Pasco School District K-6 Mathematics Interventions Resource Document

The purpose of this document is to provide users with information regarding mathematics interventions available at K-6 buildings in the Pasco School District. It is intended to help those who access the document make informed decisions about specific interventions to use with particular children as well as the future purchase of intervention materials. This document is a work in progress and new information will be added as it becomes available. Please direct questions to Megan Nelson(mnelson@psd1.org).

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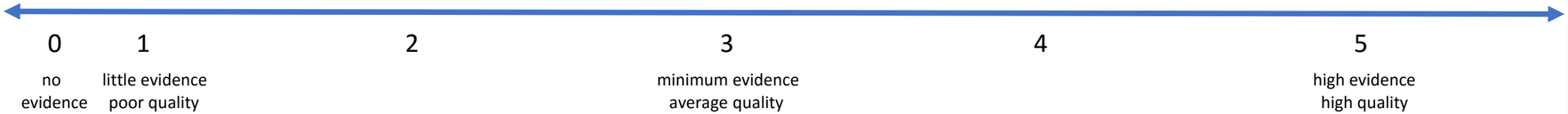
Rating Scale: The interventions were examined by separate categories and rated according to a rubric. Each intervention was reviewed separately by grade level, but rated by K-6 domains.



KEY

FLUENCY = Procedural Fluency; CONCEPTUAL = Conceptual Understanding; TTM = Technology, Tools, & Models; VOCAB = Key Vocabulary; DISPOSITION = Productive Disposition; REASONING = Strategic Competence; ENGAGEMENT = Student Engagement; USAGE = Ease of Use for Teacher (*see* glossary for further description)

Navigating the Document: Page 2 (Home Page) provides the ratings for each category of all intervention programs. For more details regarding a specific intervention, click on the title of an intervention from the Home Page. To return, click on the Home icon.

K-6 MATHEMATICS INTERVENTIONS

	FLUENCY	CONCEPTUAL	TTM	VOCAB	DISPOSITION	REASONING	ENGAGEMENT	USAGE
DreamBox Learning	*4*	*3*	*5*	*2*	*4*	*2*	*5*	*4*
IXL Math	*3*	*2*	*3*	*2*	*2*	*1*	*4*	*4*
Math Expressions	*5*	*4*	*5*	*5*	*4*	*3*	*4*	*3*
MobyMax Mathematics	*3*	*2*	*2*	*1*	*2*	*1*	*3*	*4*
ORIGOmath	*5*	*5*	*4*	*4*	*4*	*3*	*4*	*3*
ORIGO Box/Book of Facts	*5*	*5*	*4*	*3*	*4*	*3*	*3*	*4*
ORIGO Fundamentals	*5*	*4*	*4*	*2*	*4*	*3*	*5*	*3*

