + 7 tens = 12 tens = 120; 8 ones + 6 ones = 14 ones which is 1 ten, 4 ones = 1134 or explanations are given by adding from the right using the same method. By the end of the year, students will use the standard algorithm to meet grade four fluency expectations.</p> </div> </div> <p>During class discussions, intentional connections must be made between strategies and the standard algorithm. Throughout the school year you will hear students explaining solutions to tasks/problems using these strategies as they gradually make connections to the standard algorithm. This will allow students to develop proficiency with adding and subtracting within 1000 using the standard algorithm by the end of grade four.</p>

The curriculum provides guidance about student performance at different times of the school year. This leads to meeting the proficiency expectation by the end of grade four.

Overarching understandings

The structure of the base-ten system involves repeated bundling by 10 (e.g., 10 tens makes a unit called a hundred. Repeating this process creates new units by bundling groups of ten to create units called thousand, ten thousand, etc.)

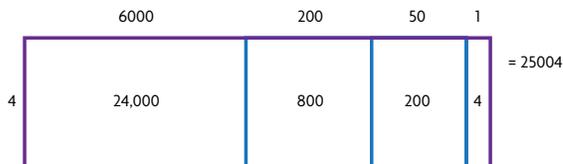
The value of a digit in a number is dependent on its place in the number.

A number can be represented in multiple ways yet maintain its value.

An understanding of the base-ten number system promotes computational fluency.

Instructional Notes (continued)

Students begin grade four by multiplying a one-digit number by a four-digit number using strategies, concept of area, and properties of operations (For example, students use an area model to find the product of $6,251 \times 4$)



or use properties of operations (the distributive property) and expanded form $4(6251) = 4(6000+200+50+1)$. After the initial introduction, students illustrate and explain their calculations based on place-value and properties of operations. Initially, you may see the teacher supporting students as they use expanded form and subdivide rectangles to reflect the relationship between multiplying and finding the area. As students progress during the school year, students will subdivide rectangles as needed to find the area and relate it to finding products. During this time, you will begin seeing students using these strategies to multiply a two-digit number by a two digit number while other students may transition directly to using the standard algorithm. Before the end of the year, students feel comfortable and persevere when comparing and contrasting calculations with the standard algorithm, the distributive property, or other properties of operations.

This guidance makes explicit for teachers strategies that students may apply to relate finding products to area at the beginning of the school year. This includes acceptable strategies that allow students to explore multiplication and area conceptually while extending their place value understanding. Teachers are better able to assist students in applying and relating their strategies prior to using the standard algorithm for multiplication.

At the beginning of the year, students will relate the concept of area to multiplication. This alerts teachers to allow students to compare relationships between multiplication, area, and expanded form during this time. Throughout the year, students will compare these strategies to the standard algorithm.

Essential questions	Acquisition and Applications	
<ul style="list-style-type: none"> ■ How can you systematically represent all numbers using only the ten digits, 0-9? ■ What is the relationship between the places in a base-ten numeral? What happens when one does repeated bundling of groups of 10? 	<p>Knowledge</p> <ul style="list-style-type: none"> ■ Recognize and know that in a multi-digit whole number, a digit in one place represents ten times what it represents in the place to its right ■ Understand base-ten structure to round multi-digit numbers to any place ■ Use understanding of the base-ten system to compare two multi-digit numbers based on meanings of the digits in each place, using $>$, $=$, $<$ symbols to record the results of comparisons. ■ Use place value understanding and properties of operations to perform multi-digit arithmetic. 	<p>Skills</p> <ul style="list-style-type: none"> ■ Compare and explain the relationships between the value of each place in a number. ■ Read and write multi-digit whole numbers using base-ten numerals, number names, and expanded form. ■ Compare two multi-digit whole numbers based on the meanings in each place using $>$, $=$, $<$ and record the result. ■ Fluently add and subtract multi-digit whole numbers using the standard algorithm. ■ Multiply a whole number of up to four digits by a one-digit whole number, and multiply two two-digit numbers using strategies based on place value and the properties of operations. Illustrate and explain the calculation using equations, rectangular arrays, and/or area.

Example, English Language Arts

The example below from the District of Columbia Public Schools (DCPS) provides the unit learning trajectory for tenth grade students. This document includes teacher guidance that provides the focus of vocabulary and language instruction as well as additional steps teachers can use to boost student attainment of essential vocabulary and language standards needed to meet grade-level learning expectations. Additional instructional considerations and resources for differentiation are also referenced in order to build student learning of grade-level standards over time.

Figure 8: Sample Tenth Grade Unit from District of Columbia Public Schools

Unit 1 Introductory Lesson: Unit 1 Trajectory Handout

Objective: In order to comprehend Unit 1 expectations and big ideas, students will respond to and discuss Unit 1 essential questions.

Unit Learning Trajectory	Students examine the ways in which authors create and structure narratives in a variety of literary non-fiction texts. First, students will read narrative poetry, including Robert Hayden’s “Those Winter Sundays,” Nikki Giovanni’s “Mothers,” and Miguel Pinero’s “A Lower East Side Poem.” Then, for the Unit 1 Cornerstone, students will craft their own narrative poems that both utilize the genre’s stylistic techniques and encompass the theme of choices and whether one’s choices are more influenced by nature or nurture. Next, students will participate in a close reading of the informational text, “The Science of Success” by David Dobbs. Students will write a brief response distinguishing and explaining the differences between the “nature” and “nurture” theories. Then, students read the anchor text, <i>The Other Wes Moore</i> by Wes Moore, and analyze the text structure the author uses to express his ideas about the role of nature or nurture in determining individual success.
Essential Questions	<ul style="list-style-type: none"> ■ What factors determine and influence individual success? ■ How does a poet advance his/her point of view about the influences in his/her life? ■ How does an author’s stylistic choices advance his /her point of view or purpose?
Summative Unit Writing Task	Write an argumentative analysis defending a claim on the role of nature or nurture in determining individual success using different author’s perspectives presented in multiple nonfiction and informational texts.
Anchor Text	<i>The Other Wes Moore</i> by Wes Moore; Culminating Writing Task: How does Wes Moore use text structure and diction to express his ideas about the role of nature or nurture on determining individual success?

Common areas of under-performance and how to support student learning.

While this unit identifies the learning trajectory, it could be even stronger with an indication of how the unit forms the basis of learning throughout the school year.

Close Reading Text	“The Science of Success” by David Dobbs. Writing Task: Scientists continue to debate over the determining factor of individual success: “nature” (genes/predisposition) or “nurture” (support system, home life, socioeconomic status). Distinguish and explain the differences between how the “nature” and “nurture” theories determine individual success. Response should be a minimum of 2–3 paragraphs.
Cornerstone Overview	The Life I Choose: Life’s success is about the choices we make. Project: Create and present a personal narrative poem.
Unit Test	Students will write an argumentative analysis defending a claim on the role of nature or nurture in determining individual success using different author’s perspectives presented in multiple fiction and nonfiction texts.

Note that multiple tasks over time each develop the next writing skill and thought process needed for the culminating writing task.

UNIT VOCABULARY

Teachers: Please teach vocabulary explicitly and implicitly.

Vocabulary should be taught both explicitly and in context. Teachers can access various vocabulary strategies *via* the novel appendices as well as the close reading appendices.

Additional Guidance: Some vocabulary words provided in the novel and close reading appendices appear as they appeared within the text to promote teaching vocabulary in context. Push the students to define and understand the word/phrase as it is being used within the text as well as how it should be used in other situations. Vocabulary in context can be taught as a ‘Do Now’ to prepare the students for the day or as an ‘Exit Ticket’ to ‘Check for Understanding.’ Increasing student vocabulary is essential however, when taught as a standalone lesson, it should not be more than 20% of the lesson. Some vocabulary words, not listed, are included in text-dependent questions or should be added to meet the needs of your students.

This section provides common areas of under-performance and how to support student learning.

UNIT LANGUAGE STANDARDS

Language standards should be taught both explicitly and in context. Depending on the needs of your students, teachers may need to go over mechanics and grammar in order for students to work towards mastery of language standards.

- Grammar and language skills are embedded into the novel guides and close reading modules. Look out for activities that are designed to strengthen students’ use of syntax.
- Hochman-style writing exercises are embedded within close reading modules as well as the novel guide. Teachers are encouraged to utilize these language exercises as warm-ups, exit tickets, or checks for understanding throughout the teaching of these texts.
- As students are writing, teachers are encouraged to conference with students and give them specific feedback on how to correct grammatical and mechanical errors. Teachers are encouraged to allow students to revise their written work in order to become stronger writers.

THE CORNERSTONE EXPERIENCE

Summary

The Life I Choose: Success in life is about the choices we make. Are the choices a product of nature or nurture? Students will compose and perform an original narrative poem that includes narrative poetry elements. Students will build knowledge of narrative poetry by analyzing narrative elements, diction, and theme used in poetry exemplars and will use this knowledge to create their own original narrative poems. Students will also analyze poetry presentations to learn about basic public speaking actions. Students will present their poems to their class and a DCPS poetry event.

Key standards

W.9-10.3	R.L.9-10.4	L.9-10.1.b	SL.9-10.4
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Student Outcome / Product

Students will create their own original narrative poems. Students will present their poems to their class and a DCPS poetry event.

TEACHING CONSIDERATIONS

Additional tasks associated with texts – suggested instructional routines and practices:

- Shared reading
- Active reading strategies (e.g., turn and talk, stop and jot, targeted task, Think-Pair-Share)
- Text-dependent questions that lead to key understandings
- Explicit and implicit academic vocabulary instruction
- Evidence-based oral and/or written responses
- Text-dependent tasks
- Speaking and Listening tasks such as the ones listed here:
<https://www.literacyta.com/literacy-standards/common-core/speaking/10/english>
- Vocabulary with pictures (i.e., on a Concept Chart divided into three columns, word, picture, definition)
- Anchor Charts
- Wait Time
- Feedback (Teacher/Student)
- Student Centered (Students are actively engaged orally throughout the lesson)
- Use of Multiple Intelligences (Inter/Intrapersonal, Musical, Linguistic, Logical/Mathematical, Spatial, Naturalist, and Body Kinesthetic)
- Gradual Release (<https://www.teachingchannel.org/videos/improving-teacher-practice>)
- Zone of Proximal Development (www.innovativelearning.com>Teaching and Learning>Educational Psychology)
- Sentence Stems (I am _____ because _____)

This document explicitly lays out student learning expectations, from understanding the structure of narratives to demonstrating understanding of nature vs. nurture by writing a narrative poem. Further reading enables students to gain the greater depth of knowledge needed to advance and defend a claim on the role of nature or nurture in determining individual choices using supporting evidence from multiple texts.

