Approach to Teaching & Learning:

SUPPORTING A LOVE OF LEARNING MATH FOR ALL STUDENTS
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VISION

All children can love learning math

MISSION

Zearn is the nonprofit educational organization behind Zearn Math, the top-rated math learning platform used by 1 in 4 elementary students nationwide. Zearn Math supports teachers with research-backed curriculum and digital lessons proven to double the learning gains of a typical year of instruction. Everything we do is driven by the belief that every kid can be a math kid.

Zearn Math works with teachers to create inclusive classroom math communities where all students feel they belong and can deeply learn the math content of their grade. An understanding and love of mathematics is critical to helping all children realize their potential and to creating a generation of engaged learners who can change the world.

In addition to curricular materials, Zearn Math offers comprehensive professional development and School Accounts to support district- and school-wide learning.

INTEGRATED APPROACH TO TEACHING AND LEARNING

Zearn Math provides a uniquely integrated approach to math teaching and learning, connecting a rigorous curriculum with a cohesive classroom system, professional development based on pedagogical content, and actionable reports on student learning. This approach recognizes that top-rated instructional materials are most impactful when they are deeply integrated into classroom systems and teacher learning communities. With Zearn Math, educators are supported each day with the material, knowledge, and data they need to create engaging learning environments and differentiate instruction to reach all students.

Curriculum and classroom model that build deep understanding and a love of learning math

Zearn Math's thoughtfully designed curricular materials and rotational classroom model come together in the daily math block to support teachers in creating an engaging and differentiated learning environment where all students can love learning math.

The top-rated curriculum teaches math as a progression of connected ideas, grounded in visual problem solving and the concrete to pictorial to abstract approach. Students learn in a rotational classroom model that embeds differentiation, precise feedback, and multimodality learning into the daily math block by blending self-paced software-based lessons with teacher-led whole group and small group learning. As students work through Independent Digital Lessons, they learn and practice new concepts at their own pace with concrete and digital manipulatives, interactive videos, pictorial representations, paper-and-pencil transfer, and precise digital feedback at the moment of misconception. During Small Group Lessons, students model math with concrete manipulatives, represent their work on paper, discuss their reasoning aloud, and receive direct feedback from their teacher and classmates. Built on the belief that all math brains can grow, Zearn Math’s flexible learning environments accommodate learning differences and foster positive math mindsets and social belonging, so all students can love learning math.
Professional development that strengthens pedagogical content knowledge for teachers

A high-quality curriculum is most effective when paired with professional development that supports teachers as they deliver differentiated instruction each day. Zearn Math PD provides this support with up-front training to help classrooms get started and forty one-hour sessions, one for each Mission of every grade, that strengthen teachers’ pedagogical content knowledge throughout the year. As teachers gain expertise on the math concepts in the Zearn Math curriculum, they are better prepared to represent and develop those ideas with their students. Deep content knowledge also helps educators provide more supportive feedback to students who are struggling by enabling teachers to more precisely identify, interpret, and address misconceptions.

Teachers collaborate to build expertise on implementing Zearn Math, understanding the fluency, application, and conceptual content of each grade at the mission and lesson level, and engaging and supporting all students as they learn and persevere through areas of struggle. The comprehensive PD, delivered through an innovative on-demand platform, equips educators with the resources to inspire and maintain math learning communities throughout the year and from one school year to the next.

Reports that provide insights into student learning for teachers and administrators

Real-time visibility into student productivity and misconception data provides educators with precise and actionable insights they can use to inform math instruction at the classroom, building, and district level. Since Zearn Math includes a software-based lesson for every day of instruction, teachers and school leaders can access reports with meaningful data covering all K–5 math learning. Reports provide insight into students’ progress and pace through the curriculum, areas of struggle, and classroom systems to support or highlight. Zearn Math School Accounts include Admin Reports, which provide data and insights at the classroom and school level, and Student Reports, which provide precise data and insights at the individual student level. With the full complement of Zearn Math Reports, administrators can drive strong curriculum usage and improvements in students’ math achievement and mindsets.
APPROACH

Grounded in teacher practice and leading research

CORE INSTRUCTIONAL SHIFTS IN MATHEMATICS

Students learning with Zearn Math develop a deep understanding of key grade-level math concepts, can connect those concepts to prior learnings, and are able to apply their knowledge flexibly and accurately when encountering new situations, contexts, and problems. All curricular materials reflect the core instructional shifts of mathematics—focus, coherence, and rigor—which are research-based and internationally benchmarked. These shifts ensure K–5 students build the critical arithmetic foundations that prepare them to extend algebraic thinking in middle school and explore more advanced mathematics in later grades.

The Zearn Math curriculum is green-lighted by EdReports, an independent nonprofit that conducts in-depth reviews of instructional materials. EdReports evaluated Zearn Math along each core instructional shift, defined in their review rubric as:

» **Focus**
  
  Determine whether instructional materials assess the appropriate grade-level content and spend the majority of class time on the major clusters of each grade.

» **Coherence**
  
  Determine whether instructional materials attend to supporting work to enhance focus, are viable for one year, are consistent with the progressions of the standards, and are coherent within a single grade.

» **Rigor**
  
  Determine if each grade’s instructional materials reflect the balances in the standards by helping students develop conceptual understanding, procedural skill and fluency, and application.¹

Zearn Math received full marks across each of these dimensions, indicating a thoughtful integration of the shifts in mathematics into all curricular materials.

¹ EdReports, *Math K-8 Review Rubric*
LEARNING PRINCIPLES

In conjunction with the core instructional shifts in mathematics, a set of foundational learning principles guides the design of Zearn Math. These principles are grounded in teacher practice, education research, and brain science. Together, they enable the daily differentiation and engagement essential to helping all students love learning math.

Everyone belongs and all math brains can grow.

Through a commitment to inclusivity and accessibility, Zearn Math creates classroom math communities where all students feel they belong and can love learning math. The curriculum fosters growth mindsets and a tenacity for learning, so students believe in their capacity to grow and are able to persevere through challenge.

Flexible learning environments deepen engagement and understanding.

Every day with Zearn Math, students have multiple ways to engage in learning, acquire knowledge, and demonstrate understanding as they learn across a mix of instructional formats. Zearn Math’s flexible approach accommodates learning differences, encourages curiosity and exploration, and builds a participatory math dialogue.

Feedback, while learning, is precise, timely, supportive, and safe.

During independent learning and in small groups with their teacher, students receive safe, in-the-moment feedback that precisely addresses areas of misconception. When students learn in this type of feedback-rich and supportive environment, they become resilient, self-directed learners and can love learning math.

Unfinished learning is addressed within the context of new learning.

Zearn Math recognizes that all students can engage with grade-appropriate learning if they have the specific support they need. Zearn Math provides just-in-time support designed to integrate unfinished learning into the context of new learning, so all students make connections and accelerate. Pedagogical content PD supports teachers as they address the needs of all the learners in their classroom.
Concept exploration begins in the concrete.
Zearn Math follows the concrete to pictorial to abstract approach, which teaches children to understand math concepts in an intuitive and tangible way. All students build a deep and sustainable understanding of math when they learn with this flexible and rich pedagogical approach.

Problem solving starts with visualization and drawing a picture.
Math is about reasoning and solving problems. Just as mathematicians often achieve breakthroughs by visualizing solutions, students learning with Zearn Math build flexible and accurate problem-solving skills by representing their thinking with pictures.

Learning math is coherent and fun.
Children who love math describe the curiosity and joy of exploring connections between concepts and working through problems. Zearn Math allows students to access math understanding—and have fun along the way—by teaching math as a progression of coherent ideas rather than as disconnected procedures.

AN EVOLVING CURRICULUM
As a nonprofit organization, Zearn is committed to dedicating its resources to improving Zearn Math to better serve students and teachers. Zearn Math is based on the scope and sequence of EngageNY; using field research, input from partner educators, advances in education research, and an extensive data set from student software-based learning, Zearn makes iterative updates to strengthen the Zearn Math student learning experience and curricular materials.
Zearn Math is designed to create daily math instruction that is differentiated and engaging in order to ensure all children love learning math. The components of Zearn Math are outlined in the following sections.

**TEACHER-LED INSTRUCTION**

Live instruction with Zearn Math is designed to deepen the moments of learning between the teacher and students. Each day, teachers lead instruction that engages the entire community of learners and builds deep math understanding for all students. Zearn Math supplies teachers with all of the materials they need to provide students with differentiated, rigorous, and supportive math instruction every day.

As students learn with their teacher and classmates during teacher-led instruction, they experience:

**A classroom learning community**

A sense of belonging in the math classroom and community is a precursor to engagement and learning. Zearn Math's commitment to inclusion and emphasis on positive math mindsets helps teachers create learning environments where all students feel welcome and mistakes are viewed as opportunities for reflection and growth. The balance of whole-group and small-group learning built into the Zearn Math classroom model creates numerous opportunities for all students to participate in math discussions, shifting math dialogue from answer-getting to a participatory discussion. Daily Small Group Lessons also provide teachers with opportunities to build a deep understanding of each student and facilitate math discussions where students can bring their own learnings and frames of reference into the classroom. A strong classroom community enhances collective learning possibilities and ensures each and every student is able to engage in meaningful learning.