K-8 DREAMBOX LEARNING

Duration of Intervention	**Minutes per Session:** *20-30 minutes/day*	Procedural Fluency (FLUENCY): *Students have various opportunities to build procedural fluency (Domains CC, OA, NBT, RP, NS, EE, MD, SP, G), using different representations and methods. As lessons progress, students are also exposed to standard algorithms for each operation. Students do not share their thinking, unless they are provided a Math Journal, found under the Resources tab on the dashboard.*
	Sessions per Week: *4 to 5*	Conceptual Understanding (CONCEPTUAL): *Although students do not have an opportunity to self-select various tools (models) or methods (representations), those presented in each activity (Domains CC, OA, NBT, RP, NS, EE, MD, SP, G) expose students to appropriate tools and models. Teachers can assign specific lessons and the computer adaptive technology provides students with a choice of lessons to pick.*
	Number of Weeks: *ongoing (1-39 weeks)*	Technology, Tools, & Models (TTM): *Visuals and electronic manipulatives assist students to build foundations of mathematical concepts and academic language* . Computer adaptive technology assures students are working at an appropriate level. The online platform allows students to access their account during and outside of school hours.
Suggested Groupings: *individual, small group*		Key Vocabulary (VOCAB): Oral and written instructions are presented in a kid-friendly manner, however in every mathematical concept grade-appropriate academic language is not always utilized.
Cost: *$6,000/site*		Productive Disposition (DISPOSITION): *Various aspects of the "gaming" experience (avatars, rewards, hints, ...) provides high engagement opportunities. The environment is modified to match age range of students (K-2, 3-5, and 6-8).*
Language of Instruction: *English* *Spanish*		Strategic Competence (REASONING): *Even though students are not required to share their thinking, the lessons are designed in such a way that they are required to think critically when solving problems.*
Training: *periodic webinars for initial and experienced users (see PD calendar);* *embedded PD (see Flex PD and Resources on Dashboard);* *District and building experts*		Student Engagement (ENGAGEMENT): *The "gaming" platform allows students to intuitively navigate from activity to activity, as well as the other areas of their dashboard. Students can access the program during school and outside of school (activated at teacher's discretion).*
		Ease of Use (USAGE): *Teacher dashboard provides real-time data and gives several reports to assist in monitoring a student, access to professional development, and other resources. Teachers can access the program from school or any other location (with internet access).*
		Program Manipulatives & Required Platforms: *Computer or i-Pad required. All manipuatives are electronic (provided in each lesson) or accessed by the teacher under the Resources tab (Teacher Tools).*
		Key Words: *adaptive; adjustable lessons; blended learning; computer-based; computer-managed; conceptual understanding; differentiated-learning; ELL; engaging environment; individual instruction; pedagogically sound; personalized lessons; real-time data; research-based; RtI; small-group instruction; standards-based; student choice; teacher-managed*

IXL MATH

Duration of Intervention	**Minutes per Session:** *No recommendation,* supplement core instruction	Procedural Fluency (FLUENCY): Additional practice activities (*Domains CC, OA, NBT, RP, NS, EE, MD, SP, G) are procedural based and provide many problems to build students' procedural fluency. It appears to be bank of "worksheet-type" problems.*
	Sessions per Week: *supplement core lessons*	Conceptual Understanding (CONCEPTUAL): *Lessons are very procedural in nature with little conceptual development. The focus seems to be providing additional practice. Students do not have an opportunity to self-select various tools (models) or methods (representations) to solve the problems. Teachers can assign specific skills, as well as the computer adaptive technology identifies students' areas of weakness. As mistakes are made, an explanation uses models, patterns, and other visual representations.*
	Number of Weeks: *ongoing (1-39 weeks)*	Technology, Tools, & Models (TTM): In the primary grades, more models are used, whereas in the intermediate grades fewer visuals are given.
Suggested Groupings: *individual, small group*		Key Vocabulary (VOCAB): *Although it appears that appropriate academic language is used, there are no other language development supports (e.g., glossary, highlighted text, justification opportunities, etc.).*
Cost: *$249/classroom*		Productive Disposition (DISPOSITION): *Gives students opportunities to reason logically, problem solve, and persevere with each skill or concept (Domains CC, OA, NBT, RP, NS, EE, MD, SP, G).*
Language of Instruction: *English*		Strategic Competence (REASONING): *Students are not given an opportunity to share their reasoning or solution path. However, as students make mistakes they can determine where their thinking went awry as they review an explanation for solving the problem.*
Training: *Online training and support provided*		Student Engagement (ENGAGEMENT): *Students can access the program during and outside of school .*
		Ease of Use (USAGE): *Teacher can access data and monitor students' progress. Teachers can access the program from school or any other location (with internet access).*
		Program Manipulatives & Required Platforms: *Computer required; no additional manipulatives necessary.*
		Key Words: *adaptive; computer-based; computer-managed; differentiated-learning; individual instruction; real-time data; small-group instruction; standards-based; teacher-managed*

MATH EXPRESSIONS (Intervention Materials)

