



EF+Math Competitive Product Analysis

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Introduction

EF+Math is an advanced inclusive research & development program that seeks to dramatically improve math learning outcomes for students in grades 3–8, with a focus on Black and Latino students, and students of all races experiencing poverty, by strengthening the core assets every student has — executive function (EF) skills. Through the EF+Math Program, teams of educators, students, researchers, and developers work together to co-design and test innovative math learning products that are designed to improve learning outcomes and affirm the brilliance of Black and Latino students and students experiencing poverty.

This report compares three products developed with funding and support from EF+Math —MathFluency+, CueThink, and Fraction Ball—with leading competitor products in the field. Based on a review by the Rennie Center that compared EF+Math-supported products to competitor products using a rubric and qualitative evaluation, each product offers unique strengths as well as targeted use cases, which are described in this report.

EF+Math Products: Competitive Advantage

The three products developed with support from EF+Math—CueThink, MathFluency+, and Fraction Ball—stand out for their intentional integration of executive function development with student-centered, equitable math instruction. While most competitor programs emphasize content coverage or fluency practice, these products distinguish themselves by weaving together cognitive skill-building, cultural relevance, and inclusive design to create empowering, identity-affirming learning experiences. By fostering persistence, metacognition, collaboration, and conceptual understanding, they expand opportunities for all students, especially those from historically marginalized communities, to excel in rigorous mathematics. Through their unique combination of high-quality math instruction and executive function support, the products developed with funding and support from EF+Math provide a more holistic approach to learning, positioning students for deeper engagement, stronger learning habits, and long-term success across multiple domains.

While united by a shared commitment to integrating executive function development with rigorous math learning, each of the products supported by EF+Math brings distinct strengths to the field. MathFluency+ focuses on building fluency alongside executive function skills like working memory and inhibitory control, using an accessible, low-text digital platform that supports diverse learners through adaptive, engaging games. CueThink emphasizes structured problem-solving and collaborative mathematical discourse, helping students develop metacognitive strategies and perseverance through peer interaction and culturally relevant problem contexts. Fraction Ball distinguishes itself by blending kinesthetic learning with conceptual understanding of fractions, creating joyful, movement-based activities that build cognitive flexibility and foster collaboration. Each product offers a unique pathway to combining cognitive, academic, and social-emotional growth within math instruction. The following section describes the unique strengths and areas for growth of each product.

MathFluency+

MathFluency+ offers an engaging, visually rich platform where students build math fluency through animated, interactive games. The student-centered program goes beyond rote memorization to integrate executive function development and conceptual math understanding without relying on language. Compared to three other fluency programs reviewed, MathFluency+ provides significantly more information for educators on alignment to learning science, supports a wider range of learner needs through its visual approach, and features a more intuitive and visually clear user interface. The following section describes how MathFluency+ compares to three leading math fluency programs.

Product & Competitor Overview

Criterion	Product Comparison
Purpose	MathFluency+ was developed to build both math fluency and executive functions through adaptive digital tasks. Other fluency programs emphasize rapid recall and motivation through repetition and gamification, without a broader cognitive development goal.
Audience	MathFluency+ and other fluency competitors are designed to support all students, including those with diverse learning needs. MathFluency+ is better able to serve multilingual learners or those who struggle with written language, as its platform offers low-text math tasks.
Implementer	MathFluency+ is intended to be used both independently by students and in teacher-facilitated settings. By contrast, other fluency programs are primarily designed for students to use independently.

Strengths of MathFluency+

One of MathFluency+'s key advantages is its integrated approach to fluency and executive function (EF) development. Unlike other programs that focus primarily on speed and repetition, MathFluency+ embeds opportunities to focus on executive functions within its instructional design. The program's focus on working memory development is particularly strong, incorporating a game in which students see operations presented in clouds before they disappear, and must remember them as they solve problems. Games are self-paced and adapt to student proficiency, encouraging students to reflect on their thinking and build learning habits that extend beyond math facts. As students build fluency, they free up space in their working memory to engage in more complex, multi-step problems.

It prioritizes engagement and accessible user design, including minimal text and simplified navigation. MathFluency+'s low-text approach offers the greatest potential among its peers for differentiation, making it accessible to students with diverse learning needs. In terms of engagement, MathFluency+ includes a wider variety of game types than most other fluency programs, resulting in a more dynamic student experience.

Furthermore, MathFluency+ offers more robust teacher guidance than its competitors. Specifically, the program incorporates guidance to embed the program within the classroom and to use the program as homework. The program also includes professional learning videos that build educators' understanding of both fluency and executive functioning. MathFluency+ reporting tools are stronger and easier to act upon than those provided by most competitors. Competitor reporting tools are very basic and do not provide specific guidance on how teachers should act upon data findings. The student-facing dashboard in MathFluency+ is more user-friendly than competitor offerings.