Notice that these instructional considerations not only address learning during the course of the unit but can also be used to support grade-level learning over the course of the school year.

This list assumes that the district has developed a shared understanding of how and when to use these strategies to address the progression of learning throughout the school year.

SUPPLEMENTARY TEXT SUGGESTIONS AND GUIDANCE

Overview: These resources allow for differentiation based on content and student interest as well as student learning profile. They allow for multiple points of entry so that all students can work toward mastery of the unit.

DC Public Library Resources:

Databases: <http://dclibrary.org/research/databases?subject%5B%5D=168&keywords>

Teacher Access: To utilize these resources, the teachers will need to use either their Educator or Personal Library card. The PIN should be the last four digits of the library card.

Student Access: To utilize these resources, the students will need to use either their DC One Card or Personal Library card. The PIN should be the last four digits of the library card or DC One Card.

Britannica High School Version (Middle School Version can be used for students with lower reading level)

Features: Articles, Image, Videos, Dictionary, Magazines, Webs' Best Sites, Primary Sources/E-Books
Teacher Resources Options: Cite, Translate, Audio, Email, Print, Create Account

Search terms (Britannica Articles): Choice, Determinism, Free Will, Existentialism, Moral Responsibility,

Search terms (Image Quest): Wes Moore, Resilience

Supplemental Class Text	Author	Text Type	Lexile Level	Source
"When Wes Moore Met Wes Moore"	Wes Moore	Informational Article	970L	http://articles.baltimoresun.com/2012-05-10/entertainment/bs-sm-wes-moore-20120513_1_wes-moore-articles-rhodes-scholarship
"Money Changes the Way We Think and Behave"	Carolyn Gregoire	Informational		Appendix

These suggestions support teachers in implementing the areas of focus so that predetermined goals for student advancement are attained.

Additional guidance is provided for teacher and student access to differentiated resources and materials.

KEY FEATURE 5:

The curriculum contains scaffolds or other supports that address gaps in student knowledge, typical misconceptions, and the needs of ELLs and students with disabilities to ensure broad-based student attainment of grade-level standards.

Why is this important?

Many students move through grade levels accumulating gaps in conceptual understanding or skills that profoundly impact their continued learning of increasingly complex ideas and texts. A supportive district analyzes student performance data and uses curriculum guidance documents to alert teachers to likely gaps and how to address them. Based on assessment data and samples of student work collected during walk throughs in schools, district staff can determine the learning gaps that are common throughout the school system. They can also identify areas that require additional instructional focus in language, writing, and reasoning skills.

Leaving it up to individual teachers to identify and devise remedies for these issues, on the other hand, results in widely different outcomes. If the gaps are not systematically addressed, students are unlikely to ever catch up. Some teachers may begin reteaching skills from earlier grade levels, thus delaying entry into grade-level work, even though the gap could have been properly addressed during grade-level instruction. It is also not necessary to constantly pull students out of instruction in grade-level work for interventions if general, Tier I classroom instruction is geared to handling common misconceptions in the course of daily instruction.

What does this look like?

Depending on the type of issue, district curriculum guidance may be as simple as a note to the teacher. For more complex issues, examples of activities or even links to videos of classroom techniques can support classroom teachers. Again, a district may not address every possible issue in the first edition of its curriculum guidance as long as there is a plan to deal with priority issues first and make additions in subsequent iterations, with a written timeline for completion.

For example, this sample grade six mathematics unit is used to illustrate how a district curriculum might contain scaffolds or other supports to address gaps in student knowledge, typical misconceptions, and the needs of English Language Learners and students with disabilities to ensure broad-based student attainment of grade-level standards. The grade six mathematics unit on expressions and operations provides teachers guidance on typical student misconceptions as well as a description of the Three Read strategy to support deeper proficiency with real-world problems. The sample unit explicitly attends to typical student misconceptions with expressions and equations and includes viable strategies to address student misconceptions and unfinished learning. The unit begins by focusing on the standards that have been addressed during a previous

grade, the standards addressed in the unit, and also includes recommended instructional notes for the teacher. A portion of the unit is shown in the following sample.

Example, Mathematics

Figure 9: Excerpt from a Grade Six Mathematics Curriculum Unit on Expressions and Equations

Unit – Expressions and Equations:

Apply and extend previous understandings of numbers to the system of rational numbers. (CCSS 6.NS)

- This includes understanding that positive and negative numbers are used together to describe quantities having opposite directions or values (e.g., temperature above/below zero, elevation above/below sea level, credits/debits, positive/negative electric charge); use positive and negative numbers to represent quantities in real-world contexts, explaining the meaning of 0 in each situation.
- Apply and extend previous understandings of arithmetic to algebraic expressions. (CCSS 6.EE)
- This includes, writing and evaluating numerical expressions involving whole-number exponents. Write, read, and evaluate (algebraic) expressions in which letters stand for numbers.
- Write expressions that record operations with numbers and with letters standing for numbers. For example, express the calculation “Subtract y from 5” as $5 - y$.
- Identify parts of an expression using mathematical terms (sum, term, product, factor, quotient, coefficient); view one or more parts of an expression as a single entity. For example, describe the expression $2(8 + 7)$ as a product of two factors; view $(8 + 7)$ as both a single entity and a sum of two terms.
- Evaluate expressions at specific values of their variables. Include expressions that arise from formulas used in real-world problems. Perform arithmetic operations, including those involving whole number exponents, in the conventional order when there are no parentheses to specify a particular order (Order of Operations). For example, use the formulas $V = s^3$ and $A = 6s^2$ to find the volume and surface area of a cube with sides of length $s = 1/2$.
- Use variables to represent numbers and write expressions when solving a real-world or mathematical problem; understand that a variable can represent an unknown number, or, depending on the purpose at hand, any number in a specified set.

INSTRUCTIONAL NOTES TO TEACHERS:

Prior Learning in this Cluster in Grade Five (Expressions and Equations):

Students have been recording and writing numerical expressions since the early grades, such as $2 + 3$, $6 - 4$, $8 \cdot 3 + 9 \cdot 3$. In grade five they used whole number exponents to express powers of 10, and now in grade six they start incorporating whole number exponents into numerical expressions.

Additionally, students are expected to translate between and among word phrases, numerical expressions, and algebraic expressions. Make sure your instructional focus includes explorations — not merely a “set of rules” and procedures to follow. Allow the rules to develop from student exploration and discussions.

Typical gaps in student understanding with the orders of operations:

Typical student misconceptions include incorrect interpretations of the orders of operations as well as failing to distinguish between expressions such as -7^3 and $(-7)^3$. Make sure that you connect students’ informal language to help them use the more precise terminology, i.e., base and exponent, and that they are able to compare and contrast each of them.

Instructional strategies for the orders of operations that attend to typical student misconceptions, unfinished learning, and over-generalizations.

Part of this misconception with the order of operations may be an overgeneralization of the typical acronym PEMDAS, which is even found in our adopted textbook. Please only use this acronym if it is student initiated. Be sure to have students pay attention to typical overgeneralizations. Oftentimes, students will incorrectly infer that you always multiply before you divide; or add before you subtract. Thus, they fail to correctly evaluate the following: $12 \div 3 \cdot 4$ as compared to $12 \div (3 \cdot 4)$. This is the same mistake that students make when simplifying $12 - 9 + 3$ as opposed to $12 - (9 + 3)$. While these examples are simplistic, they reflect typical misconceptions created when students overgeneralize and do not completely understand the orders of operations.

During instruction include activities that require students to compare and contrast solutions as well as explore problems worked incorrectly to determine possible reasons for the error. Additionally, consider including activities that allow students to work with problems or tasks that require rearranging numbers or operators to yield a specific value (i.e., insert parentheses so that $15 - 5 \cdot 3 = 30$ or $2 \cdot 3^2 + 4 \cdot 3 - 1 = 26$).

Instructional scaffolds for ELLs and students with unfinished learning (suggestions developed jointly with the department of English Language Learners and the Special Education)

Often when asking students to represent and solve real-world problems, reading the problem may pose challenges to them. This means they will need support in handling grade-level problems, but it is vital to have them learn to access this level of reading and problem solving. Modeling how to do a close read of a text or even examples in our textbook helps students recognize that a rich text or word problem is more than mere numbers on a page. The **Three Reads**, is a routine that begins in a structured fashion, with the teacher taking the lead in posing good questions as students read and re-read a rich text three times. While it is initially teacher directed, responsibility is gradually turned over to students as they begin using the “three reads” independently. [San Francisco Unified School district offers a wealth of information about The Three Reads (<http://www.sfusdmath.org/3-read-protocol.html>).]

Explore The Three Reads using an example that reflects the level of work our district expects grade six students to do. Notice with the Three Reads, there is no question stem. Instead, the

Notice the lack of a question stem. Instead students will use the information to pose various problems that could be solved. This reinforces a focus on the relationship between the numbers in the problem.

questions that will be solved are generated from the discussion occurring in the classroom. This allows all students, especially ELLs and students with disabilities and others, to gain access to the context of the problem, the meaning of the numbers and their relationship to the overall problem.

The Task

The eighth grade class needs to raise money for its end of the year field trip. Team 8A wants to sell popcorn at the Spring Fling Carnival while team 8B wants to sell cotton candy. The cost to rent the popcorn machine is \$15.00 and a cotton candy maker rents for \$25.00. The cost of additional supplies for the popcorn is \$0.05 per bag. The additional cost for the cotton candy is \$0.10 per stick. Team 8A will sell the bags of popcorn for \$0.50 each and 8B will sell their cotton candy for \$0.75 per stick.

