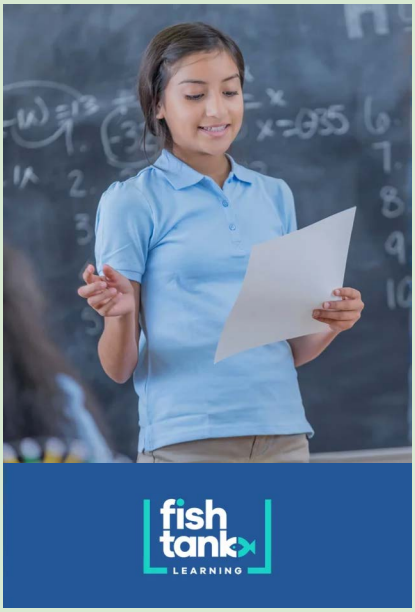
FISHTANK PLUS MATH

FISHTANK LEARNING, 2021

PUBLICATION DATE: AUGUST 2024



Fishtank Plus Math is an online mathematics program for Grades 3-8. Please see the Fishtank Learning website and the publisher-provided information later in this report for product specifications. Grades reviewed: 3-8

Note: *Because very few Massachusetts educators have experience using this product, the CURATE panel did not have access to survey or interview data when conducting this review.*

Fishtank Plus Math

Fishtank Learning, 2021

Mathematics, Grades 3-8

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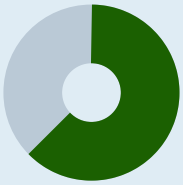
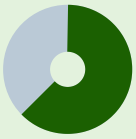
Content Standards and Organization

Grade-Appropriate Practices



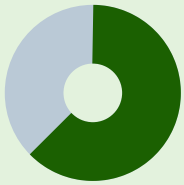
Standards Alignment

Accessibility for Students



Usability for Teachers

Impact on Learning



Classroom Application

Overall

Meets Expectations - Most or all evidence indicates high quality; little to none indicates low quality. Materials may not be perfect, but Massachusetts teachers and students would be well served and strongly supported by them.

Partially Meets Expectations - Some evidence indicates high quality, while some indicates low quality. Teachers in Massachusetts would benefit from having these materials but need to supplement or adapt them substantively to serve their students well.

Does Not Meet Expectations - Little to no evidence indicates high quality; most or all evidence indicates low quality. Materials would not substantively help Massachusetts teachers and students meet the state's expectations for teaching and learning.

Not Applicable (N/A) - Materials were not designed to address the criterion, and the publisher explicitly named the omission in legal submissions. This rating applies only to the Foundational Skills criterion in the K-5 ELA/Literacy rubric. It signals that the core curricular materials is without foundational skills and will need to be paired with a strong foundational skills resource to address all components of the core literacy block.

No Rating - Evidence is insufficient to generate rating.

Overall

The Bottom Line

Fishtank Plus Math is well-aligned to Massachusetts standards and feature content that effectively balances the pillars of rigor. Tasks are well-aligned to lesson objectives, advancing student learning with clear purpose. Lesson activities expose students to a range of representations and mathematical tools, and they include frequent opportunities for students to explain their thinking and respond to others' reasoning. However, materials provide insufficient opportunities for students to strategically choose which tools they will use to solve a problem. Teacher-facing materials lack lesson-specific support for English learners (ELs). In addition, teachers will need to adapt materials substantively to affirm students' diverse cultures and perspectives.

Standards Alignment

Content Standards and Organization

Strengths

- Materials feature a coherent progression of content and are explicitly designed to align with Massachusetts Curriculum Frameworks. Each Lesson Map and individual lesson plan provides standards alignment information. The Unit Summary contains information on how content aligns to students' prior and future learning.

