

Accelerating Course-Level Learning for the 2020-21 School Year High School Mathematics

Introduction

Rhode Island students, educators, and families experienced an abrupt shift from in-school learning to distance learning on Monday, March 16, 2020 due to the emergence of the novel coronavirus responsible for COVID-19. LEAs and the State aggressively sought to gain device and internet access for all Rhode Island students. Teachers strove to deliver content and maintain personal relationships with their students and families in a drastically different environment. A plethora of online resources (e.g., Discovery Education, NBC Learn) became available at no cost. RIDE created a COVID-19 webpage with a vast amount of resources including guidance for multilingual learners, special education, prioritizing content standards, and self-care. By many metrics, Rhode Island students were well positioned to continue the balance of their school experience for the 2019-20 school year remotely. But with any abrupt change, there are side effects and unintended consequences.

One of these consequences is the reality that many students did not interact with the whole array of academic content they would have experienced during face-to-face instruction. Whether the reason be that some students did not have immediate access to online instruction or the simple fact that completing assignments often takes more time remotely than in person, most students will have a bank of unfinished learning. Thus, one of the major challenges of the 2020-21 school year is to address this unfinished learning by engaging students in course-level content. To do this successfully, educators will need to employ formative assessment to identify students' needs and strengths and to then build on those strengths to facilitate new learning. This will require scaffolding instruction at certain junctures with just-in-time supports before launching into new content. It does not mean, beginning the instructional year with teaching content from the previous grade/course and then commencing instruction of new course-level content several months into the school year. National experts in mathematics education agree the former practice is more efficacious in helping to advance new learning (NCTM, NCSM 2020).

Advancing student learning through current course-level content while addressing the gaps from previous years is no small feat, but it is the challenge every educator needs to take on to minimize the impact of the abrupt changes brought on by COVID-19 during the close of the 2019-20 school year. In the process, educators will need to continue their practice of integrating the eight Standards for Mathematical Practice into content instruction. They must continue to use high cognitive demand tasks and balance the three aspects of mathematical rigor (conceptual understanding, procedural skill and fluency, and application) while simultaneously attending to students' social emotional needs. RIDE believes our educators have the knowledge, drive, and ingenuity to tackle this challenge, and we seek to support them in any way we can. The following bundle of resources is one way we offer to help our educators reimagine their pacing and instruction for the coming year.

Components of the bundle include:

- Questionnaire for Determining an LEA’s/School’s Need for Accelerating Course-level Learning Guidance
- Accelerated Course-Level Learning Planning Guidance and Templates
 - Yearlong Planning
 - Unit Planning
 - Lesson Planning

Questionnaire for Determining an LEA’s/School’s Need for Accelerating Course-Level Learning Guidance

The following questions are intended to assist LEAs/schools in determining their need for RIDE’s guidance on accelerating course-level learning in mathematics for the 2020-21 school year. The need for this guidance is a function of the current mathematics curriculum used by an LEA/school. Walk through the questions to ascertain whether you would benefit from the guidance or if you are sufficiently positioned to plan for the year ahead based on resources provided by the publisher of your curriculum.

1. Our LEA/school uses a mathematics curriculum that is rated as high-quality by EdReports.
 - a. If yes, proceed to question 2.
 - b. If no, proceed to question 5 if you use a published curriculum and question 6 if you use a locally developed curriculum.
2. Our LEA/school uses the same high-quality curriculum throughout the course sequence in a school (e.g., Agile Mind Algebra 1, Geometry, Algebra 2).
 - a. If yes, proceed to question 3.
 - b. If no (e.g., Agile Mind - Algebra 1 and Illustrative Math - Geometry), proceed to question 4.
3. The publishers of our high-quality curriculum materials have outlined a systemic approach for accelerating grade/course-level learning in mathematics for the 2020-21 school year.
 - a. If yes, use the guidance provided by your high-quality curriculum.
 - b. If no, continue to question 5.
4. The publishers of the multiple high-quality curricula we use within a school have each outlined a systemic approach for accelerating grade/course-level learning in mathematics for the 2020-21 school year.
 - a. If yes, use the guidance provided by each publisher paying special attention to any inconsistencies especially with respect to the transition year(s) between programs.
 - b. If no, consider using the RIDE guidance for accelerating course-level learning.
5. Our LEA/school currently uses a mathematics curriculum that is not rated as high-quality by EdReports, but the publisher has provided guidance on accelerating grade/course-level learning.
 - a. If yes, consider using the guidance from the publisher in tandem with the RIDE guidance for accelerating grade-level learning.
 - b. If no, consider using the RIDE guidance for accelerating course-level learning.
6. Our LEA/school currently uses a locally developed curriculum.
 - a. Consider using the RIDE guidance for accelerating course-level learning.