1. The teacher begins by reading the problem, the first time, aloud for the students. After the first read, the teacher allows students to work individually or in pairs to discuss what the situation is about. This is followed by a whole class debrief.
2. The teacher reads the problem again while the students read silently. However, this time the teacher indicates that she wants students to focus on the quantities in this situation and how they are related. This is followed by a whole class debrief.
3. Finally, the teacher reads the problem a third time while the students read silently. For the third read, students are asked to consider all the possible mathematical questions we could ask about the situation. This is followed by a whole class debrief and discussion about each problem considered. Finally, students individually or in groups choose a problem to solve, discuss and compare solutions and strategies with the entire class.

What is the situation about? Teacher may use text-dependent questions.

What are the quantities in the situation, and how are they related?

What are some of the possible mathematical questions?

Example, English Language Arts

This sample curriculum document is adapted from Boston Public Schools. You will notice that scaffolds are differentiated by WIDA standards, but also include supports such as: connecting to prior knowledge, previewing academic vocabulary, read-aloud strategies, instructional conversations using “juicy sentences” and processing through group work, which are also effective scaffolds for students with disabilities and struggling readers.

Figure 10: Kindergarten ELA Sample Unit Adapted from Boston Public Schools

ANIMALS 2X2	
Essential Question:	How do animals survive and thrive?
Weekly Question:	How do some animals defend themselves?

ANIMALS 2X2	
MA Curriculum Framework for ELA and Literacy:	<p>K.1. Read closely to determine what the text says explicitly and to make logical inferences from it; cite specific textual evidence when writing or speaking to support conclusions drawn from the text.</p> <p>K.2. Determine central ideas or themes of a text and analyze their development; summarize the key supporting details and ideas.</p>
WIDA Standards	<p>Level 1.LR.W/P. General content-related words, Everyday social and instructional words and expressions</p> <p>Level 2. LR.W/P. General content words and expressions, including cognates; social and instructional words and expressions across content areas</p> <p>Level 3. LR.W/P. Specific content language, including expressions; words and expressions with common collocations and idioms across content areas</p>
MA Content Standards:	<p>K.RI.1. With prompting and support, ask and answer questions about key details in a text.</p> <p>K.RL.2. With prompting and support, identify the main topic and retell key details of a text.</p> <p>K.RI.3. With prompting and support, describe the connection between two individuals, events, ideas, or pieces of information in a text.</p> <p>K.RF.1. 1. Demonstrate understanding of the organization and basic features of print. b. Recognize that spoken words are represented in written language by specific sequences of letters.</p> <p>K.W.2. Use a combination of drawing, dictating, and writing to compose informative/explanatory texts in which they name what they are writing about and supply some information about the topic.</p>
MA Content Standards:	<p>K.RI.1. With prompting and support, ask and answer questions about key details in a text.</p> <p>K.RL.2. With prompting and support, identify the main topic and retell key details of a text.</p> <p>K.RI.3. With prompting and support, describe the connection between two individuals, events, ideas, or pieces of information in a text.</p> <p>K.RF.1. 1. Demonstrate understanding of the organization and basic features of print. b. Recognize that spoken words are represented in written language by specific sequences of letters.</p> <p>K.W.2. Use a combination of drawing, dictating, and writing to compose informative/explanatory texts in which they name what they are writing about and supply some information about the topic.</p>

ANIMALS 2X2

This is an example of activating prior knowledge before presenting new content.

Motivation/ Connection (Preview):	Motivation: Show visual of stingray. I observe _____. My prediction is _____.	Connection: We have been learning about how animals use camouflage to their advantage. Today we're going to start learning about how animals defend themselves against predators.
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Previewing Academic Vocabulary & Word Play Activity:	1. attack: act it out	2. perceive: color card believe perceive	3. threat: color card danger threat	Other Content Specific Vocabulary (Tier 3): spine
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Students are getting the kind of vocabulary instruction that will be useful as they progress through the year and subsequent grades in their academic lives.

More explicit focus on *teaching the* multiple meanings of the word "spine" would prevent misconceptions that could occur for all students.

Juicy Sentences/ Instructional Conversations (Content):	<p>The ray can drive its long, poisonous spine deep into the body of any animal or human that it perceives as a threat.</p> <p>What is the subject of the sentence? What does it do? Where does it drive its spine? Why does it drive its spine into something else?</p> <p>Do you think it would drive its poisonous spine on purpose?</p> <p>The most meaningful support is provided by teachers engaging students in instructional conversations in which they draw the students' attention to the ways in which meaning relates to words, phrases, and clauses in texts they are working on.</p>
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Group Work:	A. Phonological Awareness:/St/ consonant blend (e.g., stingray, stinger)	B. Draw and illustrate how the stingray defends itself	C. Explain in 2 or 3 sentences: What is the stingray's defense against predators? Why is it important?
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Writing Task/ Closure (Processing):	Whole-Group: T&T: How does the stingray defend itself?
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KEY FEATURE 6:

Curriculum includes written links to adopted textbooks or computer-based products to indicate where the materials are high quality, where gaps exist, and how to fill them to meet district expectations.

Why is this important?

The goal of curriculum guidance is to support teachers in their work. Leaving teachers to search for resources wastes their time and may lead to a high degree of variation in the quality and type of materials students are exposed to. If the district wants to encourage teachers to use their creativity, providing examples of the rigor of texts they are to use or of the problems they are to ask students to solve is necessary.

There is no perfect textbook or set of materials. Nor is any digital resource perfect for every classroom. Districts do have access to tools, such as the Council's [Grade-level Instructional Materials Evaluation Tool](#), [Framework for Raising Expectations and Instructional Rigor for English Language Learners](#), and [Framework for Re-envisioning Mathematics Instruction for English Language Learners](#), designed to help them assess the quality and degree of alignment to college- and career-readiness standards of various materials. Yet even after ensuring the closest possible match to district standards, districts still need to support teachers by telling them where their materials are effective in reinforcing high-quality, standards-based instruction; where and how the teacher will need to augment the materials; and areas that can be skipped. Additionally, curriculum guidance should draw teachers' attention to misleading statements or misrepresentations within the materials you are referencing.

What does this look like?

Districts need to be specific when referring to a resource. Simply listing it without page numbers or links is an insufficient reference. It is also helpful to include annotations of what teachers will find in each of the resources referenced. This is particularly useful when listing multiple resources so teachers can decide which ones best suit their students' interests while addressing particular standards.

Example, Mathematics

In Boston Public Schools (BPS), the curriculum identifies specific units from both their adopted texts, *Investigations*, and supplemental resources. For example, while BPS teachers are expected to use one of the supplemental resources, *Number Talks*, the curriculum provides guidance on how students over-generalize as well as employ inefficient strategies.

Figure 11: Sample Grade Three Mathematics Unit from Boston Public Schools

Primary Curricular Resource:

Collections and Travel Stories, Grade 3 Investigations U3

Perimeter, Angles, and Area, Grade 3 Investigations U4

Investigations and the Common Core State Standards Guide

Appendix

Estimated Instructional Time: 22 days

September 8, 2015–October 7, 2015

Overarching Questions:

- How might you use what you know about place value to help you add and subtract?
- When adding or subtracting a multiple of 10 or 100, which digits change and why?
- How are addition and subtraction related to each other? Why can you use addition to solve a subtraction problem? How can knowing $12 + 7 = 19$ help you think about $19 - 7 = _?$
- How does using representations help you understand addition and subtraction?
- What is perimeter and how do we measure it?
- How does knowing the properties and attributes of rectangles help you determine the perimeter of a rectilinear shape?

Instructional Notes: Number and Operations Connecting to Grade 2

- The school year begins with **Investigations** Unit 3, *Collections and Travel Stories* as the primary curriculum resource. **Investigations** Unit 1, *Trading Stickers, Combining Coins* was taught to your current students in Grade 2 during the 2012–13 SY. Grade 2 students last year also built 1000 books.
- As a result of the shifts with the Common Core, it is expected that students in Grade 2 fluently add and subtract within 100. Students have experiences adding and subtracting within 1,000; fluency within 1,000 is a Grade 3 standard.
- Students in Grade 2 master all of the problem situations and all of their subtypes and language variant (MCF 2011, page 183). The numbers in these problems involve addition and subtraction within 100. They represent these problems with diagrams and/or equations. For problems involving addition and subtraction within 20, more students master Level 3 methods (see **OA Progression** pages 36–39); increasingly for addition problems, students might just know the answer (by end of Grade 2, students know all sums of two-digit numbers from memory CCSS 2.OA.2). For other problems involving numbers to 100, Grade 2 students use their developing place value skills and understandings to find the answer (see the **NBT Progression**). Students work with two-step problems, especially with single-digit addends, but do not work with two-step problems in which both steps involve the most difficult problem subtypes and variants.

To ensure that the grade three teacher is aware of students' prior learning from grade two, the curriculum explicitly provides that information linked to the standards.

The BPS Mathematics Department has provided resources to schools to support the Number Talks routine. However, these are only meant to be resources. The purpose of Number Talks is for each teacher to use the protocol to address the needs of his or her students. *Crafting problems that guide students to focus on mathematical relationships is an essential part of number talks that is used to build mathematical understanding and knowledge. The teacher's goals and purposes for the number talk should determine the numbers and operations that are chosen. Careful planning before the number talk is necessary to design 'just right' problems for students.* (See Number Talks, p. 14.) Teachers are encouraged to design their own Number Talks based upon informal and formal assessment data. For example, at the beginning of the third grade, teachers might want to initially revisit two digit plus two-digit addition and subtraction from previous grades. *Using small numbers serves two purposes: 1) students can focus on the nuances of the strategy instead of the magnitude of the numbers, 2) students are able to build confidence in their mathematical abilities.* (See Number Talks, p. 183.)

Areas to consider when selecting Number Talk Problems (see Number Talks, p. 373):

Over-generalizations. When students are investigating which strategies work with different operations, they often over-generalize and try to apply their generalizations to all operations. An example is when students are convinced that compensation works with addition and then assume it will also work with subtraction, multiplication, or division.

Inefficient strategies. Sometimes students become more focused on a specific strategy and ignore efficiency. If you have given them a problem that lends itself to using landmark numbers or compensation, such as $1999 + 1999$, yet the majority of your students solve this either with the standard U.S. algorithm or by breaking it apart by place value, you would want to craft problems to address this issue.