- Materials effectively balance conceptual understanding, procedural fluency, and real-world application. In Grades 3-5, materials provide a wide range of fluency lessons and activities, including 10-15 minutes of daily fluency practice. In addition, materials provide robust tasks and instruction to support students building conceptual understanding. For example, in Grade 8, Unit 3, Lesson 1, students watch videos of Ms. Pac-Man and discuss Ms. Pac-Man's movements as they learn about translations. As students watch Ms. Pac-Man move, they independently define what a translation is. While materials regularly expose students to engaging real world problems, there are some missed opportunities to connect real world problems meaningfully to diverse students' lived experiences. For example, the Grade 6, Unit 1, Lesson 13 problem set includes questions focused on food and recipes but misses opportunities to incorporate authentic context to recipes that represent a range of diverse cultures.

Challenges

None identified

The Bottom Line

Materials progress in a coherent manner in alignment with Massachusetts standards. They provide a range of tasks and instruction with a balanced focus on conceptual understanding, procedural fluency, and real-world application. Teachers may need to adapt real-world problems to connect with students' identities and lived experiences.

Grade Appropriate Practices

Strengths

- Materials expose students to a range of representations and frequently ask students to apply representations as they solve problems. Representations include drawings, tape diagrams, tables, formulas, and a range of other ways to build mathematical meaning. For example, in Grade 7, Unit 6, Lesson 5, students find the circumference, diameter and radius of a circle. The teacher's notes explain that students can represent their thinking in various ways.

- Materials provide frequent opportunities for students to explain their thinking and evaluate the thinking of fictional characters. For example, in Grade 4, Unit 2, Lesson 12, students respond to the question, "Katie says that she can solve 32x40 by multiplying (32x4)x10. Cristina says that she can solve 32x40 by multiplying (32x10)x4. Do you agree with either or both of their strategies? Explain your reasoning." This problem requires students to both analyze others' thinking and share their own thinking. However, materials lack student-facing resources that guide students to engage in peer discourse and miss opportunities for students to evaluate their peers' thinking.

- Anchor problems provide rich opportunities for students to justify their reasoning both orally and in writing. For example, in Grade 6, Unit 8, Lesson 11, focused on statistics, students use data to make an argument. To make their argument, students must explain whether to use a measure of center or a measure of variability. Outside of anchor problems, opportunities for students to justify their reasoning take place primarily in writing, with fewer opportunities to justify reasoning orally with peers. In addition, materials lack lesson-specific support for English learners (ELs) to justify their reasoning either orally or in writing.

Challenges

- Although materials expose students to a wide range of tools and occasionally encourage the strategic selection and use of tools, Fishtank Plus Math 3-8 lacks consistent and sufficient opportunities for strategic student choice of which tools they will use to solve a problem. Across grade levels, many problems lead students towards a particular problem-solving methodology either by the phrasing of the question or through the information provided. For example, in Grade 6, Unit 3, Lesson 4, students are required to draw visual models for division problems and write the equivalent multiplication problems. In most instances, strategic selection of tools was mentioned in teacher notes rather than being embedded in student-facing materials. This puts the onus on teachers to create opportunities for students to discuss and choose tools, which can be challenging, especially for novice teachers.

- The materials provide opportunities for students to participate in regular conversation and collaboration with their peers, but inconsistently. Lessons offer some useful guidance and resources, as well as regular opportunities for partner or small group work, but the materials lack explicit, consistent, high-quality teacher guidance on how to assign students to groups. In addition, materials lack student-facing supports for peer conversations focused on lesson content; much of the guidance provided for facilitating discourse and collaboration is located primarily in teacher notes. However, all lessons do have guided questions for anchor problems, designed to be discussed as a whole group, or to scaffold the problem, increase student engagement in the content, or extend the problem itself. The onus will be on teachers to integrate strategic grouping strategies consistently.