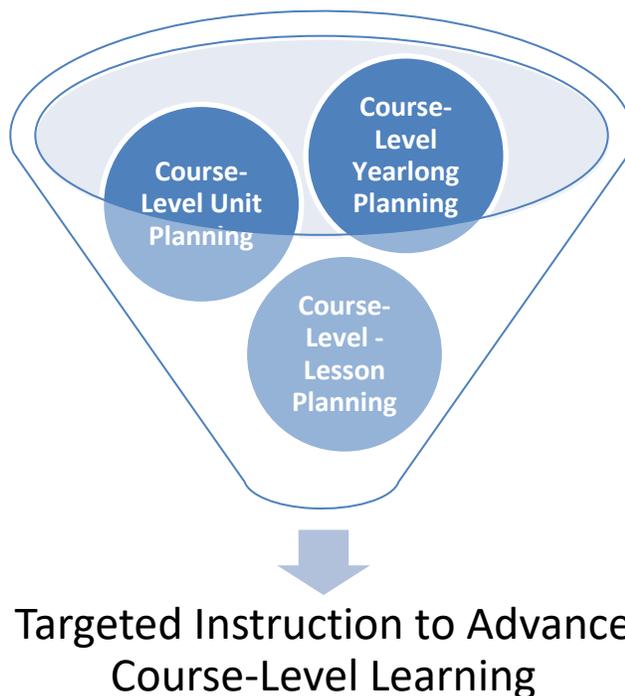
Accelerating Course-Level Learning Planning Guidance and Templates

As mentioned in the introduction to this document, most students will have some unfinished learning from the 2019-20 school year. The challenge of the 2020-21 school year is to address this unfinished learning by engaging students in **course-level content**. Needless to say, this effort to simultaneously address unfinished learning and course-level content will require time and ingenuity. Unlike elementary and middle school mathematics which address content from a relatively consistent group of domains, courses in high school mathematics (e.g., Algebra 1, Geometry, Algebra 2) generally address more specialized content from Conceptual Categories. Cognizant of this issue, leaders in mathematics education have prioritized essential mathematical content for the 2020-21 school year. The prioritization directs educators to focus on specific course-level content, provides suggestions for consolidating some content, and suggests content that may be eliminated due to time constraints. For the purpose of this guidance, reference will be made to Student Achievement Partners' 2020-2021 Priority Instructional Content in High School Mathematics.

The notable courses are Algebra 1 (whether offered over the course of one or two years or in middle school) and Algebra 2 if it is offered the year immediately following Algebra 1. Teams of Algebra teachers should draw on their content expertise to come to consensus about what the content priorities should be. The [PSAT/SAT high school assessment targets](#) and the Student Achievement Partners' Mathematics guidance help inform what standards should not be eliminated from the prioritization, but by no means identify the scope of content that should be taught.

Educators may need to adjust their curriculum both at the unit and lesson level. RIDE has formulated a series of questions, suggestions, and supporting templates to assist LEAs and schools in this effort.

Overview of the Process



Yearlong Planning

The first step in the process of accelerating student learning of course-level content is to ascertain the content for a course and to conduct a general crosswalk with course-level units. Questions to consider while working through the template include:

- Does the content extend work from earlier units or courses?
- Does the content extend into future content for this course or ensuing courses?
- Are there units that can be eliminated or postponed to the end of the year?
- Are there chapters within units that can be eliminated, consolidated, or postponed to the end of the year?
- What are the general learning targets within units that will be prioritized for this year?
- Is there information available to indicate students' prior experiences connected to the prioritized content (e.g., notes from the previous year's educator on what content was and was not taught, if the content was taught during distance learning, assessments from the previous year)? If it is not currently available, is there a channel to access it?

Based on the answers to these questions and others you may have crafted, estimate the number of days needed for each unit and when it will be instructed during the year. While doing so, consider any additional time that may be needed for just-in-time supports to address unfinished learning within the context of course-level content, time to habitually conduct formative assessments, and time to administer any other required assessments. Remember, this is just an estimate to give you a general sense of what the instructional year could look like.