Evidence from exit cards. Exit cards are an excellent way to keep a pulse on students' understanding and use of strategies. If students struggle with a specific type of problem or operation on their exit cards, this would guide the types of problems and strategies for the next day's number talk.

Examples available as video links:

Kindergarten: Quick Images: Visualizing Number Combinations:

<https://www.teachingchannel.org/videos/visualizing-number-combinations>

Grade 3: Reasoning About Multiplication and Division:

<https://www.teachingchannel.org/videos/multiplication-division-in-the-core>

Grade 3: Grade 3 Number Talk:

http://www.mathsolutions.com/videopage/videos/Final/Classroom_NumberTalk_Gr3.swf

Grade 4: Reasoning About Division:

<https://www.teachingchannel.org/videos/common-core-teaching-division>

Curriculum guidance draws teachers to the page number and alerts them to unintended consequences that may occur and the need to address them when they use the supplemental resource, *Number Talks*, with their students.

Annotating these links and noting the strengths the materials bring would have been helpful as teachers use web-based units or other resources.

Example, Mathematics

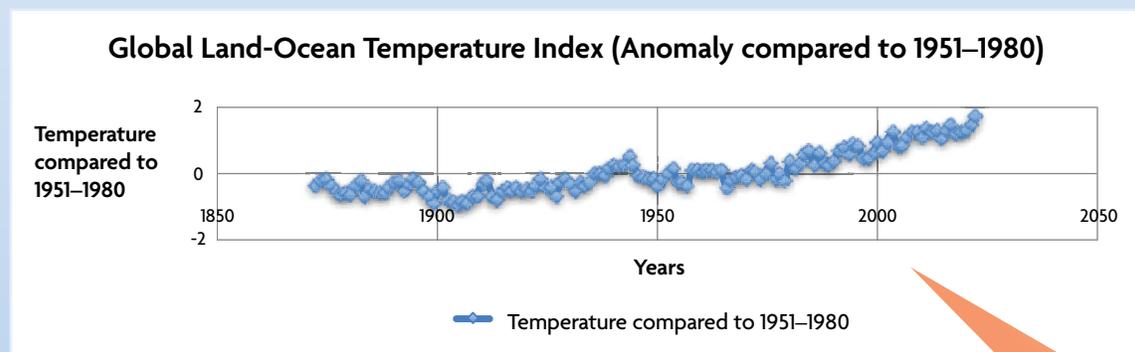
In the second math example, the district curriculum provided specific guidance to teachers about using data and graphs from sources other than the basal textbook (i.e., web-based data sources newspapers, magazines, or journals). This includes indicating where the materials are strong, where the basal is insufficient, where gaps exist, and how to fill them to meet district expectations.

Figure 12: Sample Pages from a District Grade Eight Unit on Investigating Patterns of Association in Bivariate Data Including Guidance to the Teacher about Data Displays and Interpretations

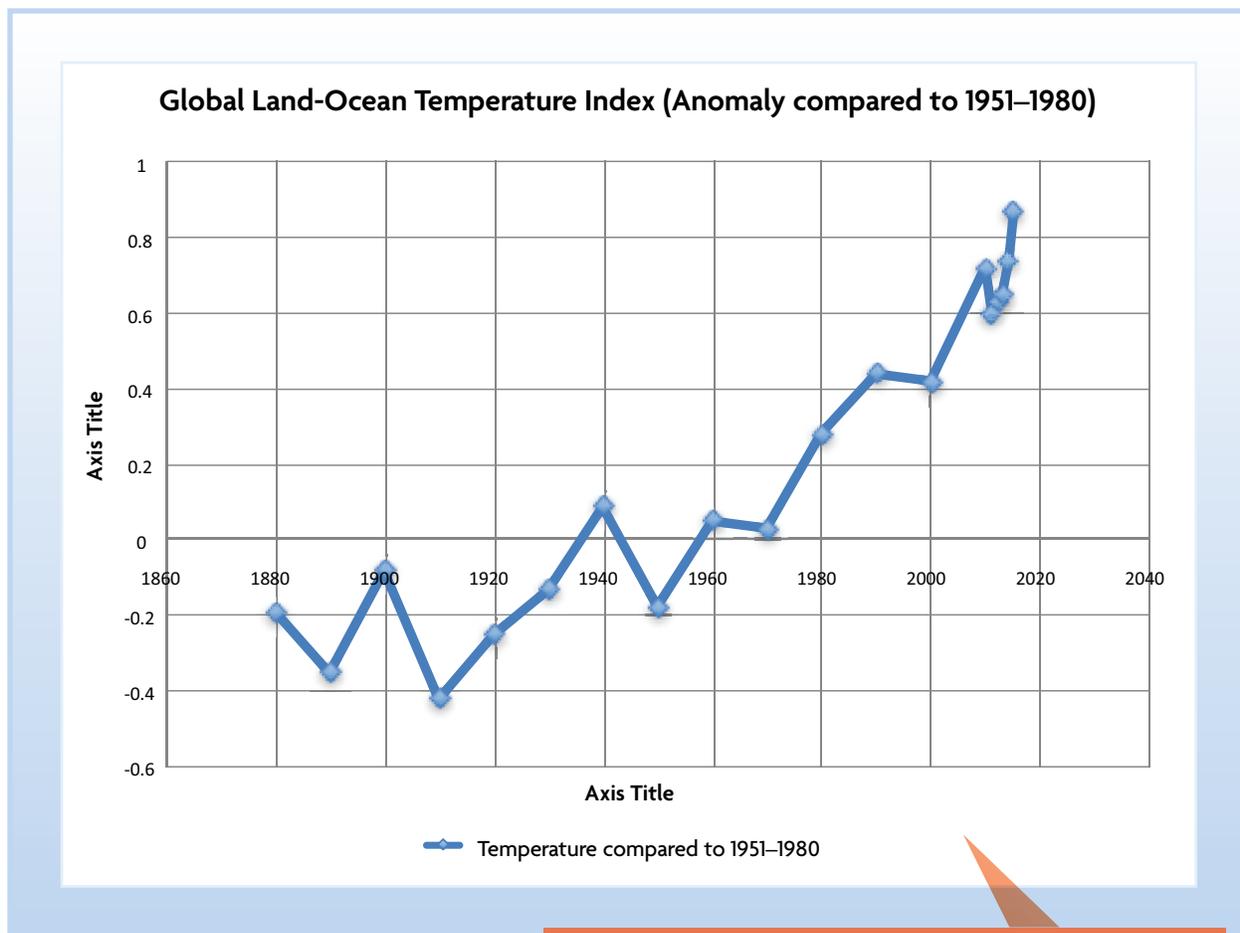
In grade eight, students are expected to make inferences based on scatter plots and other data displays. Even though the textbook includes a variety of suggestions for students to make inferences and engage with mathematical modeling problems, most of the data sources are already outdated. You will need to supplement using data and graphs from a variety of primary sources. It is imperative that we help students become wise consumers of data and to question the validity of the same data obtained from different sources. Do choose a variety of data resources so that students can see how different data displays may lead one to a different conclusion. This includes, choosing the appropriate range to accurately reflect the data and consider how modest changes may distort inferences made based on the data. For example, one widely used journal attempted to sway their readers by distorting the scale of the data to foster the belief that global warming and climate change are small concerns. Using the actual data set from NASA, teachers should notice that the actual range or scale for the graph does not accurately reflect the data. It is important that we push students to critically examine data sources and consider implications of the data presented from multiple viewpoints.

Investigate patterns of association in bivariate data.

- Construct and interpret scatter plots for bivariate measurement data to investigate patterns of association between quantities. Describe patterns such as clustering, outliers, positive or negative association, linear association, and nonlinear association.
- Know that straight lines are widely used to model relationships between two quantitative variables. For scatter plots that suggest a linear association, informally fit a straight line, and informally assess the model fit by judging the closeness of the data points to the line.



The graph was adapted from a widely-read journal. The initial graph showed changes in temperature from 1880–2015. This display may give the reader the impression that there isn't a significant rise in temperatures.



This is the same graph displayed with a different scale (a scale that more accurately reflected the range of the data). Scientists do state that a slight change in temperature should be alarming.

Example, English Language Arts

This is an example from a grade twelve English Language Arts curriculum document that provides an eight-day lesson on argument writing from Columbus City Schools. This curriculum document also provides the purpose and definition of argument writing, as well as how it translates into readiness for college and careers by including links to on-line resources for teachers to use during classroom instruction. In addition to the expectations for learning, this lesson plan provides links to the standards, the content focus and instructional strategies for days 1–4, directions for introducing the prompt, facilitating a writing workshop, and supporting student publication and assessment activities on days 5–8.

Figure 13: Sample Grade Twelve ELA Unit from Columbus City Schools

While the curriculum document refers to links throughout the lesson plan, this particular page supports teachers by not forcing them to locate their own resources needed to supplement the textbook. However, it could be more helpful if these references were annotated.



COLUMBUS CITY SCHOOLS ENGLISH LANGUAGE ARTS CURRICULUM WRITING

Instructional Resources

- **Effective Persuasion PowerPoint:** <http://owl.english.purdue.edu/owl/resource/696/1>
- **Songs:** http://www.woodyguthrie.org/Lyrics/This_Land.htm
<http://www.pbs.org/independentlens/strangefruit/film.html>
- **Art Works:** http://artandsocialissues.cmaohio.org/images/pierce_assassinated_pg.jpg;
http://artandsocialissues.cmaohio.org/images/Olds_No-Unemp_pg.jpg

Integration of Knowledge and Ideas (Strategies for Diverse Learners)

- Lesson plan about World War II propaganda posters at: <http://www.readwritethink.org/classroom-resources/lesson-plans/argument-persuasion-propaganda-analyzing-829.html>
- **ACT Writing Test Prompts:** <http://www.actstudent.org/writing/sample/index.html>
Website example: Educators debate extending high school to five years because of increasing demands on students from employers and colleges to participate in extracurricular activities and community service in addition to having high grades. Some educators support extending high school to five years because they think students need more time to achieve all that is expected of them. Other educators do not support extending high school to five years because they think students would lose interest in school and attendance would drop in the fifth year. In your opinion, should high school be extended to five years? In your essay, take a position on this question. You may write about either one of the two points of view given, or you may present a different point of view on this question. Use specific reasons and examples to support your position.
- *Logical fallacies* – adaptation of “Love is a Fallacy” by Max Schulman (video 13:44) – http://www.youtube.com/watch?v=eK_tb7ob8Kg
- *Logos, pathos, ethos* – animated PowerPoint with voice over (5:40) – http://teachertube.com/viewVideo.php?video_id=41007

Including the writing prompt is helpful to teachers and prevents them from having to seek out prompts on their own.