Bottom Line

Students have frequent opportunities to apply a range of representations when solving problems. Materials also introduce students to a range of mathematical tools but typically prescribe the tool students should use to solve a problem. Tasks include regular opportunities for students to justify their reasoning and evaluate others' reasoning; however, the evaluation of others' reasoning often relies on fictional characters rather than providing opportunities for students to discuss their reasoning with actual peers. In some instances, materials lack sufficient guidance for teachers to determine when and how to engage students in small group or partner work.

Classroom Application

Accessibility for Students

Strengths

- Some lessons provide opportunities for students to choose how they will demonstrate their learning. For example, in Grade 5, Unit 5, Lesson 5, students complete a task focused on multiplication and division of fractions. The task shows students a tape diagram and number line but does not tell students they need to use either. Instead, students can choose how they demonstrate their learning on the task. However, opportunities for students to choose how they will demonstrate their learning are inconsistent and not available in all lessons.

Challenges

- Materials provide general strategies for students working below grade level and include Pre-Unit Assessments to give information about students' prior knowledge as well as those in need of additional challenge. However, the materials lack guidance for teachers to connect strategies and scaffolds to specific lesson tasks. Often the materials provide broad recommendations, and teachers need to do significant additional work to add specificity based on student needs. For example, in Grade 8, Unit 3, Lesson 5, materials recommend that teachers provide additional practice problems aligned to the lesson objectives, such as "Examples where students give new coordinate points of figures that are transformed (by a reflection, a translation, or a combination of both)."

- Additionally, there is inconsistency in the materials in the degree of specificity of directions provided for teachers: sometimes teachers are pointed to the exact location in external resources for "Additional Practice"; sometimes teachers are brought to a general website like that of Kuta Software in Grade 8, Lesson 2, and directed to locate the "Additional Practice" supports themselves. This navigation requires extra effort for teachers to integrate resources effectively into their lessons.

- Materials incorporate general tools and guidance to support English learners to access grade appropriate content. However, they lack lesson-specific guidance to support teachers in determining when to use particular strategies. For example, Math Teacher Tools: Supporting English Learners includes oral language protocols, graphic organizers, and scaffolds for ELs. These recommendations are separate from lesson plans, and teachers need to independently determine when to apply these scaffolds with students.

- Materials lack questions and tasks that affirm students' diverse cultures and identities. Although questions feature names that represent various cultures, tasks do not include scenarios that relate to students' cultural backgrounds. For example, tasks focus on topics such as mixing paint, making hot chocolate, and slicing cheese. Teachers may need to adapt tasks to provide opportunities for students to connect math learning with their lived experiences.

The Bottom Line

Many supports and scaffolds designed to help students access grade appropriate content lack necessary specificity. Materials lack lesson-specific guidance on supporting ELs, though they do include general, curriculum-wide resources. Teachers will need to adapt materials substantively to affirm students' diverse cultures and identities.

Usability for Teachers

Strengths

- Lessons advance student learning with clear purpose. All lessons include an objective and feature Target Tasks that match the language of lesson objectives. Criteria for Success in each lesson are directly aligned to the Target Task. For example, the objective for Grade 5, Unit 1, Lesson 10 is to "Read and write decimals to thousandths using base-ten numerals, number names, and expanded form." The lesson's exit ticket requires students to write the standard, written, and expanded form of rational numbers given in one of each of the aforementioned formats.

- Pacing is reasonable and flexible. Depending on the grade level, materials include approximately 145-154 days of instruction. Lessons are designed for a class period of 45-85 minutes, varying by grade level. The materials provide guidance on how much time teachers should spend on each lesson component.

- Materials provide a range of quality formal and informal assessments, such as pre-unit assessments, mid-unit assessments, lesson-level Target Tasks, post-unit assessments, and student self-assessments. Assessments include guidance for teacher follow up based on assessment findings. For example, the Grade 4, Unit 3 Pre-Unit Assessment Analysis Guide provides teachers with a potential course of action depending on students' responses to each question.

