

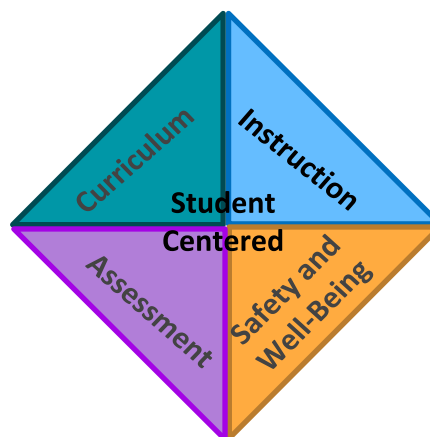
How should educators and schools work to ensure equitable learning experiences for all students in any tech scenario - high tech, low tech, or no tech?

### Considerations

- To ensure that all students have access to high quality mathematics learning opportunities, define equity and be clear about what an equitable classroom includes, whether it is virtual, in-person, or asynchronous. Consider a path that gives support and enrichment for every level of learner.
- Accommodate individual learning differences and prioritize accessibility. For students whose online access may be limited, consider low-tech or no tech options for students to express their thinking.
- When planning, consider whether the use of technology supports the end learning goal or if it is being used just for the sake of technology. When teachers use technology strategically, they can provide greater access to mathematics for all students.
- Universal Design for Learning (UDL) emphasizes flexibility in presentation of information by teachers, with multiple means for engagement and expressing thinking by students. The goal of UDL is to develop learners who are purposeful and motivated, resourceful and knowledgeable, strategic and goal-directed.

## Modifying Learning Experiences - Low or No Tech

Mathematics learning should be student-centered and consistently engage students in the Standards for Mathematical Practice. Instruction should focus on developing understanding of concepts and procedures through problem solving, reasoning and discourse in ways that honor student interest and identity.



### What Does This Look Like?

Educators should focus on applying research-based strategies and offering unique learning experiences. No matter what technology is utilized in the classroom environment, mathematics instruction should continue to focus on opportunities for students to engage in the Standards for Mathematical Practice. These opportunities may vary widely in terms of how they look, from high tech to low or no tech.

An equitable classroom utilizes a variation of these modes to reach all students. In a balanced mathematics program, the *strategic* use of technology strengthens mathematics teaching and learning. The implementation of high quality instructional materials will serve as a foundation for planning, and many tasks, activities, or strategies can be adapted for distance learning (sample lesson adapted from Illustrative Mathematics).

Additionally, the New Mexico Instructional Scope supports accelerated learning by identifying priority standards for each grade level, and the Math Planning Guide includes strategies for direct, synchronous, and asynchronous delivery.

# Modification Examples

## Based on the [Launch, Explore, Summarize model](#)

Stage of Instruction	High-Tech	Low-Tech
<b>Launch</b> <i>[The Launch ensures that all students have access to the context and content to explore that lesson's Big Idea concept or skill.]</i>	<p>Through Canvas or Google Classroom, post an open-ended task that engages students in productive struggle. Include individual think time and a chance to first work with the task individually, perhaps asynchronously before class meets. Then have students collaborate in pairs in a breakout room, or in discussion on Canvas, to create a diagram, graph, or picture of their solution or response to share with the class.</p>	<p>Assign a KWL chart or a concept map. Introduce one main part of the topic, such as a single word. Have students list what they know or think about the topic. As the lesson progresses, students will fill in the second column of the chart or more nodes on the map. The last column or node should be revisited in the Summarize phase of the lesson, or even later in the unit. (additional columns or nodes can be added to suit your needs)</p>
<b>Explore</b> <i>[The purpose of the Explore phase of the lesson is for students to explore a rich Problem, which will enable them to analyze and generalize a concept or skill.]</i>	<p>In class discussion around responses to the <i>Launch</i> task, highlight selected student responses and use a sequence of targeted questioning to build on prior knowledge and skills. Give students a chance to reflect on their individual work using a different color pencil. Then assign a similar task or activity (possibly a slightly different task for each group), and have students, in small groups work through it. Using an online collaboration app, such as Jamboard or Padlet, start with one group and have other groups add to document their thinking and discussion. Groups should prepare a digital artifact to share with the class to support their discussion and/or reasoning and their solution.</p>	<p>Have student groups research real world applications or phenomena that help explain the lesson concept. (This could even include a walk to the library for books on the subject.) The middle column of the KWL chart started in the <i>Launch</i> phase can be used here for note-taking or for questions and wonderings. As students are able to find responses to their questions, they can cross them out or answer them on the KWL chart. Groups should develop a model, detailed diagram, or picture to tell the story of the application and explain the concept connection. Have groups present what they learned from their research to the class.</p>
<b>Summarize</b> <i>[The purpose of the Summarize phase of the lesson is to orchestrate whole-group student discourse about discoveries students made during the Explore phase of the lesson.]</i>	<p>Have student groups use Google slides or another presentation app to develop a lesson summary for the class. They should highlight the learning that was built through each phase of the lesson or task completed. Teachers should pop into breakout rooms to observe group work and ensure accurate conceptual information is being shared. Students could use stories, tasks/problems, verbal explanations, diagrams, and/or graphics to explain what they learned though the lesson and how it connects to prior knowledge and skills.</p>	<p>This can be an opportunity to individualize each student's experience. Using their notes and tasks completed so far, have students create their own explanation of what they have learned in whatever format or media they choose. This could also include having students work with their parents to design a 3D model of the lesson concept made with things found around the house. A write-up about the design, process, and how it explains the lesson concept should accompany the model. Ask them to provide either an outline or rough draft to you for feedback, which could be done in the last column (L) of the KWL chart, and the polished product can be used as a form of assessment.</p>

For strategies aligned to the 5E instructional model, check out the [Math Lesson Planning Guide](#).

# Modifying Learning Experiences - Low or No Tech

## Recommended Reflection Questions

Use these questions with your PLC to examine current practice and engage in forward planning.

- [How does the selected technology support the learning goals and needs of your students?](#) What tools would best encourage engagement? What considerations are necessary to ensure effective use of any learning resource?
- Can [innovation](#) be accomplished without technology? What low-tech, or no tech, resources and tools are easily accessible to you and to students? How can families and communities be involved in the task or activity without using a digital component?
- How can [Universal Design for Learning](#) reduce barriers in instruction, provide appropriate accommodations, supports, and challenges, and maintain high achievement expectations for ALL students?

## Where can we start?

### Administrators

Support and encourage high-quality, in-depth [mathematics teaching and learning](#) to promote a [mathematical mindset](#) in your school community.

- ★ [SREB Online, Blended, and Hybrid Instruction](#)
- ★ [LPI - Resources and Examples: Learning in the Time of COVID-19](#)
- ★ [NCTM/NCSM Moving Forward](#)

### Teachers

Provide [rich problem solving opportunities](#) for students to develop [standards-based knowledge and skills](#), as well as [math confidence](#).

- ★ [The Mathematics Assessment Project](#)
- ★ [Ed Week Blog: Less is More in Math Distance Learning](#)
- ★ [Supporting the continuation of teaching and learning in COVID-19](#)

### Students, Families, and Communities

Reinforce educational priorities, advocate for your child's accessibility needs, and [provide a supportive home learning environment](#).

- ★ [Khan Academy-Parent Quick Start Guide](#)
- ★ [Common Sense Education-Parent Tips and Tricks for Distance Learning \(en Espanol\)](#)
- ★ [Education Reimagined Distance Learning Resource Center](#)

## Big Questions for High-Tech versus No/Low-Tech