Professional Articles

- “Almost Painless: A Strategy for Writing Argumentation” by Susan Dixon at <http://www.ohiorc.org/adlit/InPerspective/Issue/2008-12/Article/vignette1.aspx>
- “A Teacher Looks at Persuasive Writing: Two Vantage Points” by Kriston Crombie – <http://www.ohiorc.org/adlit/inperspective/issue/2008-12/Article/vignette2.asp>

ENGLISH LANGUAGE ARTS CONNECTIONS

Reading	Language	Speaking and Listening
Incorporate Common Core Reading (Literary or Informational Texts) standards as students complete research to build and present knowledge. http://www.corestandards.org	Incorporate Common Core Language standards as students construct writing in terms of writing conventions, knowledge of language, and acquisition and use of vocabulary. http://www.corestandards.org	Incorporate Common Core Speaking and Listening standards as students integrate and evaluate information presented in diverse media and formats. http://www.corestandards.org

KEY FEATURE 7:

The curriculum provides suggestions for the best ways to measure whether students have met specific learning expectations.

Why is this important?

Begin with the end in mind to ensure that classroom teaching leads to the desired expectations. When the district is clear about what results students are to accomplish, teachers can focus on getting them there in terms of their academic language; ability to access complex text; writing, listening, and speaking skills; their mastery of key concepts, facts, and procedures; and their use of logic and skills to answer questions and solve problems.

What does this look like?

The district can provide sample tasks or guidance on how to measure student achievement. The classroom suggestions and activities should help prepare students to handle performance tasks and measures. For example, if the goal is to have students write a paper presenting an argument for a position, the classroom work should include broad reading on the topic, notetaking regarding various positions around that topic, the academic language needed to present and argue a position (including building transitions for new paragraphs), etc.

It is also valuable to show or link to samples of student work products that illustrate the level of work the district expects from students and the level of tasks assigned to lead to that work. This illuminates the target teachers should be aiming for. Rubrics can be customized for particular assignments. However, Student Achievement Partners has developed a generic Student Work Analysis rubric that is available free of charge. In it, teachers examine the assignment and what the student work indicates regarding the level of understanding of the text and topic, the level of understanding of the task, and the level of proficiency the student has with the requirements of the targeted standard.

In the following abridged example, notice how assessments are directly linked to the standards and the aligned instruction. The assessments illustrate to teachers the level of work that is expected at the grade level (eighth grade) related to those standards. The two weeks of teaching activities are summarized to give the reader a feel for the unit.

Figure 14. Abridged Guidance from the Basal Alignment Project

Grade-Level Standards:

CCSS W8.4 Produce clear and coherent writing in which the development, organization, and style are appropriate to task, purpose, and audience.

CCSS W8.8 Quote or paraphrase the data and conclusions of others while avoiding plagiarism and following a standard format for citation.

CCSS W8.9 Draw evidence from literary or informational texts to support analysis, reflection, and research.

- Apply grade eight Reading standards to literary nonfiction (e.g., “Delineate and evaluate the argument and specific claims in a text, assessing whether the reasoning is sound and the evidence is relevant and sufficient; recognize when irrelevant evidence is introduced.”)

Synopsis of Instruction:

Students and teacher read the text multiple times while stopping to respond to and discuss text-dependent questions, continually returning to the text. A variety of methods were used to structure the reading and discussion (i.e., whole class discussion, think-pair-share, independent written response, group work, etc.).

Students completed an evidence chart as a pre-writing activity with guidance from the teacher in gathering and using any relevant notes they compiled while reading and answering the text-dependent questions earlier. They then read multiple texts that present different points of view, and with gradual release, they began compiling their own evidence charts for those materials.

Once students completed the evidence chart, they were directed to look back at the writing prompt in order to remind themselves what kind of response they were writing and think about the evidence they found. From here, students developed a specific thesis statement, composed a rough draft and completed a final draft for submission to the teacher. (Note: The timeframe varies according to school scheduling and composition of classroom students.)

Student Evidence Chart used to complete the culminating writing task.

Evidence Quote or paraphrase	Page number	Elaboration / explanation of how this evidence supports ideas or argument
<i>I need such words from you far more than you can need them from me, especially where your superior labors and devotion to the cause of the lately enslaved of our land are known as I know them.</i>		<i>Douglass feels that Harriet is superior to him because the risks she took for the cause of slavery were far superior than anything that he did.</i>
<i>Excepting John Brown—of sacred memory—I know of no one who has willingly encountered more perils and hardships to serve our enslaved people than you have.</i>		<i>John Brown gave his life for the abolitionist cause. Douglass feels that other than losing her life, Tubman has worked harder and faced danger more than anyone.</i>
<i>It is to me a great pleasure and a great privilege to bear testimony to your character and your works, and to say to those to whom you may come, that I regard you in every way truthful and trustworthy.</i>		<i>Douglass is happy to share Tubman's dedication, honesty, and hard, dangerous work with anyone.</i>
<p><i>"Most that I have done and suffered in the service of our cause has been in public, and I have received much encouragement at every step of the way."</i></p> <p><i>"You, on the other hand, have labored in a private way."</i></p> <p><i>"I have wrought in the day—you in the night."</i></p> <p><i>"I have had the applause of the crowd and the satisfaction that comes from being approved by the multitude, while the most that you have done has been witnessed by a few trembling, scarred, and footsore bondmen and women, whom you have led out of the house of bondage and the silent stars have been the witnesses of your devotions to freedom and of your heroism."</i></p>		<i>Douglass worked publicly, by day, with much encouragement while Tubman worked privately, at night, with little encouragement.</i>

CULMINATING WRITING TASK

Prompt: Frederick Douglass and Harriet Tubman were former slaves who became important leaders in the abolitionist movement. They both made various contributions by working hard and sacrificing their lives for the sake of their cause to free the enslaved people in our country. In an essay, discuss Douglass' opinion of Harriet Tubman and her efforts and risks as compared to the role he played in the abolitionist movement.

SAMPLE STUDENT WRITING, GRADE EIGHT

In the “Letter to Harriet Tubman” Frederick Douglass praises Tubman for the devotion and sacrifices that she made for the abolitionist cause. He acknowledges that she was far superior than he in their quest to free the slaves. According to Douglass, though the cause was the same, the difference between their paths was marked. Though both worked hard and were great leaders, Harriet made many more sacrifices to which Douglass felt privileged to bear testimony.

Produce clear and coherent writing that is appropriate for the task.

Douglass feels that Harriet is superior to him because the labors she took for the cause of slavery were far superior than anything he did. First he includes the fact that she worked privately without the knowledge of the general public by stating, “Most that I have done and suffered in the service of our cause has been in public, and I have received much encouragement at every step of the way.” “You, on the other hand, have labored in a private way.” He said that the only ones to witness what Harriet did were “a few trembling, scarred and footsore bondsmen and women.”

He follows with the statement, “I have had the applause of the crowd and the satisfaction that comes from being approved by the multitude, while the most that you have done has been witnessed by a few trembling, scarred, and footsore bondmen and women, whom you have led out of the house of bondage and the silent stars have been the witnesses of your devotions to freedom and of your heroism.” This indicates that he realizes that those she saved were the only ones that knew the sacrifices she made.

He realizes the perils she endured while helping the slaves escape by comparing her to abolitionist John Brown, “Excepting John Brown—of sacred memory—I know of no one who has willingly encountered more perils and hardships to serve our enslaved people than you have.” John Brown was a white abolitionist who was a martyr for the cause of slavery. This allusion is testimony to his regard to her labors for the cause.

Delineate and evaluate the argument and specific claims in a text.

Quote or paraphrase with explanation.

Though working for the same cause, Douglass is eager to share that Tubman was far superior in her strength, commitment, and bravery than he. In addition, he regarded her as “truthful and trustworthy” in every way.

Example, Mathematics

A strong district curriculum provides suggestions for the best ways to measure whether students have met specific learning expectations. The curriculum should provide sample questions and likely student responses. Sample formative assessments could be included so that teachers have adequate examples of how to assess for understanding and levels of thinking. Open-ended tasks with accompanying exemplars also provide teachers a clear understanding about how to assess student progress through the examination of student work.

Figure 15: Sample Rubric and Student Work from the DCPS Cornerstone Unit: *Area Architects* (standards and the overview were provided in Figure 2)

The unit, *Area Architects*, requires that students create new floor plans by redesigning room sizes in the structure to meet client needs while preserving total floor area. Students are expected to create diagrams and representations to illustrate their new floor plans as well justify their design mathematically while ensuring that they meet the clients' recommendations. This Cornerstone Unit provided suggestions to the teacher about the best ways to measure student attainment of the specific learning expectation, includes a rubric, and an annotated sample of student work.

USING THE RUBRIC

All Cornerstone rubrics are designed to provide students with feedback on three categories. Each category is identified and defined below. The rubric also identifies several specific quality indicators that serve as evidence of sophistication, craft, and voice.

Sophistication: Masterful Use of Content

Craft: Precision, technique, care, beauty

Voice: Conviction, style, power

STUDENT LEARNING GOALS TIME LINE

Project Timeline		
Day 1	Day 2	Day 3
<ul style="list-style-type: none">Analyze a floor plan by using side lengths to determine the area of each room and the area of the entire house.	<ul style="list-style-type: none">Design a new floor plan; keep the area the same, but manipulate the side lengths to change the shape of each room.	<ul style="list-style-type: none">Evaluate peers' floor plans. Did they maintain the correct area? How do their side lengths make their floor plan different from yours?

