

Mathematics



Section 2B.

The purpose of this document is to guide educators in prioritizing essential knowledge and skills for students for the 2020-21 school year. ODE's recommendation is that all students be given the opportunity to learn grade-level essential content rather than return to content potentially missed during the emergency school closures that ended the 2019-20 school year.



OREGON
DEPARTMENT OF
EDUCATION

Oregon achieves . . . together!

SECTION 1. Overarching Design Considerations



1A. Essential Learning and Acceleration

Instruction—even in this time of disruption—should be designed to ensure that each student has access to grade-level content so they can progress to the next level of learning and be prepared for college and careers. Leveraging student and family funds of knowledge is critical in connecting student experience to current learning goals and student agency. This year, it is important to account for the range of learning opportunities students encountered during extended school closures and over the summer. Focusing on the most essential content will be critical.

Achieving this goal requires educators to understand the essential knowledge from the current and prior grades. The prior grade’s essential knowledge must be woven into the current year’s grade-level learning. Focusing on essential knowledge for each grade asks educators to resist the temptation to think students need to learn everything from the prior grade before taking on the next grade’s learning. That is not necessary for success. Freeing educators from this inclination will let them focus tightly on the highest-leverage learning.

This fall it will be critical to monitor the potential instinct toward over-remediation. Annenberg Institute for School Reform at Brown University and Results for America’s research brief, “[School Practices to Address Learning Loss](#),” recommends against strategies that compress additional content into an instructional timeframe or that increase tiered interventions that pull students away from core content. Evidence suggests that these practices may deepen learning gaps that already exist for struggling students.

Much of the content in every grade level and subject is accessible for students of that age, even if they missed some prior learning. **Thus, the recommendation**, supported in the Annenberg research brief, **is to focus on grade-level learning to ensure students keep making progress, even in these complex times, with supplemental instruction on prerequisite skills as necessary** (See [Learning Acceleration Guide: Planning for Acceleration in the 2020-2021 School Year](#)). This year, school districts/school systems must focus on strong formative assessment practices and adjust how students learn grade-level content through comprehensive distance learning and hybrid instructional models.

What remains in all instructional models and content areas:

- **Keep care and connection at the forefront.**
- **Design learning to include students experiencing disability and who are learning English, as they are first and foremost general education students.**
- **Focus on essential grade-level learning.**
- **Builds on students’ academic background, life experiences, culture and language to support [culturally relevant learning](#).**

This content is situated as a discipline-specific resource and intended to supplement rather than repeat content included in *Ready Schools, Safe Learners*; *Comprehensive Distance Learning*; and *Ensuring Equity and Access* (all of which are available on the [Oregon Department of Education website](#)).



1B. Formative Assessment Practices

Formative assessment practices are the most vital aspect of a balanced assessment system, as they increase student learning and agency. Formative practices inform instruction in the moment, on a daily basis, and apply across all instructional areas, from CTE, to visual and performing arts, to mathematics. Please refer to ODE’s [Formative Assessment Considerations for 2020-21](#) for information around where to focus formative assessment efforts for the coming school year. The assessment sections below focus on guidelines and content-specific interim assessment resources that are available for Oregon districts, where appropriate.

SECTION 2. Content-Specific Design Considerations



2B. Mathematics

In August 2020, ODE released [Mathematics: Preparing for 2020-2021](#) which helps educators address how to prioritize essential knowledge and skills in mathematics for Oregon students. Using this essential content, districts can—where possible and in partnership with instructional materials providers—plan the scope and sequence of learning and adjust units of instruction for each content area at each grade level. One critical theme of ODE’s recommendations is that all students be given the opportunity to learn grade-level essential content rather than return to content potentially missed during the emergency school closures that ended the 2019-20 school year. In this sense, all students must be accelerated to grade-level essential content. Visit the [ODE Mathematics Standards](#) web page for future updates.

- Students can progress and succeed in essential grade-level learning as only some grade-level content is dependent on student mastery of previous content. The resources in the Content section of the table below are tools that will help make appropriate decisions about grade-level content.
- Remediation of prior grade’s essential knowledge should be embedded with the grade-level content, no more extensive than necessary, and taught in conjunction with aligned grade-level content rather than front-loaded.
- Given the above, back-to-school instructional assessments should focus just on the pre-learning necessary for the essential content of unit one, not the entire previous grade level.

Focus	Considerations for Comprehensive Distance Learning and Hybrid Delivery Models
Content What is the essential learning?	Prioritize the most critical skills and knowledge Educators should work in teams, whenever possible, to accomplish the following actions using a combination of the district’s adopted curriculum and other available tools before school opens in the fall: <ul style="list-style-type: none"> • Identify priority grade- or course- level content. • Study and apply math learning progressions to maintain focus on learning essential content.
Resources	<ul style="list-style-type: none"> • 2020-2021 Priority Instructional Content in ELA/Literacy and Mathematics (Student Achievement Partners K-8 resource) • Oregon Department of Education High School Core Math Guidance (9-12) • Student Achievement Partners Coherence Map