**ZEARN MATH TIP**

To access all materials for Teacher-Led Instruction, educators can:

1. Log in to their Zearn Teacher or Administrator Account
2. Navigate to the Curriculum page
3. Select a specific Mission
4. Click Whole Group Word Problems, Whole Group Fluency, and Small Group Lessons to view and download.
**Math discussions**

Students share their own thinking aloud and discuss classmates’ problem-solving strategies throughout daily whole-group problem solving and Small Group Lessons. Teachers facilitate thoughtful mathematical discussions between students that allow learners to refer to and build on each others’ ideas. As students share their reasoning, are exposed to other perspectives, and engage in mathematical sense-making, they are able to deepen their own understanding and become more creative and effective problem solvers. Zearn Math’s small-group format, in conjunction with the personalized learning students experience in Independent Digital Lessons, enables daily math discussions to shift from “answer-getting” focused to rich, ongoing conversations.

**ZEARN MATH TIP**

A full list of required classroom materials is available in the Appendix of this document and on the Zearn Help Center.

**Concrete manipulative work**

As students learn new concepts with Zearn Math, they progress from using concrete materials to pictorial representations to abstract symbols, and they are able to move back and forth between each stage to ensure concepts are deeply understood. During Small Group Lessons, students have opportunities to work with concrete manipulatives. This provides all learners with the opportunity to construct physical models of abstract mathematical ideas and test and confirm their thinking. Visual representations are a powerful way for students to access math concepts that may be challenging to understand if presented only in abstract or verbal form. As students work with concrete manipulatives, they are also able to make connections across different representations and describe their math models aloud. All students build a deep and sustainable understanding of math as new and abstract concepts are introduced in tangible and concrete ways.

**Direct feedback**

During Small Group Lessons, students have opportunities to receive direct feedback from their teacher during moments of misconception. In the small-group format, teachers can assess individual student understanding as students model their math thinking using concrete manipulatives, share their reasoning aloud, and problem solve. Listening to students’ thinking during discussions can serve as a formative assessment that can inform teachers’ instructional decisions. These moments of feedback also provide all students with valuable, in-the-moment support and remediation from their teacher, allowing students to correct their misconceptions and continue learning.
**Practice and preparation**
During the daily Whole Group Warm-Up, students have opportunities for fluency and application practice and are able to activate prior learnings in preparation for upcoming work. This time allows students to grapple and develop comfort with grade-level content in an additional instructional format, on top of Small Group Lessons and Independent Digital Lessons. Students can also refresh on content from previous grade levels and get a preview of the content that will be learned later on in that day’s math block.

**Exposure to all learners**
Zearn Math recommends that student groupings during Small Group Lessons vary over time in order to create opportunities for students to work with classmates with varying levels of progress against grade-level math. This exposure to the whole community of math learners, whether during partner turn-and-talk time or discussions during Small Group Lessons, allows all students to learn from and work with students with different problem-solving and communication approaches.

**INDEPENDENT DIGITAL LESSONS**
Zearn Math Independent Digital Lessons harness the best of technology to provide personalized and engaging learning experiences for students. The innovative software melds a focus on high-quality math instruction with creative and age-appropriate design to create lessons that scaffold, enrich, and motivate learning for all students.

For 1st–5th grade students, each Independent Digital Lesson consists of an adaptive fluency, a lesson-aligned fluency, guided practice, and independent practice. Kindergartners complete developmentally appropriate Digital Activities, which are short, engaging, and designed to build number sense. For K students, each Digital Activity includes fluency work that follows an intentional progression, beginning with Numbers to 5 and building to Numbers to 10, Numbers to 15, and Numbers to 20.

Zearn’s new Guide to Using Digital Activities to Support Kindergarten Teaching and Learning outlines how Zearn Digital Activities support students as they build their understanding through each mission of Kindergarten and offers guidance on how to help students make the most of digital practice.

As students learn during Independent Digital Lessons and Digital Activities, they experience:
An inclusive learning environment

Zearn Math Independent Digital Lessons and Digital Activities aim to represent the diversity found in classrooms across the country, so all students can see someone similar to themselves doing math and persevering through challenges. Students and teachers of all genders and races, as well as students with disabilities, appear on-screen during software-based learning. Names used throughout all software and paper materials are thoughtfully selected so that no one group is over- or underrepresented or stereotyped within the context of a particular problem. These features of Zearn Math help all students engage in deep learning and feel they are an equal part of the classroom math community.

Self-paced learning

Students work through Independent Digital Lessons and Digital Activities at their own pace. Self-paced learning boosts students’ math mindsets because all students are able to take the amount of time they need to problem solve, review content, or receive scaffolded remediation. This feature of Zearn Math’s software-based lessons also fosters students’ sense of ownership over their math learning, enabling them to develop into independent and self-directed learners.

ZEARN MATH TIP

When students log in to their Zearn account, they are directed to their personal Student Feed, where they can see their currently assigned Independent Digital Lesson. Here, students are shown cards that display the next activity in the assigned digital lesson. Students can also view the student calendar to see their recently completed lessons and track their progress towards their weekly lesson goals. Students can only access the next digital activity in the sequence once they complete their currently assigned activity.

Adaptive fluency experiences

Every Independent Digital Lesson and K Digital Activity includes Number Gym, an individually adaptive fluency experience that helps students build foundational number sense. For older students, Number Gym activities are designed to bridge K–2 math foundations, reinforce previously learned skills, and address areas of unfinished learning. Number Gym activities include Make and Break, Next Stop Top, Number Bond Dash, Take From 10, Take from 10: Take Two, Addition Magician, Addition Magician Returns, Form to Form, the Counting Train, Hop Skip Splash!, Sum Snacks, Bundle the Sea, Count the Cosmos, and Polar Place Values.
Lesson-aligned fluency activities
In addition to Number Gym, the adaptive fluency experience, each Independent Digital Lesson includes a fluency activity aligned to the specific lesson the student is working on. These activities support ongoing grade-level learning by developing students’ procedural fluency and preparing them for upcoming content. Students practice prior concepts in lesson-aligned fluency activities such as Sprints, Multiply Mania, Pair Compare, Totally Times, Fraction Action, Mix and Match, and Blasts. While students are timed in some lesson-aligned fluency activities, the timer is not emphasized in the experience. The focus of timed activities is for students to answer as many questions as they can and strengthen their math mindsets by working to top their own personal bests. All software-based fluency work complements teacher-led whole-group fluencies, and the combination strengthens students’ math understanding and learning retention.

A range of concept development experiences
Students learn new concepts and extend their understanding during the Guided Practice portion of Independent Digital Lessons. Students experience one of four different Guided Practice activities—Story Time, Math Chat, Learning Lab, or Z-Squad. Each activity creates a rich learning environment for students through interactive and multisensory videos featuring real on-screen teachers, digital manipulatives, and paper-and-pencil Student Notes. There are also differences between specific activities intentionally designed to help students develop along additional dimensions. For example, Z-Squad helps students grow their own understanding of themselves as competent mathematicians by featuring similarly aged and diverse on-screen students working through problems and encountering and persevering through challenge.

Digital manipulatives with precise feedback
Independent Digital Lessons and Digital Activities contain meticulously designed digital manipulatives that allow students to construct their mathematical thinking using visual models. Zearn Math digital manipulatives also give students opportunities to test and confirm their reasoning, with precise feedback to help them find and correct mistakes. Student use of digital manipulatives during Independent Digital Lessons is balanced with use of concrete manipulatives during Small Group Lessons.
**Approach to problem solving**

Zearn Math teaches students to problem solve by first drawing a picture that represents their understanding of the mathematics as they read a problem. Drawing a picture helps students make meaning of problems and understand the mathematical work required for problem solving. During Independent Digital Lessons and Digital Activities, students view problems with rich animations and construct their own visual models using high-quality digital manipulatives. This approach helps all students build flexible and accurate solving skills that they can apply across different problem contexts.

**Embedded remediation**

As students work through Independent Digital Lessons or Digital Activities, embedded remediation provides just the right amount of support to help them stay engaged and continue learning independently. For students struggling with a concept, these remediation supports can include more scaffolded manipulatives or additional interactive videos that break down the question in a different way. In the Tower of Power, the independent practice portion of an Independent Digital Lesson, this embedded remediation is called a Boost.

Students demonstrate their understanding of the content of an Independent Digital Lesson and unlock the next one by completing all problems correctly in the Tower of Power. If students make a mistake in a Tower of Power problem, a Boost breaks down the question into smaller steps with more supportive manipulatives to allow students to understand and correct their mistakes. Students then have a chance to demonstrate their learning with a new problem. If students continue to struggle in the Tower of Power after multiple remediation paths, their teacher receives an alert in the Tower Alerts Report, enabling them to provide differentiated support for that student. Boosts, like all embedded support in Independent Digital Lessons, precisely address misconceptions in real time and give all students opportunities to visualize problems in multiple ways and try again.

**ZEARN MATH TIP**

After students complete a Tower of Power, they earn a Badge to mark their hard work and progress, visible from the Badges page and the student calendar. Students then automatically progress to the next lesson in the curriculum and are assigned to the appropriate Number Gym activity.
Paper-and-pencil transfer

During the Guided Practice portion of Independent Digital Lessons, students are prompted to complete problems in their paper Student Notes to transfer their software-based learning and strengthen knowledge retention. After solving an un-scaffolded problem in their notes, students are also prompted to check and correct their work. These Student Notes serve as a reference that students can use throughout the remainder of the Independent Digital Lesson and during future learning.