Yearlong Planning Template to Accelerate Course-Level Learning

Course:

Current Course-Level Learning Targets per Unit	Prioritized Content: https://achievethecore.org/content/upload/2020-21%20Support%20for%20Instructional%20Content%20Prioritization%20in%20HS%20Mathematics_August%202020.pdf	Adjusted Learning Targets for Units That Will Be Prioritized for This Year	Are there chapters within units that can be eliminated, consolidated, or postponed to the end of the year?	Notes on Prior Learning Experiences from the Previous Grade 8/Course	Estimated Number of Instructional Days	Quarter/Time of Year
Unit #						
Unit #						
Unit #						
Unit #						
Unit #						
Unit #						

Unit Planning

The second step in the process of Accelerating Student Learning of course-level content is to analyze the prioritized content more thoroughly for a unit and to think generally about how the content should be taught. Identifying prerequisite knowledge and planning for formative assessments are instrumental to this process.

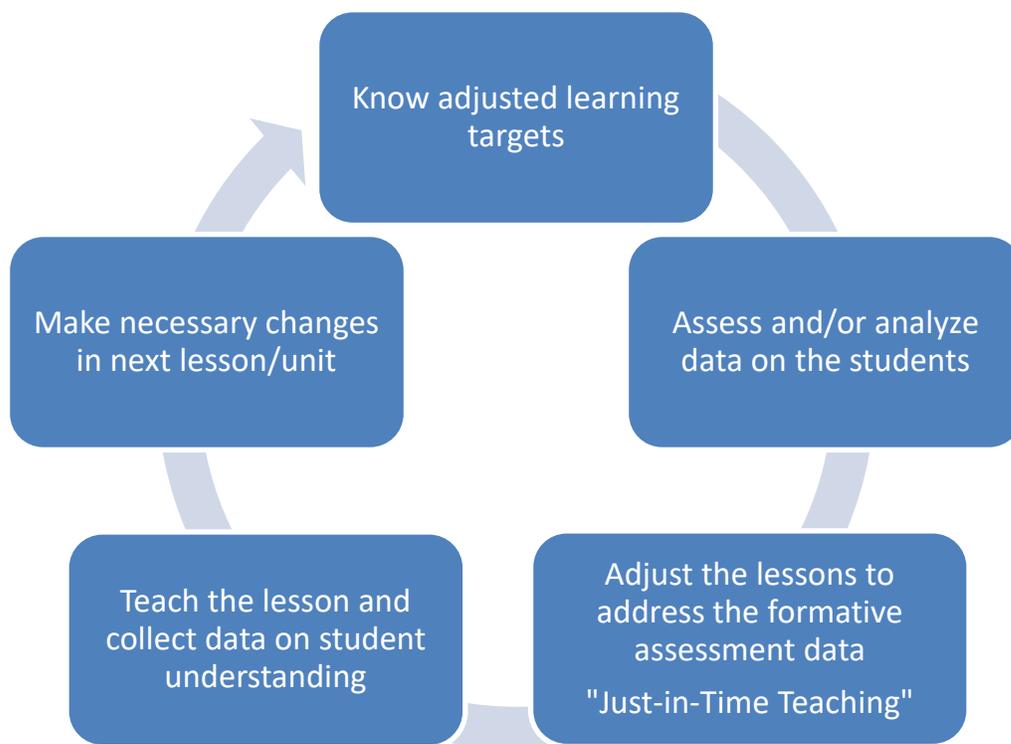
- Using the Yearlong Planning template as a reference, record the adjusted learning targets you identified for this unit.
- Comb through the chapters and sections of the unit to more precisely identify the content that can be eliminated, consolidated, or postponed until later in the year. The Student Achievement Partners resource for prioritized content for the 2020-21 school year is helpful during this process. Once you have culled this content, you can actively record the chapters and sections that are prioritized for this year.
- Identify prerequisite knowledge for the prioritized content in the unit. If your curriculum resource does not provide you with this essential information, you can use the [Achieve the Core Coherence Map](#) or the Rhode Island Mathematics Progressions (RIMP) to assist you in this process.
- While the intent of this document is to help educators address unfinished learning in their students, in other words to fill gaps in understanding, it is helpful to remember that students come to their new learning with many strengths. As you engage in this planning process, take time to inventory and note those strengths in order to capitalize on them. Use those strengths to serve as bridges to learning new course-level content.
- Finally, attend to each chapter/section of the unit with an eye on facilitating the acceleration of learning of course-level content. The template suggests categories of information you will need to consider. These include:
 - *Formative Assessment Tasks* – To successfully accelerate learning it is necessary to frequently and strategically make use of formative assessment data. As such, it is good practice to pre-identify some tasks you can use for acquiring this data. Tasks should assist you in determining what understandings and misunderstandings students bring to the new learning. Employing this strategy during “normal” times is important, but it is much more vitally so under current circumstances.
 - *Scaffolding and Just-in-Time Lessons/Supports to Accelerate Student Learning* – By considering prerequisite knowledge and formatively assessing students, educators will be provided with information useful in customizing their lessons to meet students’ needs and accelerate their learning. At times, these supports will be needed by the entire class, small groups, or just one or two students. The Lesson Planning guidance provided later in this document addresses various situations for which a teacher may need to plan.
 - *Notes on Consolidation of Content* – Use the Student Achievement Partners resource for prioritized content for the 2020-21 school year to assist you in planning how and when you will integrate some content strands with others to maximize instructional time and learning of grade-level content.
 - *Attention to Equity of Access Issues* – As always, all students should have equitable access to course-level content. Consider how the events of the past school year may influence instructional practices for this school year. Are there new variables to consider which will precipitate the adoption of new and creative strategies? Are there proactive steps that can be taken should the return to distance learning become necessary? Have you considered the needs of multilingual learners and differently abled students? Have you considered students with limited internet/device access? Have you considered how to respond to the socio-emotional needs of your students during instruction?