Annotated Student Work Sample

Grade 3 – Cornerstone 2

Day 1 – Materials

Floor Plan¹

The rooms in the floor plan below are rectangles or made up of rectangles.



¹ This floor plan is from Eureka Math, Grade 3 Module 4 Lesson 15.

District of Columbia Public Schools | July 2019

Craft: This student precisely measured each room using a centimeter ruler and recorded each side length.

Grade 3 – Cornerstone 2

Problem Set²

Name Student A Date _____

1. Make a prediction: Which room looks like it has the biggest area?
I think the living room has the biggest area.
2. Record the areas and show the strategy you used to find each area.

Room	Area	Strategy
Bedroom 1	<u>60</u> sq cm	$5 \times 12 = 5 \times (10 + 2)$ $= (5 \times 10) + (5 \times 2)$ $= 50 + 10 = 60$
Bedroom 2	<u>56</u> sq cm	$8 \times 7 = 56$
Kitchen	<u>42</u> sq cm	$6 \times 7 = 42$
Hallway	<u>24</u> sq cm	$3 \times 8 = 24$
Bathroom	<u>25</u> sq cm	$5 \times 5 = 25$
Dining Room	<u>28</u> sq cm	$4 \times 7 = 28$
Living Room	<u>88</u> sq cm	$(6 \times 10) + (4 \times 7)$ $= 60 + 28$ $= 88$

Sophistication: The student used the break apart and distribute strategy to find the area of Bedroom 1.

Sophistication: To find the area of Bedroom 2, Kitchen, Hallway, Bathroom, and Dining Room, the student used multiplication as a strategy to find the area of each room. The student accurately represented his/her problem solving strategy with equations.

Sophistication: The student used the break apart and add strategy to find the area of the living room.

² This problem set is from Eureka Math, Grade 3 Module 4 Lesson 15.

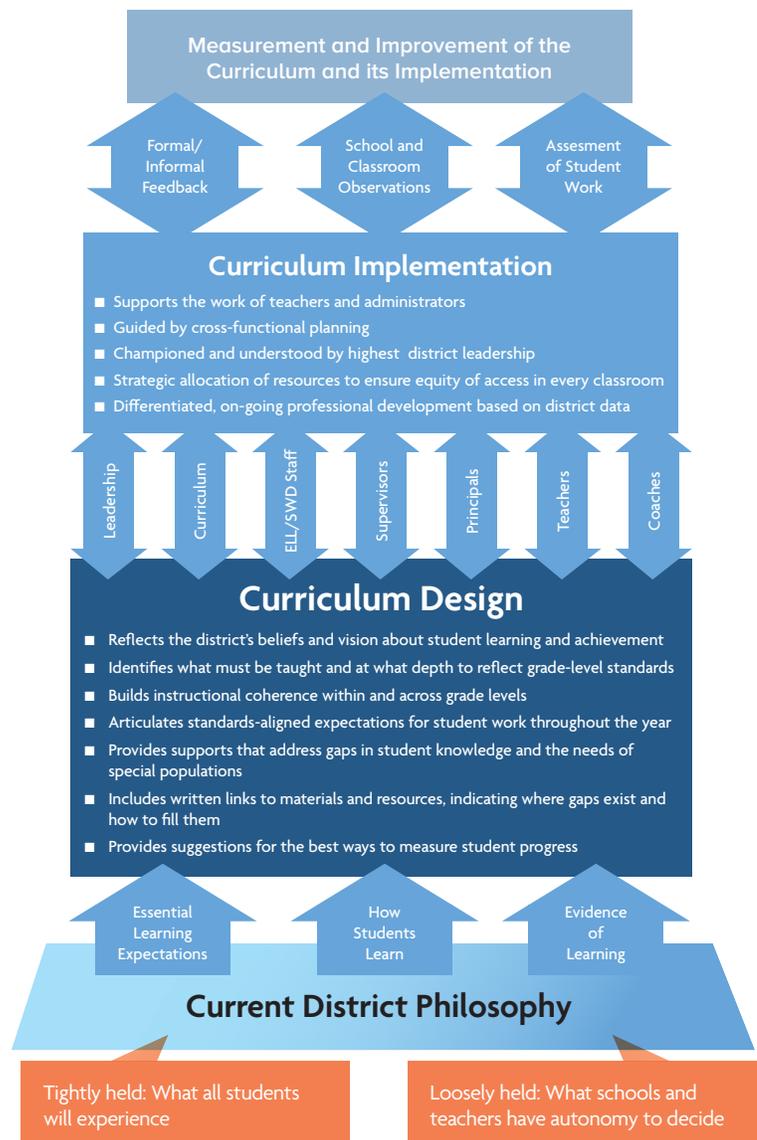
PART III:

RECOMMENDATIONS

As districts embark on the process of developing a high-quality curriculum aligned to college- and career-ready standards, it is crucial to understand the broad context within which a curriculum functions. Figure 16 attempts to provide a holistic view of the interconnected nature of various steps in the process of defining, adopting, implementing, and sustaining the quality of a curriculum.

To begin with, a district's curriculum should be built on its philosophy about the essential learning expectations it holds for students, as well as how students learn and how this learning should be measured or captured. Of course, central to this instructional philosophy, or theory of action for how a district intends to advance student achievement and college and career readiness, are decisions the system has made regarding what instructional oversight it retains at the district level (i.e., what it holds “tightly”), and what decisions it allows to be made at the school or classroom level (i.e., what it holds “loosely”). While there is a natural tension between these two forces of centralization and school-based management, most districts find themselves somewhere in the middle of this management continuum. Even in a highly centralized school system, schools often have their own approaches and learning philosophies. Nonetheless, there are certain essential features that, regardless of school-to-school differences, should serve as a unifying foundation. Learning standards and expectations, for instance, should not vary by school, even if other things do. This provides equity in terms of student learning

Figure 16: Steps in the Development, Implementation, and Ongoing Support of a District Curriculum



goals no matter where a student attends school, and no matter how frequently students transfer from school to school.

This set of decisions and beliefs that form the foundation for a district curriculum also determines many of the elements that a curriculum must contain, which can be seen listed in the middle box in the diagram. In addition to the central objective of supporting teachers and administrators, ensuring equity of access, and preparing students for college and careers, a strong curriculum must clarify what instructional decisions it holds tightly and loosely and what learning is essential and why. The most effective theory of action is based on an honest assessment of district needs given the level of student and staff performance. Autonomy should never mean that schools are released from ensuring that students meet the learning expected at each grade level and course. Moreover, a curriculum must make a district’s learning philosophy concrete by articulating what is central to district instructional work within viable timelines, as well as building a shared understanding of the learning that is to happen within and across grade levels. It is this set of features and criteria that make it a “curriculum” and not just a textbook series—a key distinction that means all the difference between sending out boxes of materials and providing teachers and administrators with meaningful guidance.

Of course, a district’s work is far from over once it has developed a curriculum—even one that meets all of these criteria. Implementation is key, and requires focused collaboration and calibration on the part of all district staff. This implementation process needs to begin “at the top”—with the endorsement and support of a district’s school board and superintendent. From there, the implementation process should be guided by cross-functional planning, including a diverse set of district instructional leaders, school supervisors, principals, and teachers, and resources should be strategically allocated based on district priorities. Professional development is a key component of implementation, and the successful roll-out of any curriculum will therefore depend on high-quality, ongoing professional learning opportunities based on district data and targeted to meet the diverse needs of teachers, aides, and administrators. For example, principals and supervisors do not need the depth of content and instructional knowledge that teachers do, but they need to understand what key focus areas are, why they are critical, and what that learning looks like. Moreover, there needs to be coherence in what they are observing and looking for in classrooms and the way they gauge the progress students should be making at various points of the year so that they are in a position to provide teachers with quality feedback.

Finally, the diagram shows that, through formal and informal feedback mechanisms, monitoring of implementation in all schools and classrooms, and assessment of student work and progress, the district should continuously work to ensure that the curriculum is being implemented with integrity and is supporting access to rigorous content and high-quality instruction for all students.

Based on this illustration, the following recommendations are grouped into three main categories essential to the process of developing and rolling out a high-quality curriculum aligned to college- and career-readiness standards: planning, implementation, and measurement/improvement. The recommendations in the planning section provide some examples of what a district needs to think about and address in developing curriculum, while the implementation section provides guidance for ensuring that the curriculum is understood and used effectively systemwide. Finally,

the measurement/improvement section provides advice and steps to ensure that the curriculum is continuously refined and improved, and that the district is gauging effectiveness based on clear measures of student achievement and growth.