After finishing the Tower of Power, students must also complete a paper-and-pencil Exit Ticket as the last step of an Independent Digital Lesson. Exit Tickets are un-scaffolded practice problems that allow students to transfer their learning to paper and demonstrate their understanding of the content of the lesson. Teachers can use Exit Tickets as formative assessments to identify students who may need extra help with a particular concept and provide appropriate support.

**ZEARN MATH TIP**

Paper-and-pencil Student Notes and Exit Tickets are available in Zearn Student Workbooks. To access these materials online, educators can:

1. Log in to their Zearn Teacher or Administrator Account
2. Navigate to the Curriculum page
3. Select a specific Mission
4. Select Student Notes and Exit Tickets to view and download for printing

Pausing and rewinding

The video player in Independent Digital Lessons and Digital Activities can be paused or rewound at any time. This feature allows students to rewatch specific content or entire lessons in a low-risk independent learning setting.

Rotational Classroom Model & Weekly Schedule

The Zearn Math classroom model supports engagement and multimodality learning for all students. Each part of the model provides students with opportunities to strengthen their math understanding; when the model is implemented fully, conceptual understanding, procedural skill and fluency, and application are all explored with equal intensity. The model also ensures students are able to complete grade-level content within the academic year and builds in weekly time for differentiated learning opportunities. Features of the Zearn Math classroom model include:

**Daily mix of whole-group, small-group, and independent learning**

Each day with Zearn Math, students experience a balance of learning across multiple formats as they participate in a Whole Class Warm-Up and then learn new content in a small group with their teacher and peers and at their own pace in an Indepen-
The rotational model provides all students with daily opportunities to learn, practice, and reflect on their learning in a variety of instructional settings with a variety of different learners. This flexible daily environment also supports the expression of students’ natural curiosity and encourages students to become independent and self-directed learners.

**Weekly schedule with core instructional time and flexible time**
The Zearn Math weekly schedule consists of four “Core Days” when students learn grade-level content and one “Flex Day” that can be tailored to meet students’ needs. This schedule ensures students have sufficient time each week to work through grade-level content and includes built-in weekly time educators can use to differentiate instruction to meet student needs. Zearn Math also highlights the lessons that are optional or can be omitted during core instructional time to support completion of all grade-level content during the academic year.

**ZEARN MATH TIP**
Each Mission Overview marks the Optional Small Group Lessons and Omitted Digital Lessons for that Mission in the Overview of Topics and Lesson Objectives table.

**Flexible, safe learning environments**
The Zearn Math rotational classroom model provides students with multiple ways to engage in safe and supported learning. During Independent Digital Lessons, students learn independently while wearing headphones with opportunities to replay lessons, access closed captioning or have text read aloud, and problem solve with supportive remediation and chances to try again. While learning during whole-group and small-group time, students have varied ways to learn and interact with their teacher and classmates. The small-group format also ensures students have more frequent opportunities to participate in rich math discussions.

Zearn Math provides a G1–5 Recommended Schedule and a K Recommended Schedule teachers can use to put the classroom model into action. These schedules can be accessed through the “Resources” tab in all educator Zearn accounts.
**G1–G5 Zearn Math recommended schedule**

**Download G1-G5 schedule**

<table>
<thead>
<tr>
<th>Core Days</th>
<th>Flex Day</th>
</tr>
</thead>
<tbody>
<tr>
<td>MON - FRI</td>
<td>FRI</td>
</tr>
</tbody>
</table>

**Whole Group Fluency & Word Problems**

Each day, teachers lead an fluency activity and one word problem from the Whole Group Flowery or Whole Group Word Problems.

**Independent Digital Lessons**

**Small Group Lessons**

**Flexible Lessons**

**INDEPENDENT DIGITAL LESSONS**

Teachers use the Progress Report to assign each student an appropriate lesson for the specific week. Teachers may choose to deliver instruction in stations or as a whole group. Daily Teacher-Led Instruction builds number sense with concrete manipulatives, pictorial representations, and discussion. After daily fluency, students solve Word Problems independently and then solve their work with peers to provide opportunities for student to student math discussions. In each lesson, teachers facilitate thought-provoking mathematical discussions between students that allow learners to refer to and build on each other’s ideas.

**COMPREHENSIVE PROFESSIONAL DEVELOPMENT**

Zearn Math provides schools with all the PD resources needed to inspire teacher learning communities and engage teachers in ongoing, collaborative study of grade-level math content. All professional development is based on the Zearn Math curriculum and classroom model, ensuring educators are supported with learning that is directly relevant to teachers’ daily instruction. The two types of Zearn Math PD are:

**Classroom Implementation PD**

Classroom Implementation PD supports teachers using Zearn Math in their classrooms. This three-session professional development series provides training on the curricular resources and reports available for instruction, the rotational classroom model, and classroom routines and systems that support independent learning. It also includes specific guidance on how and when teachers can support productive struggle that allows students to persevere through challenges and receive the remediation they need to be successful. This PD helps teachers prepare to meet the needs of all learners in their classroom.
**Curriculum Study PD**

Curriculum Study PD is year-long professional learning that builds deep pedagogical content expertise for teachers on the Zearn Math curriculum. This professional development includes forty one-hour sessions, one for each Mission of every grade, and supports teachers in understanding multiple means of engaging students in learning for each concept and the range of ways students can demonstrate their learning. In grade-level teams each month, teachers collaboratively explore the fluency, application, and conceptual content of each Mission, the student work they should expect to see, and the specific instructional materials they will use in the classroom. Each session dives into key teaching activities, such as modeling how teachers can use scaffolded questioning during word-problem work to help students make meaning of math texts and draw visual representations of problems. Curriculum Study PD helps teachers plan their daily instruction and ensure all students have opportunities to learn, grow, and share their math knowledge over the course of the school year.

**Zearn Math Tip**

To access facilitation materials for Zearn Math PD, educators can:

1. Log in to their PD-enabled Zearn Teacher or Administrator Account
2. Navigate to PD
3. Select the specific PD session
4. Select Facilitator Guide and Participant Notes to view and download

Zearn Math provides a recommended calendar that school leaders and teachers can use to schedule upfront Zearn Math PD before the school year begins and the forty grade-level sessions throughout the year that support daily instruction. A downloadable version of the Zearn Math PD Calendar is available in the “Resources” tab of educators’ PD-enabled School Accounts.
ASSESSMENTS AND REPORTS

Ongoing, formative assessments
The Zearn Math curriculum includes a series of formative assessments designed to provide teachers with precise and actionable feedback they can use to inform instruction and respond to the needs of each student. Assessments focus on the big ideas of mathematics and allow students to demonstrate their understanding across multiple modalities through a thoughtful balance of software- and paper-based experiences.

Zearn Math offers daily, lesson-level assessments—the Tower of Power (available for 1st–5th grades) and Exit Tickets—along with Mid- and End-of-Mission assessments that are more comprehensive and administered roughly biweekly. All assessments are designed to fit into the classroom model and enhance, rather than distract from, instruction. Lesson-level assessments are embedded into the curriculum and occur as part of recommended daily core instructional time, not in addition to it. Mission-level assessments take on average 30 minutes to complete and should be administered during a built-in, weekly Flex Day.

To further assist teachers in analyzing student work, Zearn Math provides comprehensive Professional Development. Curriculum Study PD is year-long professional learning that builds deep pedagogical content expertise for teachers on the Zearn Math curriculum. This professional development supports teachers in understanding the range of ways students can demonstrate their learning. Teachers collaboratively explore the student work they should expect to see on lesson- and Mission-level assessments.

» Daily digital assessment
The Tower of Power is a scaffolded assessment, administered automatically at the end of each Independent Digital Lesson. The Tower of Power is focused on the content of a single lesson and allows students to demonstrate their new understanding. If students make a mistake, they receive real-time remediation at the point of misconception, allowing them to correct their understanding and continue through the assessment. All students have a rich learning experience throughout the assessment as they engage with the digital manipulatives and interactive visuals that are part of the Zearn Math software-based student experience.

Each Tower of Power contains two to four stages of problems that increase in complexity and decrease in scaffolding as students progress. The problems in each stage are carefully designed to focus on the big ideas of each lesson, mirroring the progression of learning students have just completed. Students are not permitted to move on to their next Independent Digital lesson without successful completion of the Tower of Power. Since the Tower of Power is software-based, teachers can access a report to determine how well students are progressing through the Tower of Power assessments, enabling them to adjust instruction to support students’ progress.

» Daily paper assessment
The Exit Ticket is a paper assessment that is also focused on the content of a single lesson, but it is less scaffolded than the Tower of Power. The Exit Ticket is administered at the completion of each Independent Digital Lesson, providing teachers with a second data point in addition to the Tower of Power that they can use to monitor daily learning. As the companion to the Tower of Power, the Exit Ticket uses a single problem (or multiple problems where appropriate) to determine if the student transferred the work from the software-based lesson to a less scaffolded, open-response item that requires students to show their thinking.
and work by drawing models, writing explanations, or both. Exit Ticket problems are designed to highlight the big mathematical idea, or a piece thereof, of each lesson and as such should not be edited for content.