Duration of Intervention	**Minutes per Session:** *20-40*	Procedural Fluency (FLUENCY): Intervention materials (Tier 1, 2, 3) are provided for each lesson. For example, individualized worksheets, differentiation cards, Soar to Success, journal prompts, MegaMath ... These various resources support students developing procedural fluency in the domains CC, OA, NBT, RP, NS, EE, MD, SP, G.
	Sessions per Week: *3-5*	Conceptual Understanding (CONCEPTUAL): *Although the intervention components are designed to build understanding, resources use a direct instruction model, giving limited opportunities for students to choose their own solution strategies or justify that decision.*
	Number of Weeks: *ongoing (1-39 weeks)*	Technology, Tools, & Models (TTM): *The various intervention components utilize appropriate technology, various models and mathematical tools.*
Suggested Groupings: *individual, small group*		Key Vocabulary (VOCAB): In each lesson, mathematical vocabulary are identified and used throughout the program. There are some specialized (program specific) language that teachers should assist in identifying appropriate synonyms.
Cost: *included in district adoption of core program*		Productive Disposition (DISPOSITION): *As students gain deeper conceptual understanding, they can become more flexible with numbers and motivated when facing unfamiliar problems. What is more, the program exposes students to mathematical activities that require productive struggle within their zone of proximal development.*
		Strategic Competence (REASONING): *Program relies heavily on rote memory and procedural problem solving strategies rather than inquiry-based problem solving.*
Language of Instruction: *English & Spanish*		Student Engagement (ENGAGEMENT): *The lesson materials provide direct instruction opportunities, games and other activities allow for the application of operational strategies.*
Training: *program overview (purpose, progression of mathematics, and how to use).* *Navigating ThinkCentral is helpful.* 		Ease of Use (USAGE): *Most of the activities require preparation and gathering of material and worksheets need printing. Directions are provided and the key mathematical ideas are identified. The teacher resources provide question ideas to use during the lesson and discussion.*
		Program Manipulatives & Required Platforms: *Blackline masters, differentiation cards, and other program materials are provided in hard copy and electronic formats. Some supplemental manipulatives are necessary for activities and games.*
		Key Words: *differentiated-learning; individual instruction; small-group instruction; standards-based; teacher-managed*

K-6 MOBYMAX MATHEMATICS

Duration of Intervention	**Minutes per Session:** *65 minutes/day* (30 math; 15 fluency; 20 number)	Procedural Fluency (FLUENCY): *Students have many opportunities to build procedural fluency (Domains CC, OA, NBT, RP, NS, EE, MD, SP, G), however there are not many representations or models used in lessons (activities). Individual component that stress operational fluency via timed drills. As lessons progress, students are exposed to standard algorithms for each operation early.*
	Sessions per Week: *5*	Conceptual Understanding (CONCEPTUAL): *Lessons are very procedural in nature with little conceptual development. Students do not have an opportunity to self-select various tools (models) or methods (representations) in the problems that are presented. Teachers can assign specific lessons and the computer adaptive technology provides students with a choice of lessons to pick.*
	Number of Weeks: *ongoing (1-39 weeks)*	Technology, Tools, & Models (TTM): Few v*isuals and models used. Teacher assigns lessons. Students must complete entire lesson progression prior to going to another mathematical concept.*
Suggested Groupings: *individual, small group*		Key Vocabulary (VOCAB): *Oral and written instructions are presented in monotone voice. Does not necessarily use academic vocabulary.*
Cost: *$250/teacher per year*		Productive Disposition (DISPOSITION): *Not very appealing (mostly naked numbers and problems). Problems do not connect to the real-world; as students progress they earn gaming time, however the games appear vintage or out of date. Although the games allow students to reason, they are not directly connected to domains (CC, OA, NBT, MD, G).*
Language of Instruction: *English only*		Strategic Competence (REASONING): *Students are not given opportunities to share thinking in multiple ways.*
Training: *weekly webinars available*		Student Engagement (ENGAGEMENT): *The platform does not allow students to intuitively navigate from activity to activity. Students can access the program during school and outside of school .*
		Ease of Use (USAGE): *Teacher can access data and monitor students' progress. Some really useful reports (data) provided. Teachers can access the program from school or any other location (with internet access).*
		Program Manipulatives & Required Platforms: *Computer, i-Pad, or android phone required.*
		Key Words: *adaptive; computer-based; computer-managed; differentiated-learning; individual instruction; real-time data; small-group instruction; standards-based; teacher-managed*