<p>Instructional Materials</p> <p>What tools and resources do I use?</p>	<p>Start with what you already have in place</p> <p>Build from the curricular content and lesson planning already in use prior to COVID-19. Supplement or re-align the district-adopted curriculum as needed for supporting students in distance learning and for, if applicable, an adapted scope and sequence.</p> <ul style="list-style-type: none"> ● Adjust your scope and sequence or course maps to reflect identified essential content. Keep long-term learning pathways in mind, especially for high school course progressions. ● Prioritize grade-level tasks and projects that engage students in the practice of mathematics. ● Promote positive mathematics learning and achievement.
<p>Resources</p>	<ul style="list-style-type: none"> ● Mathematical Practice Standards ● San Diego Enhanced Mathematics is a sample modified scope and sequence for prioritizing math in grades 6 to 12 using Illustrative Mathematics as an example curriculum. <ul style="list-style-type: none"> ○ Original San Diego Unified School District Resource ○ Modified version aligned to Oregon’s 2+1 high school math model (Lane ESD) ● Mathematics Education Through the Lens of Social Justice: Acknowledgment, Actions, and Accountability. ● Incorporate Tribal History/Shared History lessons that include mathematics. ● Resources focused on positive mathematical mindsets at Youcubed. ● The Oregon Open Learning Hub has content area resources that are openly licensed and free to use, remix, and share. ● Digital Access of State Adopted Math Instructional Materials ● Adoption Criteria for Math Instructional Materials <p>Leverage the expertise and resources of STEM community partners including your local Regional STE(A)M Hub. Local informal institutions, businesses, and universities can offer resources to support with the design, facilitation, and evaluation of professional learning and increase opportunities for out-of-school STEM engagement. Your local Regional STE(A)M Hub already has established partnerships with many of these community partners and can help you.</p> <ul style="list-style-type: none"> ● STEMOregon.org
<p>Instructional Practices and Student Engagement</p> <p>How do I adapt instruction to engage students in learning?</p>	<p>Student discourse, rich tasks, and choice are key to building identity and agency in equity-based teaching and learning in mathematics. Given the social nature of learning, designing tasks that support student discourse is a critical aspect of planning. Synchronous and asynchronous digital tools are available for students to interact with each other and mathematical content.</p> <ul style="list-style-type: none"> ● Plan for intentional and purposeful student engagement in the Standards for Mathematical Practice. Quality tasks are more important than the quantity of tasks with which a student engages. ● Engage students in rich mathematical tasks that elicit more evidence of their thinking than simply an answer. Students can continue to use and produce mathematical language in a distance learning context using a variety of online tools and platforms. ● Consider using the many COVID-19 data sets for analysis and discussion so students can see mathematics as relevant now more than ever. Educators should be sensitive to students’ lived experiences when choosing to use these data sets. ● Ensure students are placed in heterogeneous math classes or groups where expectations for learning are high.
<p>Resources</p>	<ul style="list-style-type: none"> ● Moving Forward: Mathematics Learning in the Era of COVID-19. ● Mathematics Instruction for English Language Learners

	<ul style="list-style-type: none"> ● Teaching with Accessible Math ● Creating Accessible Math with MathML ● Signing Math & Science ● Instruction Partners’ Math Guidelines for Distance Learning Models ● 11 Teacher Recommended Math Apps and Online Tools ● Strategic Use of Technology in Teaching and Learning Mathematics ● Use Oregon Open Learning resources for engaging supplemental materials. <ul style="list-style-type: none"> ○ Regional STEM Hub Group ○ Oregon Mathematics Group ● Council of the Great City Schools released Addressing Unfinished Learning in the 2020–21 School Year, an instructional framework for addressing unfinished learning and learning losses, as well as a review of essential skills and content in ELA and mathematics to support access to grade-level content in key grade transitions for all students. ● English Learners Success Forum shares Analyzing Content and Language Demands for Math to support analysis of the language and content area demands of an upcoming lesson before teaching. ● Council of the Great City Schools shared A Framework for Re-envisioning Mathematics Instruction for English Language Learners to explicitly address the role that language and communication play in service of understanding and applying mathematical concepts.
<p>Assessment</p> <p>How will I measure learning?</p>	<p>Assessment of mathematics should be used to provide insights into students’ learning that help teachers support every student to move to grade-level content as quickly as possible. Plan an approach to identify students’ understanding of prerequisite content. Evidence of student thinking in mathematics includes qualitative data. Comprehensive assessments should not be used at the start of the 2020-21 school year to identify prerequisite knowledge students are still learning, nor should instructional emphasis return to students’ previous grade level. Instead, educators can use multiple approaches to identify students’ prerequisite knowledge for essential priority content.</p> <p>ODE is providing all districts with access to a robust and aligned Interim Assessment System and Tools for Teachers that provide educators with assessment and curricular options at multiple levels in order to efficiently support teacher and student agency. These resources can be used for assessment of grade-level learning at the end of instructional units. Please see the Oregon Department of Education interim assessment webpage for more information.</p> <p>Please see formative assessment information in ODE’s Formative Assessment Considerations for 2020-21 for focused considerations and resources.</p>
<p>Resources</p>	<ul style="list-style-type: none"> ● Example of 6th grade analysis for prerequisite learning ● Student Achievement Partners Mathematics Tasks ● Assessment tasks through Oregon Open Learning <ul style="list-style-type: none"> ○ Illustrative Mathematics Curricular Resources ○ Oregon Mathematics Group ● Use tasks provided by adopted instructional materials. ● Math and ELA Interim Assessments ● Formative Assessment Process ● ODE Official State Scoring Guides and Student Language Scoring Guides