In Kindergarten, most Missions do not include Exit Tickets to allow K students to focus on concrete learning. The last two Missions of the year do include Exit Tickets to help prepare students for 1st grade with Zearn Math.

» **Mission-level paper assessments**

Mid-Mission and End-of-Mission assessments are formative assessments administered roughly half way through the Mission and at the conclusion of the Mission respectively. For 1st–5th grades, these paper assessments consist of open response items that require students to show their work or explain their thinking in a variety of ways, including drawing models and writing explanations. In Kindergarten, each paper-based assessment is designed to be administered interview-style, where teachers record their observations of the student’s work and thinking. The assessment items vary in their focus, ranging from items that highlight a student’s understanding of a big mathematical idea to items that are more focused on students’ procedural fluency.

Zearn Math provides an answer key for each Mission-level assessment that contains the exemplar student response for each item, as well as specific standards-alignment information. For additional instructional support, teachers will now be able to access new rubrics for Mission-level assessments, available for the 2021-2022 school year. Each rubric models a progression towards understanding, offering detailed examples of where students might go wrong with guidance on what incorrect answers indicate about a student’s unfinished learning. These rubrics help teachers leverage the Mission-level assessments by providing actionable feedback they can use to respond to students’ demonstrated learning and misconceptions.

Zearn Math’s Mission-level paper assessments are anchored in the following set of design principles.

» **Efficient and coherent**

All questions assess student understanding of content focused only on the specific Mission and do not include questions that extend beyond the scope of learning. Additionally, assessments do not contain any problem-solving contexts that are unrelated to the mathematics focus of the specific Mission. Zearn Math Mission-level assessments are designed to take about 30 minutes, and they are intended to be delivered on a Flex Day. Each assessment includes a carefully selected number of problems that allow for rich feedback on student learning for teachers while limiting the time spent assessing and time spent analyzing the assessment.

» **Students first**

Assessments are an extension of the learning process, following the same progression as the curriculum and using the same language and models students use in the lessons. This allows the assessments themselves to serve as a learning experience and promote student ownership of their learning.

» **Practical and actionable**

Assessments are built around open response items that require students to show their work or explain their thinking in a variety of ways, including drawing models and writing explanations. Each part of any multi-step problem has a clear objective, is aligned to standards, and allows teachers to identify whether students are struggling with the foundational math concept or the multi-step aspect of the problem.
Zearn Math provides an answer key for each Mission-level assessment that contains the exemplar student response for each item along with specific standards alignment information. Exemplar student responses should not be viewed as the single correct answer or solution method because many of the problems on a Mission-level assessment allow students multiple entry points and acceptable solution paths or strategies. Rather, the exemplar responses should be used—along with rubrics and Curriculum Study PD—to inform teacher feedback.

New for 2021-2022, Zearn offers rubrics to provide teachers with actionable feedback they can use to respond to the learning and misconceptions students demonstrate on the Mission-level, paper-based assessment. The rubrics include detailed examples of how a student might answer a problem incorrectly and provide teachers with guidance on what an incorrect answer means in terms of a student’s unfinished learning. They also contain guidance on scoring that helps teachers assess the depth of students’ learning and communicate to students and parents the precise feedback students’ need to continue to develop their understanding. Finally, the rubrics are designed to be practical and convenient for teachers and include guidance on translating scores to a score out of 100 so that teachers can more easily input gradebook grades.

Given the coherent structure of Zearn Math, if unfinished learning is evident, teachers should move forward with additional supports and address misconceptions during Small Group Lessons and on Flex Days, understanding that the unfinished learning may best be completed by connecting it to new ideas presented in the latter half of a Mission or a subsequent Mission. Students with unfinished learnings should also be supported during flexible math time or other specific intervention time with work on foundational lessons.

**ZEARN MATH TIP**

To access Mission-level Paper Assessments, educators can:

1. Log in to their Zearn Teacher or Administrator Account
2. Navigate to the Curriculum page
3. Select the specific Mission
4. Select Mission-level Assessments to view and download for printing
Class reports
Zearn Math provides teachers with reports at the classroom level that they can use to differentiate instruction and ensure all students receive the support and enrichment they need. These reports provide real-time data and insights into student pace, progress, and areas of struggle during software-based learning. Zearn recommends teachers check reports at least twice a week to stay up-to-date on students’ learning and be able to use the insights to inform instruction. Class Reports include four individual types of reports:

» **Progress report**
   The Progress Report shows teachers where each student is in the digital sequence of all grade-level content. Teachers can view the percentage of Independent Digital Lessons 1st–5th grade students have completed for each Zearn Math Mission. By checking the Progress Report, teachers can understand how far along students are in their grade-level math content.

» **Pace report**
   The Pace Report helps teachers keep 1st–5th grade students on track each week to meet the four Independent Digital Lesson completion goal. Teachers can access a real-time view of how many lessons students have completed, the time it took to complete each lesson, and whether or not students have completed any off-grade-level work (e.g., if a student navigated back to work on earlier Independent Digital Lessons). By checking the Pace Report, teachers can identify groups of students who need more digital time to meet weekly learning goals and students who have already met their goal and can begin working on Bonuses for an extra challenge.

New for 2021-2022, the Pace Report tracks students’ progress through any foundational lessons that teachers have bookmarked for extra support. Teachers can filter by lesson grade level to monitor how many bookmarked foundational lessons each student has remaining. To read more about identifying and bookmarking foundational lessons, see “Using Zearn Math for Intervention” below.

» **Tower alerts report**
   If a 1st–5th grade student struggles in the Tower of Power, the independent practice portion of an Independent Digital Lesson, the student receives a Boost, scaffolded remediation at the precise moment of misconception. If a student struggles multiple times, their teacher receives a Tower Alert. The Tower Alert Report allows teachers to identify the part of the lesson where the student struggled and whether or not the student was able to complete the Tower and move on to the next Independent Digital Lesson. Teachers can use the report to identify which students need additional support on specific concepts and plan targeted Flex Day mini-lessons to meet those students’ needs. By checking the report at least twice each
week, teachers can also ensure no students are struggling and “stuck” on a Tower for long periods of time without being able to move on to the next lesson and continue learning.

» **Sprint alerts report**

Sprints are lesson-aligned fluency activities that appear in some Independent Digital Lessons to help 1st–5th grade students build and strengthen core math foundations. Students are timed during Sprints; however, the timer is not emphasized in the student experience. If students answer fewer than 10 questions correctly in a Sprint, their teacher receives a Sprint Alert. The Sprint Alerts Report allows teachers to see which students are struggling with Sprints and may need additional support during Flex Day.

» **Activity tracker**

The Activity Tracker shows teachers how far along K students are in the sequence of Digital Activities. Teachers can view the percentage of activities students have completed as Kindergartners follow an intentional progress of fluency work from Numbers to 5, Numbers to 10, Numbers to 15, and Numbers to 20.

» **Student reports**

Zearn Math provides Student Reports with real-time data and insights into student pace, progress, and areas of struggle during software-based learning. Teachers can use these reports, along with other formative assessment data, to gain insight into individual student learning. Student Reports provide teachers with visibility into which topics a student may be excelling in and which topics they may be struggling with. Teachers can see the breakdown of Pace, Progress, and Tower Alerts for any individual student, as well as all the activities that student has completed and when. Combined with Zearn Math’s Foundational Lesson Guidance, this report gives teachers the information needed to choose deeper interventions when necessary.

ZEARN MATH TIP

Step-by-step video tutorials on using each Class Report are available through Zearn Teacher or Administrator Accounts and in the Zearn Help Center.
Admin reports

Zearn Math offers Admin Reports to help school and district administrators monitor progress through the Zearn Math curriculum and identify classrooms that need additional support. These reports provide real-time data and insights into student learning at the school, grade, and classroom level. Admin Reports are available as part of a paid Zearn Math School Account and include three individual types of reports:

» **Completion tracking report**

The Completion Tracking Report helps school leaders ensure all students stay on track throughout the school year to complete all grade-level math content. Administrators can access a real-time view of the percentage of students who have completed each Zearn Math Mission and filter the report by school, grade, and classroom. This report allows administrators to identify classrooms early on that may be falling behind on completing grade-level work and provide additional support.

» **School goals report**

The School Goals Report provides school leaders with detailed information they can use to understand classroom-level Zearn Math implementation, celebrate goal achievement, and identify and share best practices. Administrators can access a real-time view of the last teacher sign-in date, the percentage of students actively logging in to their accounts, average weekly lessons completed, average weekly digital usage minutes, and average number of Tower Alerts per lesson. New for 2021-2022, administrators can compare the number of grade-level lessons completed to the total number of lessons completed for each class. The School Goals Report helps administrators create a dialogue with teachers and students about what is going well and what can be improved on in teaching and learning with Zearn Math. To read more about identifying and bookmarking foundational lessons, see “Using Zearn Math for Intervention” below.

» **Student exports**

Student Exports allows school leaders to download all data from their Zearn Math reports. Administrators can use this to create custom analytics on progress, pace, and Mission completion.