- *Typical Needs for Tier 1 Core Remediation* – Over and above the expectation that most students will have some unfinished learning resulting from the spring 2020 distance learning period, it should also be expected that some students will have more typical gaps in learning from their face-to-face instructional experiences. In that the focus of this guidance is to optimize core instruction, or Tier 1 level learning, teachers will also need to plan for remediating these more typical gaps. The practice of using formative assessments and just-in-time scaffolds is also the recommended strategy for addressing this phenomenon.
- *Distance Learning Modifications if Needed* – In an ideal world, all students and teachers will return to face-to-face instruction for the entire 2020-21 school year. The reality of this may be quite different. As such, it becomes necessary to pre-plan for adjustments that can be made to instruction during a distance learning period. What platforms could be used to facilitate this learning? Are there applications which are both student and teacher friendly that are useful in developing students' understanding of course-level content? How can elements of a unit be reconfigured to be effective in both synchronous and asynchronous situations?

Work through these issues, and others you may find pertinent, with your course-level colleagues. Honor your own expertise, seek out assistance as needed, and know that additional adjustments may need to be made as the year unfolds. By prioritizing content, considering prerequisite knowledge, adjusting your units to reflect prioritized content, and using formative assessment you should be well-positioned to target instruction to maximize course-level learning.

Cycle of Formative Assessment to Advance Learning



Unit Planning Template to Accelerate Course-Level Learning

Unit Number:	Unit Topic:			
Transfer from Yearlong Plan				
What are the prioritized learning targets you identified for this unit during the yearlong planning?	What chapters <i>and</i> sections within chapters can be eliminated, consolidated, or postponed to the end of the year for this unit?	What information do you have on prior learning experiences from the previous grade/course?	Estimated Number of Instructional Days	Quarter/Time of Year
Identify chapters and sections of chapters that are prioritized for the year.		Identify prerequisite knowledge for the unit. The Achieve the Core Coherence Map is a helpful tool for accomplishing this.		
Consider known strengths in student understanding which can be capitalized on to accelerate grade-level learning.				
Chapter/Section Adjustments and Considerations: <ul style="list-style-type: none"> Prioritized Content and Standards Formative Assessment Tasks Scaffolding and Just-in-Time Lessons/Supports to Accelerate Student Learning Notes on Consolidation of Content Attention to Equity of Access Issues Typical Needs for Tier 1 Core Remediation Distance Learning Modifications if Needed 				
Chapter/Section #		Chapter/Section #		
Chapter/Section #		Chapter/Section #		
Chapter/Section #		Chapter/Section #		
Chapter/Section #		Chapter/Section #		

Lesson Planning

Now that you have determined how to adjust your unit to facilitate new course-level learning for your students, it is time to consider what adjustments may be needed to individual lessons. Recall experts in mathematics education suggest the most efficacious way to address unfinished learning is to engage students with grade-level content and well-chosen high demand tasks, providing just-in-time scaffolding and supports as needed (Student Achievement Partners, 2020). Educators should habitually use formative assessments to gather the data needed to facilitate grade-level learning.