- Materials include rubrics for mid and post-unit assessments, as well as sample student responses for anchor problems, practice problems, and Target Tasks. Student self-assessments link to standards and help teachers set clear expectations for what students will learn over the course of a unit. However, sample student responses for questions lack examples at various levels of student achievement and there is no guidance provided for the teacher to avoid bias in setting expectations for students.

- Materials include strong resources focused on building teachers' mathematical content knowledge. For example, the Fishtank Plus website includes a Math Teacher Tools section that provides videos and readings to support teachers with discourse, word problems, math explanations, etc. However, materials lack resources to support teachers with culturally responsive instruction.

Challenges

- Although materials provide consistent classroom routines, guidance for teachers to implement particular structures within lessons are inconsistent and often separated from lesson-specific materials. For example, in Grade 7, Unit 7, Lesson

2 focused on random sampling, teacher guidance states that an anchor problem should be used to introduce the concept and some guiding questions are included. It goes on to state that students should talk about their methods and discuss arguments but does not include any guidance for teachers on how to group students or structures to prompt student discussion.

The Bottom Line

Lessons feature clear objectives with tasks that directly align to stated lesson objectives. Teachers will benefit from a range of high quality informal and formal assessments, which incorporate guidance for teachers to follow up. Pacing is reasonable and teachers can expect to complete all content in a typical school year. However, materials do not incorporate sufficient guidance for teachers to implement classroom routines and structures, nor do they help build teachers' understanding of culturally responsive instruction.

Impact on Learning

The Bottom Line

A DESE-commissioned policy brief found in 2018 that "research has yet to catch up to recent developments in curriculum materials." As with many comprehensive curriculum products currently in use, high-quality studies of student learning impacts that meets a definition of evidence in tiers 1, 2, as defined by ESSA, are not yet available for *Fishtank Plus Math*. This is a promising and important area for further study.

Looking for more information? Read the full EdReports review or find a Massachusetts district using this product.

What the Publisher Says....

We asked publishers for information on product specifications and technological requirements, professional learning opportunities for Massachusetts educators, and diversity of representation in their materials. See what Fishtank Learning had to say about *Fishtank Plus Math*.

Diverse Representation

Describe how you ensure that students of diverse races, ethnicities, nationalities, socioeconomic classes, family experiences, linguistic backgrounds, abilities, cultures, religions, genders, gender identities, sexual orientations, and other identities see themselves fully reflected and respected in your curriculum. For example, describe any bias or inclusivity review procedures you have in place and provide evidence of their efficacy.

We believe that all students deserve access to high-quality curriculum and that students should not need to prove they can do rigorous, grade-level math in order to gain access to it. We see these beliefs as key components of supporting anti-racist school practice, and we share our curriculum as a trusted resource for educators in this work. As a curriculum team, we are continually listening, learning, and iterating on our curriculum and resources to get this work right. We strive to help all students see themselves as confident and competent mathematicians who are able to apply their math knowledge both in and out of the classroom as global citizens.

Our problems are written to reflect a wide range of identities and real-life contexts. The contexts and quantities used within problems do not suggest certain levels of wealth or access to opportunities. At times, common contexts that are accessible to most, such as school, nature, daily activities, temperature, or sports, are used. For example, in Anchor Task 1 of this Grade 5 lesson, students identify contextual situations that represent a fraction addition problem. Given the language demand on top of the mathematical understanding in this problem, the authentic, common contexts help to lighten the cognitive load as students work through the problem.

Other problems offer opportunities to connect to specific cultures and provide windows and mirrors for students. Anchor Problem 1 of this Grade 6 lesson applies ratio reasoning to a popular Puerto Rican recipe, arroz con gandules, offering the opportunity for students to talk about recipes from their own cultures. We aim to use engaging contexts that are interesting to students and connect to the real-world. Anchor Task 1 from this Grade 4 lesson invites students to investigate a newspaper headline featuring a record-breaking pumpkin at the Topsfield Fair.