**ZEARN MATH TIP**

Step-by-step video tutorials on using each Admin Report are available through Zearn Administrator Accounts and in the Zearn Help Center.
COMMITMENT TO ACCESSIBILITY

Zearn strives to be accessible for all students, in line with its mission to ensure all students love learning math. The Zearn Math student experience reflects intentional decisions meant to support a diverse range of learners, and Zearn is working to conform with accessibility standards, including the Web Content Accessibility Guidelines (WCAG 2.0). Zearn views its commitment to accessibility as ongoing and will continue to make updates to ensure curricular materials are usable for all students, including those with disabilities.

Accessibility features of the Zearn Math student experience include:

**A classroom learning community**

A sense of belonging in the math classroom and community is a precursor to engagement and learning. Zearn Math’s commitment to inclusion and emphasis on positive math mindsets helps teachers create learning environments where all students feel welcome and mistakes are viewed as opportunities for reflection and growth. The balance of whole-group and small-group learning built into the Zearn Math classroom model creates numerous opportunities for all students to participate in math discussions, shifting math dialogue from answer-getting to a participatory discussion. Daily Small Group Lessons also provide teachers with opportunities to build a deep understanding of each student and facilitate math discussions where students can bring their own learnings and frames of reference into the classroom. A strong classroom community enhances collective learning possibilities and ensures each and every student is able to engage in meaningful learning.

**An inclusive learning environment**

Zearn Math Independent Digital Lessons aim to represent the diversity found in classrooms across the country, so all students can see someone similar to themselves doing math and persevering through challenges. Students and teachers of all genders and races, as well as students with disabilities, appear on-screen during Independent Digital Lessons. Names used throughout all software and paper materials are thoughtfully selected so that no one group is over or underrepresented or stereotyped within the context of a particular problem. These features of Zearn Math help all students engage in deep learning and feel they are an equal part of the classroom math community.

**Closed captioning**

Closed captioning for all interactive student videos is available for all Missions for all grades. Closed captioning allows students to turn on an English text transcription of all dialogue and other relevant audio information in the Zearn Math video player. This accessibility feature is particularly important for deaf and hard-of-hearing students, as well as English Learners.
Audio support
All instructional prompts students see in Independent Digital Lessons have audio support through either recorded audio or Zearn Math’s text-to-speech feature. Students can click on the audio button next to text questions or prompts to hear the words spoken aloud. All math expressions in Zearn Math software-based lessons are read correctly with Zearn Math’s text-to-speech tool. Additional audio support, if needed, can be accessed using supported browser text-to-speech tools. These accessibility features are particularly important for students with cognitive impairments, students with learning differences, young students, and English Learners.

Visual clarity
Independent Digital Lessons are intended to meet web standards and make all content visually clear and understandable. These accessibility features are particularly important for students with color blindness or any visual impairments.

» Use of color
Throughout Zearn Math Independent Digital Lessons, color is never used as the only visual means of conveying information. When a student receives precise feedback on an answer during Independent Digital Lessons, that feedback is provided in multiple ways—with color, with clear iconography, and through specific messages such as “Nice!”, “Try again,” or “Check the answer.” Additionally, where color is used to draw attention to a specific piece of information, Zearn Math also uses prompts to convey the same information.

» Color contrast
Zearn Math aims to conform to minimum color contrast requirements. Software-based lessons use larger fonts that meet a minimum contrast ratio of 3:1. Font smaller than 18pt or 14pt bold meet a contrast ratio of 4.5:1. Where specific elements of Independent Digital Lessons do not meet contrast standards today, Zearn is making improvements.

» Font readability
Throughout software-based lessons, Zearn Math avoids using fonts smaller than 10pt, with most text using at least 16pt fonts. Font types are simple, clear, and have limited variation in order to ensure all text is readable.

» Zoomability
Students may resize digital pages up to 200% through browser settings to view images or text closer up without losing any content.

Screen reader and braille translation options
All instructional prompts and directions that students see in the Zearn Math digital program can be accessed and read by screen reading software. Additionally, all student-facing PDFs are screen-reader accessible. Screen readers enable blind students to read the text that is displayed on the computer screen with a speech synthesizer or braille display. Blind students will need
teacher or caregiver assistance in understanding Zearn Math’s dynamic digital manipulatives within the Guided Practice, given the nature of how they are built.

All core student-facing G1-G5 paper-based instructional materials are available in various accessible formats, including large print, Braille, and tactile, from APH.org (American Printing House). Educators can search their catalog, called Louis, for Zearn and place orders for the materials they need. These materials are also on file with the National Instructional Materials Accessibility Center (NIMAC). Our non-core student materials (optional Homework and Problem Sets) are derived from Eureka Math, who offers braille and large print for these materials. Educators can search the same APH catalog for Eureka Math. Zearn’s Kindergarten and G6-G8 paper-based materials are in the process of being completed and will also be on file with NIMAC. Educators can find the aligned Illustrative Math versions of G6-G8 student-facing paper-based materials in accessible formats from the APH.

Keyboard accessibility
While Zearn Math requires the use of a mouse, trackpad, or touchscreen device today, Zearn has made keyboard accessibility a priority. Zearn will be adding new Zearn Math features to ensure that all interactive elements in Independent Digital Lessons are keyboard accessible for students. This accessibility feature is particularly important for students with impaired mobility or dexterity or students with low vision.

On-screen keypad
As students work through Independent Digital Lessons, they have the option to use an on-screen keypad, rather than a computer keyboard, to type and submit answers. This accessibility feature is particularly important for tablet users and young students who may not know how to use a computer keyboard.

Volume consistency
In order to provide a consistent and non-disruptive audio experience for students, there are no significant volume changes between video audio and other sound effects during Independent Digital Lessons. Outside of Zearn Math’s video content, there is no audio that plays automatically for more than 3 seconds. This accessibility feature is particularly important for students who are sensitive to changes in volume, students who have difficulty focusing on visual content (including text) when audio is playing, students on the autism spectrum, or students with hearing impairments.

No visual flashes
Independent Digital Lessons do not contain any visuals that flash more than three times in any one-second period. This accessibility feature is particularly important for students prone to seizures because flashing content can trigger seizures.

Note: A student’s Individualized Education Plan (IEP) should be the first resource teachers use as they look to differentiate instruction for a student with a disability. While Zearn Math’s accessibility features aim to ensure that all students can learn core content in two ways—Independent Digital Lessons and Small Group Lessons—Zearn realizes that not all children will learn best through software-based lessons. For example, due to the visual nature of Zearn Math’s digital manipulatives, students with severe visual impairments may be better served working with physical manipulatives. Students not able to access software-based materials should participate in Whole Group Fluencies and Word Problems with the full class and Small Group Lessons with their teacher and
classmates. Rather than complete the Independent Digital Lesson, students should complete lesson-aligned paper components including Student Notes, Problem Sets, Homework, and Exit Tickets as determined and directed by the teacher.

**USING ZEARN MATH FOR INTERVENTION**

Zearn Math helps teachers support students with accessing grade-level math, layering in the most critical content kids need in order to address unfinished learning and foundational gaps. Zearn Math offers multiple layers of intervention support—all top-rated, built for deep understanding, and designed for coherence. Zearn Math’s Independent Digital Lessons coherently align to teachers’ core instruction, providing students with daily opportunities to independently explore and practice the same concepts they learn with their teacher, with built-in Tier 1 intervention and acceleration supports. If students need additional support to address unfinished learning, teachers can bookmark targeted foundational lessons that directly connect to students’ grade-level learning.

Zearn’s downloadable [Approach to Math Acceleration](#) is a comprehensive guide to support accelerated learning in math for the 2021-2022 school year.

**Approach to unfinished learning**

Zearn Math helps teachers address students’ unfinished learning in the context of new learning, with just-in-time supports built in to daily digital lessons and targeted foundational lessons that are coherently aligned to their grade’s core content. At the beginning of each Mission, all students should be assigned to the grade-level digital lesson that corresponds to what they are learning with their teacher during the core math block. Zearn Math recommends students with significant areas of unfinished learning spend flexible math time or other specific intervention time working on earlier content that is directly tied to core grade-level learning. Many intervention programs use upfront, one-time diagnostics that result in setting students assignments that consist of low-level math skills, without providing any connection between students’ intervention lessons and the content they are learning with their teacher. Zearn’s alternative approach to intervention sets all students up for success.

During core time, teachers teach grade-level lessons. Alongside this core instruction, kids work on Independent Digital Lessons that cover the same concepts teachers are teaching, with built-in support. At the end of each lesson, the Tower of Power, Zearn’s embedded daily diagnostic, assesses each student’s understanding and automatically launches a Boost exactly when kids need it, with support and scaffolding they need from prior grades or prior units. If a student continues to struggle, teachers receive a notification in their Tower Alerts Report, which they should monitor regularly. Teachers can then check the Student Report to see exactly where an individual student is struggling. Teachers can then bookmark foundational lessons as a second intervention assignment using the Foundational Lesson Guidance Zearn provides for every objective of 1-5 math. These foundational lessons provide the building blocks students need to access the grade-level content they are learning during core instructional time. Furthermore, students can access their bookmarked foundational lessons and grade-level assignments in one program, with one login. Zearn’s approach helps teachers align core and intervention time and layers in the most critical content kids need to address unfinished learning.