K-6 ORIGOmath

Duration of Intervention	**Minutes per Session:** *60* (easily split into two 30- minute sessions)	Procedural Fluency (FLUENCY): *ORIGOmath encourages students to solve addition, subtraction, multiplication, and division problems mentally. They learn strategies and practice computation with flexible thinking and practice. The intervention program keys on the domains CC, OA, NBT, NF, RP, NS, and EE.*
	Sessions per Week: *4*	Conceptual Understanding (CONCEPTUAL): *Rather than memorize facts, students study visual representation of them and practice the computations with manipulatives that foster conceptual understanding.*
	Number of Weeks: *ongoing (1-39 weeks)*	Technology, Tools, & Models (TTM): *Students use manipulatives as tools to demonstrate their thinking. Visual models are used to introduce and reinforce mental strategies for computation.*
Suggested Groupings: *individual, small group*		Key Vocabulary (VOCAB): *Although there are opportunities for students to use academic language, teacher needs to provide structures or supports to ensure use of mathematical language during lesson and discussions. Each unit calls out specific mathematical language to explicitly teach.*
Cost: *$449.79/Teacher Edition (set)* *$99.95/Teacher Edition (each)* *$9.99/Student Journal (each)*		Productive Disposition (DISPOSITION): *As students gain deeper conceptual understanding of numbers, operations, etc., they can become more flexible and motivated students when faced with unfamiliar problems. What is more, with ORIGOmath, students are exposed to problems that require productive struggle within a zone of proximal development.*
		Strategic Competence (REASONING): *Students must think about what strategy to use when faced with math fact practice and extension. Rather than relying on rote memory for a solution (as the tradition drill and kill methods for fact fluency), students are encouraged to think about numbers as quantities and use strategic reasoning.*
Language of Instruction: *English only*		Student Engagement (ENGAGEMENT): *The lesson materials provide direct instruction opportunities. Addition of the games, electronic platform, and other interactive components increases student enjoyment.*
Training: *program overview (purpose, progression of mathematics, and how to use).*		Ease of Use (USAGE): *Most of the lessons and activities require preparation and gathering of additional material. Directions are provided and the key mathematical ideas are called out. The teacher resources provide question ideas to use during the lesson and discussion.*
		Program Manipulatives & Required Platforms: *Blackline masters, student books, additional materials need to be prepared ahead of time.*
		Key Words: *differentiated-learning; individual instruction; small-group instruction; standards-based; teacher-managed*

K-6 ORIGO (Box and Book of Facts)