Planning

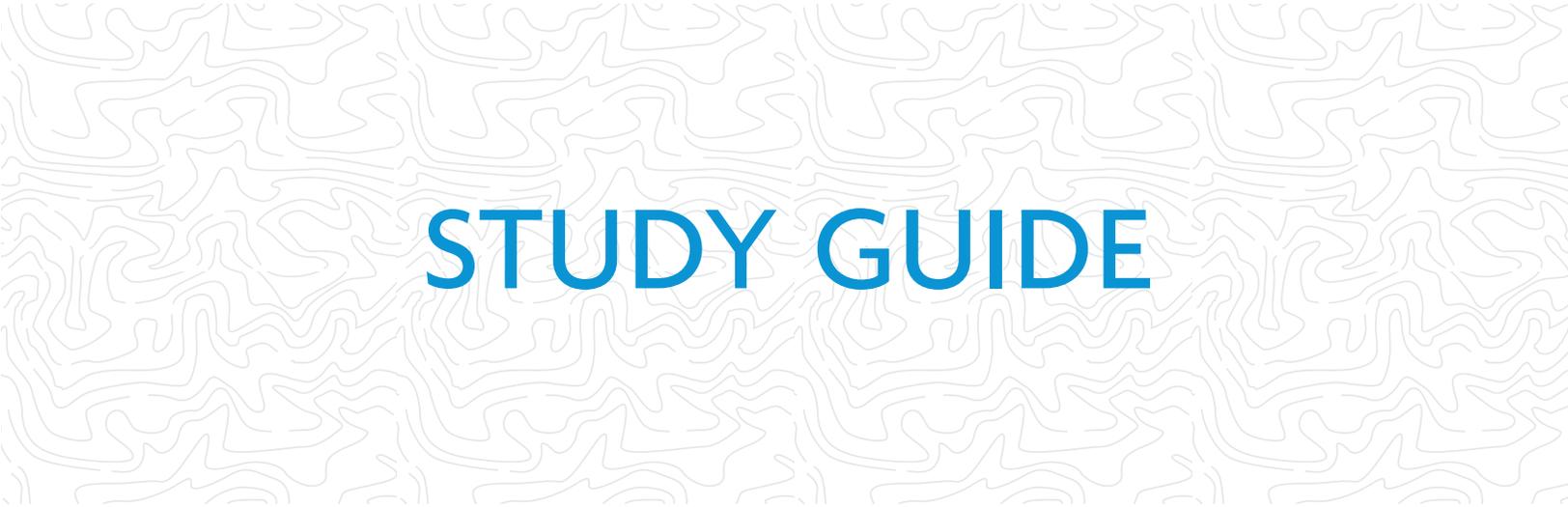
- Examine the curriculum to ensure that it can be taught and learned within the actual time available during the school year. Build in time for teaching and re-teaching, school calendar constraints, and benchmark and summative assessments.
- Analyze achievement data and student work to identify areas of weakness and known gaps in performance to ensure that additional guidance and support is provided in curricular documents/resources.
- Determine the level of experience and current content knowledge of teachers across the district in order to provide targeted support and preparation.
- Based on the analysis above, determine the grain size for curriculum guidance. There are two types of considerations: the level of detail needed to explain the meaning of district expectations and whether the scope and sequence will provide guidance on what must be taught within specific time frames (day, week, quarter, semester).
- Ensure ease of use of curricular documents so that teachers do not have to consult multiple sources for guidance on what to teach and best approaches for supporting the development of particular concepts or skills.
- Determine how best to distribute the curriculum, determining whether to create printed or online documents, and whether on-line materials should be alterable or not.
- Carefully vet and select instructional materials that will be used to support implementation of the curriculum using tools such as the [Grade-level Instructional Materials Evaluation Tool](#), [Framework for Raising Expectations and Instructional Rigor for English Language Learners](#), and [Framework for Re-envisioning Mathematics Instruction for English Language Learners](#).
- Carefully vet and select supplemental materials, programs, and interventions, including materials addressing the needs of special populations. Ensure that these materials are high quality and aligned to college-and career-readiness standards.
- Articulate how college-and career-readiness standards should be linked and applied across subject areas.
- Host focus groups to provide data and feedback on the ease of use and accessibility of sample curricular documents before developing the entire curriculum.

Implementation

- Enlist the superintendent and other district and school-based leaders to help champion the curriculum and underscore the district's expectation that the curriculum will be implemented with integrity in all classrooms. Ensure that these key leaders understand the importance of the curriculum and how it is based on the district's philosophy about what is essential for students to learn, how they learn best, and how their learning will be measured.
- Analyze student performance data and the demands of the curriculum to determine instructional priorities and the content-level demands that will require additional professional development. Establish a data analysis and cross-functional planning team to identify priority topics and provide sufficient lead time for upcoming focus areas in the scope and sequence.
- Create content-based professional development systems that address the cadence or routines of teaching and provide support to teachers in making effective instructional decisions. Ensure the strategic placement of professional development days throughout the school year and employ existing resources and structures (such as professional learning communities, common planning time, and coaches) in order to deliver effective training.
- Based on the resources of time and personnel, prioritize short- and long-term professional development goals differentiated for teachers and administrators based on their respective roles in standards implementation and other factors such as level of experience and prior training.
- Based on an analysis of teacher and student performance data, develop a systematic plan for supporting high needs schools with implementation of the curriculum.
- Ensure that new teachers and administrators receive the just-in-time training they need to support implementation of the curriculum and other district instructional initiatives already underway.
- Ensure that district professional development provides all teachers with the skills necessary to meet the needs of special student groups, such as English Language Learners, students with disabilities, and gifted and talented students, so that all students have access to high instructional standards and expectations.
- Provide guidance and training to teachers and administrators on the selection or development of instructional materials (including digital tools) aligned to college- and career-readiness standards.
- Provide guidance and support to schools and teachers in the selection and use of supplemental materials, programs, and interventions for students who are struggling to meet college- and career-readiness standards.
- Track what instructional materials are being used in schools to implement college- and career-readiness standards, and the effectiveness of these materials with various student groups.

Measurement and Improvement

- Regularly reach out across departments and to teachers and administrators to gauge the quality and alignment of the curriculum and its usefulness to end users in supporting student achievement. This can take multiple forms, from regular meetings with users to focus groups, surveys, and online feedback forums.
- Establish a process for refining and improving curriculum based on the feedback collected from teachers and administrators as well as student achievement and student work data.
- Clearly communicate all changes to the curriculum to teachers, administrators, and staff, acknowledging the role of data and feedback in these revisions.
- Provide teachers and administrators with guidance on what to look for in student work, what to look for during walk-throughs, and how to assess student learning to provide evidence that assignments and student work are aligned to grade-specific instructional expectations articulated in the curriculum.
- Build a bank of annotated exemplars of student work in order to provide explicit guidance on what students are expected to learn and produce at each grade level, as well as next steps in addressing unfinished learning.
- Evaluate the effectiveness of professional development in improving instructional practice and increasing college- and career-readiness levels.
- Evaluate how teaching resources are used, and monitor the placement and use of technology to prevent inequities in access to digital resources.



STUDY GUIDE

Part I: Purpose, Principles, and Preconditions

Defining Curriculum

1. What principles provide the foundation for your district's curriculum?
2. How does your district curriculum differ from a listing of standards or from the adopted textbooks or required classroom resources? Do staff understand those differences?
3. What steps are you taking to more clearly articulate and communicate your district's vision for the role of its curriculum?

The Purpose of a Quality Curriculum

4. How do you ensure consistency in instructional standards and expectations across schools?
5. To what extent is the work of teachers and school-based administrators guided by your district curriculum? How do you know?

Preconditions for Supporting a High-Quality Curriculum

6. As you think about your own district, which preconditions for supporting a high-quality curriculum are present, and which preconditions could be strengthened?
7. Consider data about the level of student performance and the stability and expertise of teachers, administrators, and other instructional staff in your district. In light of those factors, how does your district curriculum offer the level of guidance that instructional staff requires for all students to have access to the level of instruction they need to meet the standards?

Principles for Design and Implementation

8. As you read the principles for design and implementation of a high-quality curriculum, which items does your district's curriculum do well?
9. What areas do you see for improvement?

Part II:

Seven Key Features of a Strong, Standards-Aligned Curriculum

10. Examine each of the seven key features in Part II. How well does your curriculum:
 - a. Reflect the district’s beliefs and vision about student learning and achievement?
 - b. Clarify what must be taught and at what depth?
 - c. Illustrate instructional coherence within and across grade levels?
 - d. Provide explicit articulation of standards-aligned expectations for student work at different points of the school year?
 - e. Include scaffolds that address gaps in student knowledge and needs of ELLs and students with disabilities?
 - f. Cite links to classroom materials indicating where they are strong, where gaps exist, and how to fill them to meet district expectations?
 - g. Recommend best ways to measure whether students have met specific learning expectations?

A Deeper Look at Key Feature 2

11. As you examine Key Feature 2, how would you summarize why it is important for the district’s curriculum documents to be clear about what must be taught and at what depth to reflect college- and career-readiness standards for each grade level and course?
12. Carefully examine the sample grade four English language arts unit overview (Figure 3) provided on page 14. Pay particular attention to the level of detail used to explain what the grade-level expectations are for the grade four standard: *Compare and contrast the point of view from which different stories are narrated, including the difference between first- and third-person narrations.*
 - a. In Figure 3, where would a teacher or supervisor find in the curriculum exactly what students need to know about first- and third-person narration?
 - b. What else do students need to be able to do in order to show that they can determine an author’s point of view, according to Figure 3?

COUNTEREXAMPLE: Now contrast the level of detail in Figure 3 to the following counterexample (Figure 17). This counterexample is typical of what teachers often receive in districts across the country. In this district, teachers in grade six receive a curriculum map and are expected to create their own approach to a set of standards while addressing essential questions per quarter. Figure 17 only displays the first unit of the quarter.

**Figure 17. Counterexample for Key Feature 2:
Sample Grade Six Curriculum Map for Quarter 1**

Unifying Concepts	Essential Questions	Reading Complex Texts & Texts to Support Writing 3-5 shorts texts; 1 extended text per quarter; Balance between literary and informational texts	Performance Assessments
<p>Q1</p> <p>Unifying Concept</p> <p>Identify through culture</p>	<p>Q1 Unit 1</p> <p>How do cultural experiences influence who we are?</p> <p>How do authors convey meaning through words and/or images?</p>	<p>Q1 Unit 1</p> <p>Extended Text (autobiography and fiction; see Sixth Grade Unit Plan for how these texts are used in book clubs)</p> <p><i>The Circuit</i> by Francisco Jimenez</p> <p><i>The Breadwinner</i> by Deborah Ellis</p> <p><i>Seedfolks</i> by Paul Fleischman</p> <p><i>Holes</i> by Louis Sachar</p> <p>Short Texts (informational and editorial)</p> <p>“Evolution of a Point Guard” by Howard Beck, <i>New York Times</i></p> <p>“I’ve Got Your Number” by Robe Imbriano, <i>New York Times</i></p> <p>“Hip-Hop at the Museum?” by Stephanie Harvey & Anne Goudvis, <i>Toolkit Texts</i></p> <p>“Marriage – or Else” by Rod Nordland & Alissa J. Rubin, <i>Junior Scholastic</i></p> <p>Negotiating Asian-American Identity through Portraiture” posted by Saskla DeMelker, PBS Newshour (http://www.pbs.org/newshour/art/blog/2011/10/negotiating-asian-american-identity-through-portraiture.html)</p> <p>“Eisenhower to Ngo Dinh Diem” (http://www.pbs.org/wgbh/amex/vietnam/psources/ps_eisenhower.html)</p>	<p>Beginning of Year (BOY): RI.6.1 and W.9 Performance Task (reading and writing about text with evidence) for Pre-Assessment*+</p> <p>Q1 Unit 1</p> <p>Teacher-created performance assessment</p> <p>Focus on inform and explain</p> <p>Primary Standards Assessed: RI.6.1, RI.6.7; RI.6.10; W.6.2</p>

- 13a. Where is the listing of the standards for teachers to address in their classroom instruction for this unit?
- b. Where are teachers or supervisors to find out what the standards are?
- c. How will the teachers in every school know if they have correctly interpreted the content students should know and the depth of understanding the district expects for all students?
14. Look at a sample from your own district’s curriculum. Is the level of detail closer to the example in Figure 3 or to the counterexample in Figure 17?
15. What evidence would indicate whether the curriculum support has been sufficient for teachers to understand district expectations for what they need to teach and at what depth?