**ZEARN MATH TIP**

Educators can access Foundational Lesson Guidance from each Mission page within their Zearn Teacher or Administrator Account.
Grade-level lessons with built-in foundational support

Each Zearn Math grade-level digital lesson includes built-in support on concepts from previous topics and grades, so that students can strengthen foundational understanding while learning grade-level concepts. At the beginning of each new mission of instruction, teachers should assign students to the first digital lesson of the mission. Supportive pathways within every grade-level digital lesson teach new concepts through concrete and pictorial representations that help students make sense of new concepts by anchoring to ideas they already know or intuitively make sense to them. This approach emphasizes the big ideas in mathematics and strengthens conceptual and procedural knowledge to address unfinished learnings so that students can move smoothly to and make connections with other mathematics.

At the end of each daily, grade-level lesson, Zearn’s embedded daily diagnostic, the Tower of Power, assesses each student’s understanding and automatically launches a Boost exactly when kids need it, with support and scaffolding they need from prior grades or prior units. These built-in personalized interventions address unfinished learning in the context of new learning, integrating new information with the needed prior knowledge. Thus, Zearn continually assesses, diagnoses, and gives kids the Boost they need, built into their grade-level learning.

ZEARN MATH TIP

Teachers who are part of a Zearn Math School Account can set students to specific digital lessons to directly align to their daily instruction. Our Help Center offers step-by-step instructions on setting students to specific lessons.

Reports with visibility into student progress

As students learn with grade-level digital lessons aligned to core instruction, Zearn Math offers visibility into student learning and struggle. Specifically, the Student Report provides teachers with visibility into precisely which topics a student may be excelling in and which topics a student may be struggling with and how deep the struggle is. The information in the Student Reports empowers teachers to assess struggle side-by-side with other information—such as productivity of the struggle, where in the scope and sequence struggle is occurring, and other formative assessment data—so that teachers are empowered with the full information they need to choose deeper interventions when necessary. Should teachers decide that students need intervention beyond the foundational support built into grade-level lessons, Zearn Math provides teachers with Foundational Lesson Guidance.

Foundational lesson guidance for deeper interventions

Zearn Math’s Foundational Lesson Guidance helps teachers initiate purposeful interventions at the moment the need arises, targeted to students’ specific point of struggle. The Zearn Math content team has identified foundational lessons based on an analysis of data on student struggle from over 8 billion problems completed. Each foundational lesson focuses on the big math idea that connects with and promotes the same grade-level content students are learning during core time. This targeted
and coherent approach maximizes effectiveness by allowing students to move fluidly between grade-level and intervention content as needed in order to fill conceptual gaps and get back to grade-level learning as quickly as possible.

» **Bookmarking foundational lessons**

For students that need a deeper intervention, teachers using Zearn through a School Account can search our database for recommended content and bookmark specific lessons identified as the critical foundational content for every objective of 1-5 math. These lessons, selected based on data from over 8 billion problems completed on Zearn, efficiently support learning recovery. They are the foundational work kids need, coherently connected to what their teachers are teaching. Students complete their bookmarked foundational lessons in addition to their current grade-level assignment during specified intervention time.

Zearn Math’s database provides the essential foundational lessons for understanding specific grade-level math concepts, as well as an additional layer of support lessons that may be helpful to students. In addition to guided and independent practice, this option provides students with additional adaptive and lesson-aligned fluency work to build automaticity and deepen number sense.

» **Directing to Math Library**

Students can access both their foundational and grade-level assignments on Zearn’s online math platform with the same login. Students can find their bookmarked foundational lessons in the Math Library, which they can navigate to directly from their student feed. Zearn’s student experience is designed to feel safe and supportive, so students do not see the word “intervention” or the grade level of the bookmarked lessons.

» **Monitoring student progress on bookmarked lessons**

The Pace Report allows teachers to monitor student progress on both grade-level and bookmarked foundational lessons from the same place. Teachers can hover over a lesson to see whether students have been working on grade-level or bookmarked lessons and can track how many bookmarked lessons students have remaining. Teachers can also view a student’s remaining bookmarks in the Student Report, in the “Current Assignment” section. Within the Student Report’s “All Activity” tab, Math Library lesson completions will be marked with icons. Administrators viewing the School Goals Report will be able to see a grade-level lessons column and a total lessons column. The total lessons column will include the grade-level lessons, as well as bookmarks and other lessons done in the Math Library.

» **Additional instructional support**

To further support students with foundational content, teachers can review earlier concepts through Curriculum Study Professional Development. From a PD-enabled Zearn Math School Account, teachers can access an overview of the content to review the visual representations and strategies students may use to access the big idea of the mission.
In addition to the targeted Foundational Lesson Guidance, Zearn highlights Foundational Missions for each Mission of the curriculum that point teachers to the earlier content areas where grade-level concepts are introduced and developed.

**Recommended student and teacher usage**

Zearn Math is designed so that teachers can use the materials in a range of interventions. To achieve maximum impact, students should complete Digital Lessons for every objective of elementary grade-level content. Research shows students achieve strongest results when Zearn Math is used as a core instructional intervention to learn and practice all grade-level lessons.

As students work through grade-level content on Zearn’s platform, an embedded daily diagnostic assesses learning and automatically launches digital Tier 1 intervention. If students need additional support, teachers are given individualized foundational lesson recommendations that they can bookmark for students with a single click. Students then work through these foundational lessons during additional time blocks. Students can see both their intervention and grade-level assignments when logging in to Zearn’s online math platform.

Teachers should check in on students’ assigned and bookmarked foundational lessons and monitor Student Reports to choose deeper interventions when necessary. When teachers move to new units of instruction, teachers should assign students to the first digital lesson of the new mission.

As students work on foundational lessons during flex time or intervention time, teachers or intervention specialists should continue to implement the Zearn Math model fully. This includes:

- **Ensuring content alignment between core instruction and intervention instruction**

  Teachers can support students in accessing current and upcoming grade-level content by focusing student work on the relevant foundational content. Teachers can bookmark the lessons recommended in Zearn’s Foundational Lesson Guidance via the “Assignments” tab.

**ZEARN MATH TIP**

The Foundational Missions for each grade-level Mission are listed in each Mission Overview.
Supporting learning in multiple ways

Zearn Math provides students with a mix of modalities, feedback, and support that is crucial to helping students build deep understanding. As students work on foundational lessons, they should have opportunities to work independently on software-based lessons, model their math with concrete manipulatives, participate in math discussions, and receive direct feedback from their teacher. To demonstrate understanding and strengthen knowledge retention, students should also complete paper-and-pencil Student Notes and Exit Tickets for each lesson in a Foundational Mission.

**ZEARN MATH TIP**

To access these paper-and-pencil student materials, educators can:

1. Log in to their Zearn Teacher or Administrator Account
2. Navigate to the Mission page for the Foundational Mission
3. Select Student Notes and Exit Lessons to view and download for printing

Additional Independent Digital Lesson time

Students need to complete four Independent Digital Lessons each week in order to finish all grade-level content during the academic year. Some students may need longer than the recommended minimum 120 minutes of digital time during core instruction to meet this goal. These students can use time on Flex Day or other flexible math block time (e.g., WIN, RTI) to work on their software-based lessons and continue learning grade-level content at their own pace, supported by on-ramps and embedded remediation. These supports include Number Gym, individually adaptive fluency experiences that help students strengthen foundational number sense, and Boosts, personalized remediation paths that precisely address student misconceptions as they problem solve. To identify which students need additional digital time to meet learning goals, teachers should check the Pace Report to see how many lessons students have completed each week.

Additional small-group instruction time

Flex Days provide teachers with time they can use to lead targeted mini-lessons addressing specific grade-level areas where students need extra support. During these mini-lessons, students can re-engage with the content they are learning during core instructional time, with opportunities to explore new problems, model their thinking with concrete manipulatives, discuss strategies with classmates, and receive direct feedback from their teacher. Zearn Math materials for Small Group Lessons highlight extra problems, tied directly to students’ grade-level learning, that teachers can use during this flexible time. These problems are denoted by a green apple in the teacher materials and marked “Optional for Flex Day.” To identify which students may benefit from extra practice with a specific math idea, teachers should check the Tower Alerts Report each week.
ADDITIONAL ENRICHMENT

Zearn Math builds on-ramps to grade-level content, acceleration support, and enrichment opportunities into all parts of students’ core instructional learning. The classroom model also incorporates a weekly Flex Day that creates dedicated time teachers can use to further differentiate instruction and meet student needs as well as administer paper-based assessments at the midpoint and end of each Mission.

Zearn Math recommends the following additional enrichment options.

Learning extensions

If students are demonstrating mastery in assessments and completing four Independent Digital Lessons each week, teachers can use Flex Day to provide opportunities for additional challenge and growth. Zearn Math provides teachers with curricular materials for extending learning that are aligned to students’ current grade-level work.

» Digital bonuses

Digital Bonuses are challenging problems students can work on after they complete an Independent Digital Lesson. Teachers can assign students to work on bonuses during weekly flex time to enrich and extend learning. Digital Bonuses do not appear automatically in the Student Feed, so teachers should direct students to navigate to them from their Badges.

ZEARN MATH TIP

To navigate to Bonuses, students can:

1. Click Badges on the student homepage,
2. Click on a Lesson Badge or use to arrows to navigate to previous grades, Missions and Lessons,
3. In the Lesson pop-up, click the Beat It button.