Areas for Growth

While MathFluency+ demonstrates many strengths, there are specific areas for growth that mirror challenges noted among its competitors. Like other programs reviewed, MathFluency+ offers limited resources aimed at fostering students' sense of belonging in the math classroom, an important factor in promoting student engagement and persistence. For example, mini-lessons do not provide opportunities for students and their peers to discuss connections between their math learning and their lived experiences. Aside from integrating characters who represent diverse cultures, MathFluency+ does little to affirm diverse cultural backgrounds and identities through its games and content. Although accessibility is generally a strength of the program, it does not provide specific support for students with low vision, a gap that is consistent across its competitor products as well. Additionally, neither MathFluency+ nor its competitors offer embedded instructional support for students who consistently answer questions incorrectly. Beyond displaying the correct answer, programs do not provide feedback to support students in addressing misconceptions and improving their understanding.

In summary, MathFluency+ offers a more inclusive, developmentally responsive, and engaging experience than other fluency programs. Its attention to executive functions, accessibility, and user-centered design positions it as the most future-ready fluency program reviewed.

CueThink

CueThink cultivates mathematical discourse, collaboration, and perseverance through structured problem-solving routines, empowering students to see themselves as capable mathematical thinkers. Compared to leading core curriculum platforms and supplemental adaptive learning platforms, CueThink stands out for its focus on metacognition, collaboration, and structured problem-solving—though it requires thoughtful teacher facilitation and curriculum integration. The following section describes how CueThink compares to three leading math instructional programs.¹

Product & Competitor Overview

Criterion	Product Comparison
Purpose	CueThink is designed as a supplemental tool to strengthen student problem-solving, reasoning, and discourse. Two competitors reviewed provide core curricula that offer a full scope and sequence, and a third provides an adaptive supplemental program.
Audience	CueThink supports middle school students in building metacognitive strategies through structured problem-solving. It can be used by all students and is specifically intended for Black and Latino students and students experiencing poverty. Comparison products are designed for use by all students, though some can be used for intervention.
Implementer	CueThink is used by teachers to facilitate structured math discussions. Teachers assign problems, guide discussions, and interpret open-ended student work—a contrast with one competitor’s independent, fully-digital structure. The two core curricula reviewed are used by teachers in a classroom setting.

Strengths of CueThink

CueThink emphasizes reasoning, collaboration, and a robust problem-solving process. It provides culturally relevant problem contexts and offers consistent exposure to rigorous, multi-step problems. Its process scaffolds structured mathematical conversations, and it facilitates robust opportunities for students to learn from and respond to their peers’ work.

¹ Although CueThink is a supplemental instructional resource, it was compared in this analysis to two core curricula and one other supplemental product due to its purpose and functionality. The selected competitor products represent some of the highest quality instructional resources available and, overall, offer more robust functionality than those chosen for comparison with the other two products.

CueThink's structured approach to problem solving introduces a range of tools and strategies to support diverse learning needs. Its focus on persistence in problem-solving strengthens students' inhibitory control, outperforming competitor products in this critical area of executive function development. CueThink also distinguishes itself by offering math content that affirms diverse cultures and resonates with students' lived experiences; many problems have been thoughtfully redesigned for cultural relevance, with educators able to view the original problems, learn about the redesign process, and select revised problems that better reflect their students' backgrounds. For example, one problem was redesigned from a context of bowling to focus on a context of air quality, as this was a topic of importance to the community designing the problem. This attention to cultural relevance significantly exceeds that found in competitor resources.

Embedded problem-solving strategies, which also serve as scaffolds for learning, are another strength of CueThink, representing a level of support not commonly seen across the broader market of supplemental math instructional materials. Additionally, while peer collaboration is a feature of many core curricula, it is rare among supplemental resources; CueThink stands out by actively building students' capacity to share their thinking and learn from one another, fostering a stronger sense of belonging in the math classroom. Through its structured routines, CueThink also promotes reflection and strengthens students' metacognitive skills, supporting deeper and more sustained mathematical engagement.

Areas for Growth

Despite its strengths, CueThink faces certain limitations compared to its competitors. CueThink covers a narrower range of Common Core State Standards and Mathematical Practice Standards than its competitors. Additionally, while adaptive learning has become a common feature in digital math programs, CueThink does not personalize content based on student performance. Some competitors continuously adjust content in response to student performance, enabling personalized learning paths with minimal teacher intervention.

Although CueThink's interface is intuitive and easy to navigate, it is less visually polished and gamified than its competitors, which may reduce its appeal for some students. In terms of English learner support, CueThink's resources are comparable to other supplemental products but are not as extensive as those offered by the core curriculum platforms. Finally, CueThink provides less robust teacher feedback and reporting capabilities than competitor products, which may limit its ease of use for progress monitoring and instructional decision-making.

In summary, CueThink offers a strong supplemental resource by consistently exposing students to rigorous, multi-step problems and equipping them with a structured set of tools and strategies. It stands out for its emphasis on persistence, its culturally relevant problems, and its opportunities for peer collaboration.