A Deeper Look at Key Feature 3

16. As you examine Key Feature 3, which addresses building instructional coherence within and across grade levels consistent with college-and career-readiness standards for each grade, pay particular attention to the Algebra 1 section provided on page 20 (Figure 5). Notice how explicitly the district provides teachers with guidance regarding prior student learning about the concepts the current lesson will address. How else does the curriculum guidance in Figure 5 build coherence so that students can make connections in their learning?

COUNTEREXAMPLE: Now contrast the level of detail in Figure 5 to the following counterexample (Figure 18). Too many districts only provide teachers with this level of guidance—a set of standards divided into each quarter. In this sample, the district appears to treat the grade three content as a set of disjointed standards, without any consideration of the inherent connections between standards.

Figure 18. Counterexample for Key Feature 3: Curriculum Guidance for Grade Three Mathematics

First Quarter	Second Quarter	Third Quarter	Fourth Quarter
Use place value understanding to round to the nearest 10 or 100 Fluently add or subtract within 1000 using strategies and algorithms based on place value, properties of operations, and/	Identify arithmetic patterns (including patterns in the addition table or multiplication table) and explain them using properties of operations. Multiply one-digit whole numbers by multiples of 10 in the range 10-90	Understand a fraction $1/b$ as the quantity formed by 1 part when a whole is partitioned into b equal parts; understand a fraction a/b as the quantity formed by a parts of size $1/b$. Represent a fraction $1/b$ on a number line diagram by defining	Solve real-world and mathematical problems involving perimeters of polygons, including finding the perimeter given the side lengths, finding an unknown side length and exhibiting rectangles with the same perimeter and different areas or with the same area and different perimeters.

<p>or the relationship between addition and subtraction.</p> <p>Solve two-step word problems using the four operations.</p> <p>Represent these problems using equations with a letter standing for the unknown quantity. Assess the reasonableness of answers using mental computation and estimation strategies including rounding.</p> <p>Interpret products of whole numbers, e.g., interpret 5×7 as the total number of objects in 5 groups of 7 objects each.</p> <p>Use multiplication and division within 100 to solve word problems in situations, involving equal groups, arrays and measurement quantities.</p> <p>Apply properties of operations as strategies to multiply and divide.</p>	<p>(e.g., 9×80, 5×60) using strategies based on place value and properties of operations.</p> <p>Use multiplication and division within 100 to solve word problems in situations involving equal groups, arrays, and measurement quantities.</p> <p>Apply properties of operations as strategies to multiply and divide.</p> <p>Interpret whole-number quotients of whole numbers, e.g., interpret $56 \div 8$ as the number of objects in each share when 56 objects are partitioned equally into 8 shares, or as a number of shares when 56 objects are partitioned into equal shares of 8 objects each.</p> <p>Determine the unknown whole number in a multiplication or division equation relating three whole numbers. For example, determine the unknown number that makes the equation true in each of the equations $8 \times _ = 48$, $5 = _ \div 3$ and $6 \times 6 = _$</p>	<p>the interval from 0 to 1 as the whole partitioning into b equal parts.</p> <p>Represent a fraction a/b on a number line diagram by marking off a lengths $1/b$ from 0. Recognize that the resulting interval has size a/b and that its endpoint locates the number a/b on the number line.</p> <p>Recognize that each part has size $1/b$ and that the endpoint of the part based at 0 locates the number $1/b$ on the number line.</p> <p>Use multiplication and division within 100 to solve word problems in situations involving equal groups, arrays and measurement quantities, e.g., by using drawings and equations with a symbol for the unknown number to represent the problem</p> <p>Understand a fraction as a number on the number line; represent fractions on a number line diagram.</p>	<p>Recognize area as an attribute of plane figures and understand concepts of area measurement.</p> <p>A plane figure which can be covered without gaps or overlaps by n unit squares is said to have an area of n square units.</p> <p>A square with side length 1 unit, called “a square unit,” is said to have “one square unit” of area, and can be used to measure area.</p> <p>Measure areas by counting unit squares.</p> <p>Relate area to the operations of multiplication and division.</p> <p>Find the area of a rectangle with whole-number side lengths by tiling it, and show that the area is the same as would be found by multiplying the side lengths.</p> <p>Multiply side lengths to find areas of rectangles with whole-number side lengths in the context of solving real world and mathematical problems, and represent whole-number products as rectangular areas in mathematical reasoning.</p> <p>Use tiling to show in a concrete case that the area of a rectangle with whole-number side lengths a and $b+c$ is the sum of $a \times b$ and $a \times c$. Use area models to represent the distributive property in mathematical reasoning.</p>
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			<p>Recognize area as additive. Find areas of rectilinear figures by decomposing them into non-overlapping rectangles and adding the areas of non-overlapping parts, applying this technique to solve real-world problems.</p> <p>Partition shapes into parts with equal areas. Express the area of each part as a fraction of the whole.</p>
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17. Looking at the number and type of expectations in each quarter, how well do you think the district has spaced out learning objectives, and how realistic is this timeline?
18. As you examine the four quarters, how are teachers expected to make connections for students within the grade level?
19. Are teachers provided with sufficient guidance and data on the the background students have had in previous years on a given concept or skill?
20. As you examine your district’s curriculum, what have you used to ensure that concepts and skills are built in a logical manner? For example, in mathematics, have you used sources such as the Progression Documents from Illustrative Mathematics? (See example at <https://www.cgcs.org/domain/120>).

Part III: Recommendations

21. Think about the diagram provided on page 50 (Figure 16). Which sections are ones that you feel are strong areas within your school district?
22. Which areas could be the focus of next steps for improving your district's curriculum, strengthening its implementation, or evaluating its effectiveness? To leverage your work, prioritize what you can do well with the staff and budget available. Take into consideration where student achievement data and student work samples reveal the greatest needs and the content area concepts and skills where teachers need the greatest support.

Planning

23. As you begin making revisions to your current curriculum, consider the following:
 - a. How will you ensure that the district curriculum can be taught and learned within the actual time available during the school year?
 - b. How can you adjust the pacing to more accurately reflect the actual time available during the school year?
 - c. How can you allow time for students to learn the grade-level standards as well as to address the needs of students who may have unfinished learning?
24. Given the level of student achievement and the expertise of your teachers and instructional support personnel, what is the appropriate grain size for the curriculum guidance you need to provide?
25. As you analyze your student achievement data and student work, as well as feedback from teachers about curriculum implementation, how can you provide additional guidance to address areas of weakness and known gaps in student performance? How can this be done without inadvertently creating a document that lacks focus or does not allow time for students to learn the grade level standards?
26. In writing curriculum guidance, how will you act on the feedback and support you receive from other central office departments, principal supervisors and specialized offices, such as English language learners and students with disabilities?
27. How can you utilize feedback and data about the ease of use and accessibility of current curriculum documents before any revisions are made to the curriculum?

28. How did you determine whether the ELA and mathematics materials you have adopted for school use are culturally responsive and aligned to the rigor of the college-and career-readiness standards? How will you provide guidance for any areas that aren't sufficiently addressed in the materials or resources?
29. What tools did you employ (such as the Council of the Great City Schools' [Grade-Level Instructional Materials Evaluation Tool—Quality Review](#), and [English Language Development 2.0](#)) to determine the alignment of the materials?

Implementation

30. How will you enlist the superintendent and other district and school-based leaders to help champion the curriculum and underscore the district's expectation that the curriculum be implemented with integrity in all classrooms? What support will be needed throughout the revision and implementation process? What are some of the budgetary implications and what impact will the budget have on curriculum revisions and implementation?
31. In considering district professional development,
 - a. How will you design the district's professional development plan to address the knowledge and skills that teachers will need to implement the curriculum with integrity?
 - b. How will you utilize existing structures to provide adequate time to address priority areas?
 - c. What discipline-specific professional development is needed to enhance teacher's content knowledge as well as to address the cadence or routines of teaching so that teachers are able to make more effective instructional decisions?
 - d. How will you clarify and communicate the rationale for specific areas in the curriculum based on the analysis of student performance data?
 - e. How will you design professional development to help teachers leverage cross-disciplinary support?
 - f. How will professional development incorporate the needs of special student groups, including gifted and talented students as well as students with unfinished learning?

Measurement and Improvement

32. How will you regularly reach out across departments and to teachers and administrators to gauge the quality and alignment of the curriculum and its usability for end users?

33. After the current revisions, how will you continuously update and improve the curriculum based on feedback collected from teachers and administrators and from student achievement data? How will you clearly communicate these revisions, in a timely manner, to teachers and administrators?
34. How will you know whether concepts specified in the curriculum are being taught at the appropriate level of depth? What guidance is provided so that teachers are able to assess the degree of student understanding?
35. What tools can be used during classroom walk-throughs to provide feedback to teachers about the evidence of student learning as well as to explicitly identify gaps in student understanding?
36. How can you incorporate exemplars of student work into the curriculum?
Throughout the school year, how can you and your curriculum team begin building a bank of annotated exemplars of student work so that teachers and administrators have evidence of quality student work and how it should progress from the beginning to the end of the school year?
37. How will you evaluate the effectiveness of the professional development designed to improve teacher practice as well as discipline-specific content knowledge? How can you ensure that all schools have access to the same quality professional development so that inequities do not exist?
38. How well do your standardized tests align to the content and depth of the district's curriculum and standards? How do you know?



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