» Optional enrichment problems

Teacher materials for Small Group Lessons highlight extra, above-grade-level problems that teachers can assign to students during Flex Day for enrichment. These problems are denoted by a green apple in the teacher materials and marked “Optional for Flex Day: Enrichment.”
ENGLISH LEARNERS

Language learners of all levels can and should engage with grade-level math content that is scaffolded with the appropriate amount of linguistic support. The Zearn Math approach to teaching and learning fosters the side-by-side development of math understanding and language competence, as students are provided with opportunities to both access mathematics using existing language skills and extend their language development in the context of mathematical sense-making.

Each day with Zearn Math, students learn in a classroom model designed for daily differentiation, experience inclusive environments of social belonging, and receive linguistic support across whole-group, small-group, and individual learning formats. Thoughtfully designed curricular materials and Curriculum Study, Zearn Math’s pedagogical content PD, help teachers build expertise that empowers them to support students’ language development as they learn math and encounter areas of struggle. While these features of Zearn Math support all students in building a deep understanding of grade-level mathematics, they are particularly critical for meeting the needs of English Learners, who are simultaneously learning math and acquiring language.

In line with Zearn’s commitment to continuous improvement, paper-based teacher and student instructional materials are fully translated into Spanish for the 2021-22 school year. These new materials are the first step in Zearn’s commitment to offering comprehensive curriculum resources in Spanish.

Features of Zearn Math that support English Learners and foster language development include:

Curriculum approach

» Flexible learning environments

Zearn Math is built on the Universal Design for Learning (UDL) framework, a set of research-based guidelines designed to create flexible learning environments that accommodate individual learning differences and ensure all students can access and participate in learning opportunities. Zearn Math aligns with UDL principles by providing students with multiple ways to engage in learning, acquire knowledge, and demonstrate understanding. Each day with Zearn Math, students learn independently on software-based lessons and in small groups with their teacher and peers. Across these learning experiences, students have opportunities to engage with the same math content in multiple ways using multiple modalities.

As students work through Independent Digital Lessons, they learn and practice new concepts at their own pace with concrete and digital manipulatives, interactive videos, pictorial representations, paper-and-pencil transfer, and precise digital feedback at the moment of misconception. During Small Group Lessons, students model math with concrete manipulatives, represent their work on paper, discuss their reasoning aloud, and receive direct feedback from their teacher and classmates. All students build a deep understanding of grade-level content through this multimodality learning, as they engage with math ideas through words, texts, pictures, discussions, and concrete examples.

This approach also ensures English Learners have daily development opportunities across all language domains—writing, speaking, listening, and reading—that Zearn Math scaffolds with temporary supports. Students have repeated and supported ways to make meaning of math concepts and articulate them into written and spoken words, sentences, and paragraphs. During software-based lessons, students watch and hear on-screen teachers model math and math language and problem solve using paper-and-pencil notes and digital manipulatives such as word tiles. At each step, students are supported with digital remediation...
that breaks down complex problems, so students can make sense of what is being asked of them and organize their thinking. During Small Group Lessons, English Learners have repeated opportunities to talk about their mathematical thinking, negotiate meaning with others, and collaboratively solve problems with direct feedback from their teacher. Zearn Math scaffolds this small group instruction for English Learners with concrete manipulatives that support sense-making and guidance for teachers on how to model math and create structured peer interactions.

» **Concrete to Pictorial to Abstract (CPA)**

As students learn new concepts with Zearn Math, they progress from using concrete materials to pictorial representations to abstract symbols, and they move back and forth between each stage to ensure concepts are reinforced. Through this approach, all students build a deep and sustainable understanding of math as new, abstract concepts are introduced in tangible and concrete ways. This approach also supports students’ language development, as students make connections across representations and describe their thinking aloud during each phase of math learning.

Zearn Math includes supports that scaffold and foster this language development for students who are learning English. Materials for Small Group Lessons provide teachers with sentence frames they can use to support English Learners as students describe connections across representations during partner talks and small group discussions. For example, the sentence frame, “I partitioned into ____ (fractional unit). I shaded ____ (number of) ____ (fractional unit),” helps students verbalize their thinking as they concretely model their math with fraction strips. Additionally, during Math Chats, the guided practice portion of Independent Digital Lessons, on-screen teachers lead “think alouds” where they point out connections across representations while modeling the math with digital manipulatives and concrete objects.

» **Approach to problem solving**

Zearn Math teaches students to problem solve by first drawing a picture that models their understanding of the mathematics after they read a problem. Drawing a picture helps students make meaning of problems and understand which models or operations may or may not work for problem solving. This approach, which emphasizes careful reading and visualization, helps all students build flexible and accurate solving skills that they can apply across different problem contexts. Students are also introduced to the language used in mathematics and exposed to grade-appropriate, complex texts as they problem solve.

Zearn Math supports English Learners as they experience challenging texts by scaffolding problem solving rather than by simplifying language. This approach broadens students’ exposure to English, while simultaneously providing support, so that they can expand their vocabularies, navigate increasingly complex texts, and communicate their thinking orally and in writing. Across each part of the daily Zearn Math student experience, complex language is broken down through scaffolded supports to ensure students can make meaning of the text. For example, during Independent Digital Lessons, students view problems with rich animations and are supported in constructing their own model of the problem using high-quality digital manipulatives. If students struggle, they receive precise, in-the-moment digital feedback that highlights the relevant part of the word problem, provides further scaffolding, and allows the student to try again.
As students work through word problems, they are also taught to answer in complete sentences. During software-based lessons, this sentence construction is often scaffolded with sentence frames. Students also have un-scaffolded opportunities to write their own answer sentences and receive feedback from their teacher while completing Student Notes and working through problems during Whole Group Word Problems and Small Group Lessons.

**Elements of language**

Students are exposed to many elements of language during their daily learning with Zearn Math, such as mathematics vocabulary and discourse patterns of spoken language. Zearn Math’s intentional design ensures that students are supported as they develop skills across these different elements.

» **Essential vocabulary**

Students are not expected to have prior knowledge of essential math vocabulary, and language critical to student learning is thoughtfully introduced, taught, and repeated frequently. This progression helps all students gain familiarity with new terminology and practice using it as they move through the curriculum.

Zearn Math also provides specific supports that can further scaffold this development for English Learners as they learn new vocabulary in a new language. Teacher materials for small-group instruction highlight the significant terminology introduced in each lesson and include activities and discussion questions that encourage students to reflect as they encounter new vocabulary. For example, in a 2nd grade lesson on measurement, students are prompted to share and discuss new words they have learned—such as “length,” “height,” and “meter”—as their teacher records their responses.

» **Patterns of discourse**

As students engage in rich math discussions during whole-group and small-group time, they have opportunities to organize their language in discourse patterns such as “compare and contrast” or “question and answer.” Teachers facilitate these structured conversations through activities like pair shares, which allow students to make claims, provide evidence, make conjectures, communicate thinking, and critique others’ reasoning.

Zearn Math provides scaffolding to support English Learners as they encounter and practice these discourse patterns. Teacher materials for Small Group Lessons include specific notes with conversation starters, sentence frames, or modeling guidance that help enhance discussion quality for all students and ensure English Learners are supported in participating. Examples of conversation starters in Zearn Math materials include, “I noticed that you…,” “I agree/disagree because…,” and “Your solution is different from/the same as mine because…”
Teacher-led instruction:
whole group warm-up and small group instruction

» Classroom learning community
A sense of belonging in the math classroom and community is a precursor to engagement and learning. Zearn Math’s commitment to inclusion and emphasis on positive math mindsets helps teachers create learning environments where all students feel welcome and mistakes are viewed as opportunities for reflection and growth. The balance of whole-group and small-group learning built into the Zearn Math classroom model creates numerous opportunities for all students to participate in math discussions, shifting math dialogue from answer-getting to a participatory discussion. Daily Small Group Lessons also provide teachers with opportunities to build a deep understanding of each student and facilitate math discussions where students can bring their own learnings and frames of reference into the classroom. A strong classroom community enhances collective learning possibilities and ensures each and every student is able to engage in meaningful learning.

» Math discussion
Students share their own thinking aloud and discuss classmates’ problem-solving strategies throughout daily whole-group problem solving and Small Group Lessons. Teachers facilitate thoughtful mathematical discussions between students that allow learners to refer to and build on each others’ ideas. As students share their reasoning, are exposed to other perspectives, and engage in mathematical sense-making, they are able to deepen their own understanding and become more creative and effective problem solvers. Zearn Math’s small-group format, in conjunction with the personalized learning students experience in Independent Digital Lessons, enables daily math discussions to shift from “answer-getting” focused to rich, ongoing, conversations.

Daily math discussion is a critical part of the daily math block for English Learners who are developing mathematical language because it provides opportunities for students to simultaneously make meaning and communicate that meaning. Rich back-and-forth math conversations also allow students to hear and respond to how other students express their understandings. Zearn Math teacher materials for whole- and small group instruction provide guidance on instructional routines that foster these math discussions for all students, with additional notes on supporting English Learners. For example, teachers are prompted to facilitate “Turn and Talks” where pairs of students discuss their math thinking and are encouraged in some situations to let students with limited English fluency choose the language they wish to use. English Learners may benefit from using their first language in these discussions because processing math in their first language can create a safe space for deeper thinking.