Gender is also balanced to avoid negative stereotypes around gender assignments, such as boys playing sports and girls baking. Situations that imply a binary gender are also avoided, such as a problem asking for a total number of people when given

the number of girls and the number of boys. Gender neutral names and pronouns are present in the curriculum as well.

Our team is constantly looking at our content through the lenses of diversity, equity, and inclusion and making edits and revisions. Currently, we are undergoing a project to collect objective data on all of our Anchor Problems/Tasks, Target Tasks, and word problems to identify names used, contexts used, genders, careers, and family structures, to name a few. Once the data has been collected, we plan to bring together a group of advisors to review the data and discuss where we have room for continued growth.

Professional Learning

Describe any professional learning opportunities (materials or experiences, publisher-provided or otherwise) available for Massachusetts educators that are designed to support high-quality implementation of your curriculum.

Fishtank Learning offers a Math Professional Learning series that supports schools and school leaders in implementing the curriculum. Our Professional Learning opportunities are featured in the Professional Learning Partner Guide by Rivet Education, recommended for offering high-quality, curriculum-based profession learning services.

The Fishtank Math Launch Professional Learning series includes four on-demand, online modules and three hours of Train the Trainer meetings for instructional leaders. The meetings aim to build the capacity of instructional leaders and coaches to effectively facilitate and guide staff through the modules, and to ensure continued, ongoing success with the materials. The content is self-paced and available throughout the full school year.

The four modules are:

- Introduction to Fishtank Math
  Participants dive into the design decisions behind Fishtank Math and learn where to find all the key elements of the curriculum
- Planning for a Fishtank Math Unit
  Participants explore the importance of intellectually preparing to teach a unit and learn a step-by-step process to do so
- Internalizing a Fishtank Math Lesson
  Participants learn to identify the different components of a Fishtank Math lesson and a step-by-step process for preparing to teach a lesson
- Supporting Just-in-Time Instruction
  Participants explore strategies to weave in just-in-time review and practice with foundational content, while ensuring students spend the majority of time in grade-level instruction

In addition to the Math Professional Learning series, there are other resources available on the site to support teachers in effectively implementing the curriculum. In our Math Teacher Tools, there are in-depth resources available for topics such as Preparing to Teach Fishtank Math, Academic Discourse, Assessments, and Procedural Skill and Fluency. Math units also feature Unit Launches, which are opportunities for teachers to dive deep into both the content of the unit and pedagogical moves to support the content.

Product Specifications

Describe what a school or district needs to implement your curriculum successfully, including instructional hours and technological infrastructure. Provide basic information about what products are associated with the curriculum (e.g., what texts a typical purchase includes, what tools are openly available online).

At Fishtank Learning, we are continuously working to improve our resources by turning to research, collaborating with partners, and seeking out feedback. We thank the CURATE team for their review of our curricular materials. We are excited to see many of the strengths of the Fishtank curriculum highlighted in the report.

The report noted some challenges teachers may encounter in implementing the Fishtank Math Curriculum. Some of these challenges we have also identified through our own learning and avenues of feedback, and as a result, we are working to address in upcoming revisions of the curriculum. This includes, but is not limited to, increasing the opportunities within the curriculum where students' diverse cultures and identities are affirmed, and including additional facilitation guidance for instructional tasks to better support teachers in the classroom.

We were disappointed to not fully meet expectations around grade-appropriate practices, as this feels inconsistent with our score of 10/10 in Math Practices in our EdReports review. We accept that we share a different approach to MP5; In the Fishtank math curriculum, we aim to introduce students to different tools and strategies over sequences of lessons, provide them with opportunities to learn how to use them, and give them opportunities to make their own choices.

We agree with CURATE that providing students and teachers with strong curricular materials can be a powerful way to accelerate student learning at scale. We believe that Fishtank Plus Math offers a strong, cohesive math curriculum option for MA educators.

Response to Report

None submitted.