Duration of Intervention	**Minutes per Session:** *10-30*	Procedural Fluency (FLUENCY): *Box/Book of Facts teaches children to solve basic facts (addition, subtraction, multiplication and division) mentally. They learn strategies and practice computation with flexible thinking through a progression of strategies that building on each other. This interventions keys in on the domains of OA and NBT.*
	Sessions per Week: *2-4*	Conceptual Understanding (CONCEPTUAL): *Rather than memorize facts, students use visual models of each strategy and practice the computations with manipulatives to foster a strong conceptual understanding.*
	Number of Weeks: *ongoing (1-39 weeks)*	Technology, Tools, & Models (TTM): *Students use manipulatives as tools to demonstrate their thinking. Visual models, which are consistent in the Book/Box of Facts, Fundamentals, and ORIGOmath are used to introduce and reinforce mental computational strategies.*
Suggested Groupings: *individual, small group*		Key Vocabulary (VOCAB): *Although there are opportunities for students to use academic language, teacher needs to provide structures or supports to ensure use of mathematical language during lesson and discussions. It does not call out specific vocabulary of focus.*
Cost: *$340.20/BoxBk of Facts (both sets)* *$224/Add-Sub BoxBook of Fact* *$224/Multi-Div BoxBook of Fact* *$107.80/Book of Facts (all 4)* *$29.95/Book of Facts (each)*		Productive Disposition (DISPOSITION): *Toward the end of mastery for each math strategy, students extend their thinking to greater numbers. With solid new strategies, students can be more productive when faced with challenges.*
		Strategic Competence (REASONING): *Students must think about what strategy to use when faced with math fact practice and extension. Rather than relying on wrote memory for a solution (as the tradition drill and kill methods for fact fluency), students are encouraged to think about numbers as quantities and use strategic reasoning.*
Language of Instruction: *English only*		Student Engagement (ENGAGEMENT): *The lesson materials provide direct instruction opportunities.*
Training: *program overview (purpose, progression of mathematics, and how to use).*		Ease of Use (USAGE): *Most of the lessons and activities require preparation and gathering of material. Directions are provided and the key mathematical ideas are called out. The teacher resources provide question ideas to use during the lesson and discussion. Teacher observation and checklist.*
		Program Manipulatives & Required Platforms: *Blackline masters (included in Book of Facts) and Fact cards provided in Box of Facts*
		Key Words: *differentiated-learning; individual instruction; small-group instruction; standards-based; teacher-managed*

K-6 ORIGO (Fundamentals)

Duration of Intervention	**Minutes per Session:** *10-20*	Procedural Fluency (FLUENCY): *The vast majority of Fundamentals games are designed as meaningful practice with computational (addition, subtraction, multiplication, and division) strategies. The intervention program keys on the domains CC, OA, NBT, NF, RP, NS, and EE.*
	Sessions per Week: *2-4*	Conceptual Understanding (CONCEPTUAL): *Rather than focusing on memorization of facts, Fundamentals uses visual representations and promotes automaticity for students. Fundamentals use of manipulatives foster a conceptual understanding for students by allowing students to choose strategies while playing each game. Students tend to think of quantities rather than just symbols when solving computations.*
	Number of Weeks: *ongoing (1-39 weeks)*	Technology, Tools, & Models (TTM): *Resources are available digitally or blackline masters. Electronic version (separate purchase) works on any device (computer, i-Pad, chrome book, etc.). When making game packets there is a need for additional items (e.g., cubes, dice, counters, etc.) and initial preparation is required.*
Suggested Groupings: *individual, small group*		Key Vocabulary (VOCAB): *Although there are opportunities for students to use academic language, teacher needs to provide structures or supports to ensure use of mathematical language during games (or discussions). It does not call out specific vocabulary of focus.*
Cost: *$29.95/Level* *$134.75/set*		Productive Disposition (DISPOSITION): *Due to the fun nature of the games, students who need remediation can be motivated to try more difficult computations. Thus providing appropriate scaffolding to ease struggling students toward a more productive disposition. The games also promote interaction, problem solving, and reasoning.*
		Strategic Competence (REASONING): *Students think about the numbers as quantities, rather than just symbols, to solve the computations. Often times too, students have to choose a solution path according to the best strategic outcome. For example, where to place a counter on the board to block an opponent.*
Language of Instruction: *English only*		Student Engagement (ENGAGEMENT): *The lesson materials provide direct instruction opportunities. Addition of the games, electronic platform, and other interactive components increases student enjoyment.*
Training: *program overview (purpose, progression of mathematics, and how to use).*		Ease of Use (USAGE): *Most of the lessons and activities require preparation and gathering of additional material. Directions are provided and the key mathematical ideas are called out. The teacher resources provide question ideas to use during the lesson and discussion.*
		Program Manipulatives & Required Platforms: *Blackline masters, game materials (counters, dice, etc.), and additional materials need to be prepared ahead of time. Electronic gameboards are available (additional cost).*
		Key Words: *differentiated-learning; individual instruction; small-group instruction; standards-based; teacher-managed*