Additional strategies included in teacher materials that educators can use to support English Learners include sentence frames, choral response, specific concrete manipulatives, and information about cognates between English and other languages (e.g., numerator / numerador). All of these supports help English Learners develop their understanding of the language used in math questions and problems while they participate in discussion with classmates, actively listen, and make connections between prior learning in their first language and new learning in English.
» **Direct feedback**

During Small Group Lessons, students have more opportunities to receive direct feedback from their teacher during moments of misconception. In the small-group format, teachers can better assess individual student understanding as students model their math using concrete manipulatives, share their reasoning aloud, and problem solve. These moments of feedback provide all students with valuable, in-the-moment support and remediation from their teacher, allowing them to correct misconceptions so students can continue learning.

The small-group format also allows teachers to gain a specific understanding of English Learners’ content learning in conjunction with their language use. As students make claims, justify their claims with evidence, communicate their reasoning, and critique the reasoning of others, teachers have continual formative assessment opportunities, which they can use to differentiate instruction for English Learners in order to more effectively develop students’ English skills as they learn math.

» **Exposure to range of learners**

Zearn Math recommends that student groupings during Whole Group Warm-Ups and Small Group Lessons vary over time in order to create opportunities for students to work with classmates with a range of skill levels in mathematics and English language competence. This exposure to a range of learners, whether during partner turn-and-talk time or discussion during Small Group Lessons, allows all students to learn from and work with students with different problem-solving and communication approaches. For English Learners, mixing groups ensures they have multiple exposures to the key uses of language in mathematics, in varied forms, modeled by different speakers.

### Independent Digital Lessons

» **Inclusive learning environment**

Zearn Math Independent Digital Lessons aim to represent the diversity found in classrooms across the country, so all students can see someone similar to themselves doing math and persevering through challenges. Students and teachers of all genders and races, as well as students with disabilities, appear on-screen during Independent Digital Lessons. Names used throughout all software and paper materials are thoughtfully selected so that no one group is over- or underrepresented or stereotyped within the context of a particular problem. These features of Zearn Math help all students engage in deep learning and feel they are an equal part of the classroom math community.

» **Precise, timely, and supportive remediation**

When students make a mistake in the Tower of Power, they receive remediation support in the form of a Boost. The Boost breaks down the question into smaller steps with different visuals and more supportive manipulatives. Students then have a chance to demonstrate their understanding with a new problem. This real-time remediation precisely addresses student misconceptions and gives all students opportunities to visualize problems in multiple ways and try again.

This in-the-moment feedback can be particularly helpful for English Learners by providing scaffolding that helps them make meaning of the text and understand what is being asked of them. If students struggle with
a problem during a software-based lesson, they receive precise remediation that highlights the relevant part of the word problem, provides additional scaffolding by breaking down the problem further, and allows them to try again.

» **Closed captioning**

Closed captioning for all interactive student videos is available for all Missions for all grades. Zearn closed captioning allows students to turn on an English text transcription of all dialogue and other relevant audio information in the Zearn video player. This feature allows English Learners to access language in multiple modalities—reading and listening—which helps retention and the development of reading skills in mathematics.

» **Audio support**

All instructional prompts students see in Independent Digital Lessons have audio support through either recorded audio or Zearn Math’s text-to-speech feature. Students can click on the audio button next to text questions or prompts to hear the words spoken aloud. All math expressions in Zearn Math software-based lessons are read correctly with Zearn Math’s text-to-speech tool. Additional audio support, if needed, can be accessed using supported browser text-to-speech tools.

» **Pausing and rewinding**

Students can pause or rewind the video player at any time during Independent Digital Lessons. This feature creates a low risk setting for all students because students can choose to rewatch specific content or entire lessons while learning independently. It also provides English Learners with repeated opportunities to develop, refine, and extend their understanding of the language used in mathematics over time.

» **Paper-and-pencil transfer**

During the guided practice portion of Independent Digital Lessons, students are prompted to complete problems in their paper Student Notes. This transfer of software-based learning to paper deepens understanding for all students by strengthening knowledge retention.

Student Notes provide English Learners with safe opportunities to deepen and extend writing skills. Students are exposed to words, expressions, and sentences, not just math symbols and numbers, as they label diagrams, write answer sentences, and explain their solutions. After completing their notes, students are able to view correct and complete versions in the guided practice video and take as much time as needed to correct or update their paper-and-pencil notes. Finally, by checking Student Notes, teachers may be able to provide more targeted feedback when working with English Learners one-on-one or in small-group time.

**ZEARN MATH TIP**

Instructions for enabling closed captioning and browser text-to-speech tools are available in the Zearn Help Center.
Classroom model

» **Daily mix of whole-group, small-group, and independent learning**

Each day with Zearn Math, students experience a balance of learning across multiple formats as they participate in a Whole Class Warm-Up and then learn new content in a Small Group with their teacher and peers and at their own pace in Independent Digital Lessons. This rotational model provides all students with daily opportunities to learn, practice, and reflect on their learning in a variety of instructional settings with a variety of different learners. For English Learners specifically, the daily mix of formats ensures they are exposed to a diverse range of thoughts and have chances to hear their teacher and a variety of classmates, as well as on-screen characters, model the language of math in English.

» **Weekly schedule with core instructional time and flexible time**

The Zearn Math pacing guide supports a weekly schedule consisting of four “Core Days” when students learn grade-level content and one “Flex Day” that can be tailored to meet students’ needs. This schedule ensures students have sufficient time each week to work through grade-level content and built-in weekly time educators can use to differentiate instruction to meet student needs. During Flex Days, teachers can plan targeted mini-lessons that provide enrichment or support or allocate additional time for students to meet weekly lesson completion goals.

For English Learners, weekly flex time provides important opportunities for targeted instruction with their teacher or other activities that extend language development beyond linguistic remediation. During a Flex Day, students may participate in structured pair work, where they can share their math thinking aloud and respond to their partner, or undertake writing work that involves explaining their strategies, making a mathematical argument, and providing evidence. Flex Days can provide important weekly time for English Learners to continue to expand their skills at navigating language and writing tasks in the math setting.

Zearn Professional Development

» **Curriculum Study PD**

Curriculum Study PD is year-long professional learning that builds deep pedagogical content expertise for teachers on the Zearn Math curriculum. This professional development includes forty one-hour sessions, one for each Mission of every grade, and supports teachers in understanding multiple means of engaging students in learning for each concept and the range of ways students can demonstrate their learning. In grade-level teams each month, teachers collaboratively explore the fluency, application, and conceptual content of each Mission, the student work they should expect to see, and the specific instructional materials they will use in the classroom. Each session dives into key teaching activities, such as modeling how teachers can use scaffolded questioning during word-problem work to help students make meaning of math texts and draw visual representations of problems. Curriculum Study PD helps teachers plan their daily instruction and ensure all students have opportunities to learn, grow, and share their math knowledge over the course of the school year.

» **Classroom Implementation PD**

Classroom Implementation PD supports teachers in using Zearn Math in their classrooms. This three-session professional development series provides training on the curricular resources and reports available for
instruction, the rotational classroom model, and classroom routines and systems that support independent learning. It also includes specific guidance on how and when teachers can support productive struggle that allows students to persevere through challenges and receive the remediation they need to be successful. This PD helps teachers prepare to meet the needs of all students, including English Learners, in their classroom.
Appendix

Zearn Math Curriculum Map

The Zearn Math Curriculum Map outlines the scope and sequence of all Missions for each grade, K–G5. The Curriculum Map also includes the number of lessons for each Mission and estimated duration based on students completing four lessons per week. Details on each Mission’s content and the weekly pacing recommendations can be found in Grade Overviews for each grade. The Curriculum Map is accessible through the “Curriculum” tab in all educator Zearn accounts.

Grade Overviews, K–5

Zearn Math Grade Overviews include pacing guidance, detail on the standards covered, and identification of the Mathematical Practices relevant to the Missions of the grade. Each Grade Overview also provides summaries of the major work of the grade and the learning objectives of each Mission. Grade Overviews are accessible through educator Zearn accounts.

Optional Small Group Lessons

To support the completion of all grade-level content during the academic year, Zearn Math highlights optional Small Group Lessons that teachers may choose to skip. These lessons are noted in all individual Mission Overviews and the Small Group Lesson materials for each Mission. A full list by grade can be found below.

Omitted Independent Digital Lessons

With Zearn Math, all 1st–5th grade students learn new content in multiple ways: in Independent Digital Lessons and in Small Group Lessons. Based on field research and input from partner teachers, the Zearn Math curriculum includes certain lessons that are best suited for live instruction in Small Group Lessons. These lessons are noted in all individual Mission Overviews.
REQUIRED MATERIALS

» Devices and headphones
  1 compatible device per every 2 students
  1 set of headphones per student

» Student paper materials
  G1-5: 1 set of Student Notes, Exit Tickets, and Mid- and End-of-Mission Assessments per student for all Missions
  K: 1 Exit Ticket per student for Missions 5 and 6

» Teacher paper materials
  G1–G5: 1 set of materials for Teacher-Led Instruction per teacher for all Missions
  K: 1 set of materials for Teacher-Led Instruction per teacher for all Missions
  1 set of Teacher Answer Keys per teacher (optional)

» Additional materials
  1 individual whiteboard per student (or writing paper)
  1 manipulative set per classroom, outlined below by grade