Depending on your curriculum, you may consider adopting a basic lesson design to give you the space and time to advance new learning for all students. The format is highly adaptable when using the results of course-level formative assessment to address students' needs and capitalize on their strengths. The basic components include:

- Lesson warm-up and/or fluency practice
- Application problem capitalizing on connections to new learning
- Concept development for new learning
- Practice problems
- Student debrief
- Homework problems

Using this lesson format and your course-level formative assessment data, consider customizing your instructional block in one of the three ways outlined below. (**Note:** The student debrief time is essential and should never be compromised.)

Situation One

Your data indicates most students have a gap in content understanding that is a prerequisite to a current lesson.

- Extend concept development time during the lesson to provide just-in-time instruction for the content, using it as a lead-in to the lesson as a whole.
- Shave off time from any lesson warm-ups, opening fluency practice, or opening application problem from a previous lesson to gain time for the additional concept development.
- Provide practice and homework problems that address both prerequisite and course level content.
- Distribute additional practice for the next few lessons and periodically throughout the year.

Situation Two

Your data indicates 5 to 10 students have minor gaps based on the most recent lesson (gaps pertain to either prerequisite content or the recently taught content).

- Adjust the next lesson to allow for small group interventions.
- Use the warm-up, fluency practice, or application problem time to work with small groups of students to address their unfinished learning. (Students without gaps engage in normal opening stages.)
- Proceed with concept development for the new lesson with all students.



- d. Provide additional support to small group students during practice time. This may include adjusting their problem sets so they have problems both with the new content and the content they needed assistance with.
- e. Distribute additional practice for the next few lessons and periodically throughout the year.

Situation Three

Your data indicates there is a minor gap (partial understanding) of content unrelated to current lesson objectives, but you have the time/flexibility to address this on an ongoing basis.

- a. Distribute practice with this concept over a series of days perhaps dedicating part of warm up time to it.
- b. Do it in short intentional bursts and provide assistance as needed.
- c. Revisit content periodically throughout the year.
- d. Eventually give students the opportunity to independently apply the content.

Lesson Planning Template to Accelerate Course-Level Learning

Adapted lesson/section #		Number of days for the lesson	
Formative assessment data to inform lesson		Is this a distance learning lesson?	
Lesson objective			
Sequence of Learning Events	Platform(s)	Synchronous or Asynchronous	Adapted-Criteria for success/Learning Targets/ Learning Objectives

References:

- The Achievement Network, Ltd. (2020). *Important Prerequisite Math Standards*. <https://docs.google.com/document/d/1YVIYSdzX1WHt4CYSfRtprf1102a4-lrMZ25ntuK25uk/edit>
- College Board. (accessed July 2020). *College Board + Rhode Island SAT® Suite of Assessments: Alignment to Rhode Island Standards*. https://www.ride.ri.gov/Portals/0/Uploads/Documents/Instruction-and-Assessment-World-Class-Standards/Assessment/PSAT-SAT/SAT_and_CCSS_Alignment.pdf.
- Council of Great City Schools. (June 2020). *Addressing Unfinished Learning after COVID-19 School Closures*. https://www.cgcs.org/cms/lib/DC00001581/Centricity/Domain/313/CGCS_Unfinished%20Learning.pdf
- Massachusetts Department of Elementary and Secondary Education. (June 2020). *Planning and Adjusting Your Instruction in Mathematics [Power Point Slides]*. Retrieved from <http://www.doe.mass.edu/covid19/learn-at-home/cis-supporting-remote-learning.html#planning-adjusting>
- NCTM, NCSM. (June 2020). *Moving Forward: Mathematics Learning in the Era of COVID-19*. https://www.nctm.org/uploadedFiles/Research_and_Advocacy/NCTM_NCSM_Moving_Forward.pdf
- Student Achievement Partners. (June 2020). *2020 - 2021 Priority Instructional Content in ELA/Literacy and Mathematics*. <https://achievethecore.org/page/3267/2020-21-priority-instructional-content-in-english-language-arts-literacy-and-mathematics>
- Student Achievement Partners. (Retrieved July 2020). *The Coherence Map*. <https://achievethecore.org/coherence-map/>
- Student Achievement Partners. (Retrieved August 2020). *Student Achievement Partners' 2020-2021 Priority Instructional Content in High School Mathematics*.