Fraction Ball

Fraction Ball creates joyful, physically active learning environments where conceptual understanding of fractions and executive function skills are developed together. Compared to other movement-based math programs, Fraction Ball distinguishes itself through its intentional integration of rigorous mathematical learning with kinesthetic engagement. It excels at fostering student collaboration, agency, and conceptual thinking. The following section describes how Fraction Ball compares to three competitors that integrate kinesthetic learning in mathematics.

Product & Competitor Overview

Criterion	Product Comparison
Purpose	Fraction Ball is designed to build conceptual understanding of fractions through movement-based, collaborative activities. Other movement-based programs lack the same emphasis on conceptual understanding. While some aim to support general algebra readiness, others prioritize physical activity without explicitly developing targeted math skills.
Audience	Fraction Ball and two of its competitors are unique in their explicit focus on making math relevant to the lived experiences of Black and Brown students and students experiencing poverty.
Implementer	Fraction Ball and the three competitors are designed to be implemented in classrooms, with teachers overseeing implementation. One competitor program can also be used in community-based/after school program settings.

Strengths of Fraction Ball

Fraction Ball demonstrates notable strengths across multiple dimensions critical to high-quality, equitable math instruction. It provides educators with clear information on standards alignment, a support not consistently offered by its competitors, and delivers a robust focus on conceptual understanding of fractions—an essential foundation for mathematical proficiency. Fraction Ball outperforms all competitor programs in supporting the development of executive functioning skills, including cognitive flexibility, working memory, and inhibitory control. In terms of cultural relevance and student belonging, Fraction Ball excels in creating learning experiences that connect to students' lived experiences and foster inclusive, affirming math environments. While all four programs are effective in engaging students, Fraction Ball's integration of physical activity with math content is notable. Two of the competitor programs incorporate movement primarily as a means to boost student engagement, whereas Fraction Ball uses movement intentionally to deepen students' mathematical understanding. Furthermore, Fraction Ball outperforms most competitors in accessibility for multilingual learners, offering resources that

support those learning English to access rigorous tasks. Finally, Fraction Ball distinguishes itself by offering a wider range of scaffolds and differentiation recommendations than its competitors.

Areas for Growth

While Fraction Ball's game-based program has many strengths, some areas for growth remain. Teacher-led discussions successfully embed a focus on building students' metacognitive skills; however, the program misses opportunities to more explicitly engage students in discussions around math confidence and their feelings about mathematics—a gap similarly observed in most competitor products. Fraction Ball's professional learning materials are also more limited compared to competitors, providing less structured support for educators seeking to deepen implementation. In terms of design, the user interface is functional but less polished than that of some competitor programs. Additionally, Fraction Ball and its competitors do not incorporate significant data collection or reporting features, limiting opportunities for real-time instructional adjustment based on student performance.

In summary, Fraction Ball provides an innovative, kinesthetic approach to building mathematical understanding and executive function skills. It offers a highly engaging experience for students and supports conceptual learning in a joyful, collaborative setting. Its intentional design makes it a valuable resource for promoting deep, inclusive math learning experiences focused on fractions.

About the Review Process

The Rennie Center for Education Research & Policy, in partnership with EF+Math, developed a standards-based rubric to guide the evaluation of instructional materials. The rubric focused on six core criteria:

- 1. Rigorous, High-Quality Math Instruction:**
Materials were evaluated for their alignment to grade-level math standards, emphasis on conceptual understanding and/or multi-step problem solving, and support for mathematical practices.
- 2. Executive Functions:**
Materials were assessed based on how effectively they support the development of executive functioning skills, such as cognitive flexibility, working memory, and inhibitory control.
- 3. Student Experience:**
Materials were reviewed for their ability to create engaging, empowering, and inclusive learning environments. This section also included a focus on creating a sense of belonging in the math classroom and reducing math anxiety.
- 4. Accessibility:**
Materials were evaluated for their ability to support diverse learners, including multilingual learners and students with varying needs.
- 5. Teacher Experience:**
The design and ease of use for teachers was assessed, with attention to professional development, classroom routines, reporting features, and intuitive navigation.
- 6. Digital Capability:**
Materials were evaluated for their integration of digital tools, including those focused on data collection and reporting.

Following the development of the rubric, the Rennie Center team identified a set of competitor programs for each of EF+Math's three products. Competitor programs were selected based on their relevance to target grade levels, instructional focus, and alignment with key program characteristics. Identified materials were then advanced for review using the rubric to determine how EF+Math's products compared to competitors in each rubric domain.

About the Rennie Center

A nonprofit based in Boston, the Rennie Center for Education Research & Policy serves as an “action tank,” pairing research with on-the-ground practice to promote effective change within schools and classrooms and then leveraging these experiences to inform statewide policy conversations. Our mission is to drive policymaking and practice that leads to better outcomes for all students—especially those who have been historically marginalized.