EMBRS Math

A Research-Based Framework for Effective, Inclusive Math Instruction.

For Educators, Schools, and District Leaders Looking to Improve Math Outcomes.

embrsmath.com

Instructional Loops: The Core of EMBRS

TEACH

Clear explanations and worked examples

TALK

Structured discussion and response opportunities

TRY

Independent practice with immediate feedback

Many students struggle with math. EMBRS looks to the research to fix that. Focusing on explicit instruction, a high-response lesson framework, and providing effective feedback, EMBRS has developed the **Instructional Loop.** The **EMBRS Instructional Loop** ensures every student actively engages in learning by moving through three distinct phases:

- **TEACH**: Teachers use worked examples and think-aloud strategies to demonstrate skills.
- **TALK**: Students engage in structured discussions, correcting errors and verbalizing understanding.
- **TRY**: Students practice independently with **immediate feedback** to reinforce learning.

This cycle maximizes engagement and ensures **every student gets the support they need, when they need it**.

Explicit Instruction: Building Strong Foundations

Clear expectations at lesson start

Students understand learning goals from the beginning

Step-by-step explanations

Complex concepts broken down into manageable parts

Frequent practice opportunities

Students apply new skills with guidance

Ongoing targeted feedback

Immediate corrective feedback keeps students on track

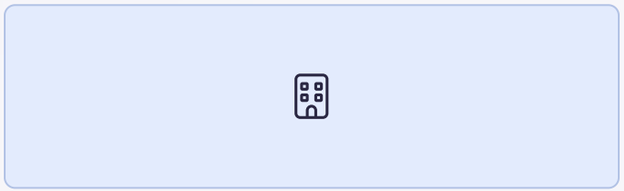
Many traditional math programs leave students to “discover” concepts on their own, often leading to frustration and gaps in understanding. **EMBRS takes a different approach.**

The result? **Fewer gaps, stronger retention, and higher achievement**.

Scaffolded Learning: Building Competence and Confidence

Prerequisite Skills

ON-RAMP lessons for foundational concepts and **HOOKS** with concrete



Core Lesson

3 **TEACH-TALK-TRY** Instructional Loops - Structured progression of new skills

Extension

ACCELERATOR activities for advanced learners

Not all students start at the same place. EMBRS ensures every learner can succeed with a structured, scaffolded approach.

- **ON-RAMP**: Two additional **Instructional Loops** to revisit **prerequisite skills** to support struggling learners.
- **Core Lesson**: Three structured **TEACH-TALK-TRY Instructional Loops** to build new skills in a progressive way.
- **ACCELERATOR**: Extension activities challenging **advanced learners** to deepen understanding.

This tiered approach ensures that all students can access grade-level content while receiving **targeted support or enrichment**.

Schema-Based Instruction: Making Word Problems Accessible

1

Identify Problem Type

Students learn to recognize common problem structures

2

Apply Appropriate Strategy

Explicit instruction on solving different problem types

3

Represent the Problem

Use diagrams, equations, or other models

4

Solve with Confidence

Apply learned strategies to new situations

Schema-Based Instruction is a key feature of EMBRS. Rather than leaving students to figure out word problems on their own, EMBRS provides explicit instruction on recognizing and solving different problem types. This approach bridges the gap between skill acquisition and application.

Cognitive Load Theory: Optimizing Learning Efficiency

Minimum Viable Explanations (MVE)

Concise, clear instructions that focus only on essential concepts, reducing cognitive overload and helping students grasp key ideas more efficiently.

Chunked Information

Content broken into manageable segments through short Instructional Loops, allowing students to process and practice one concept before moving to the next.

Reduced Distractions

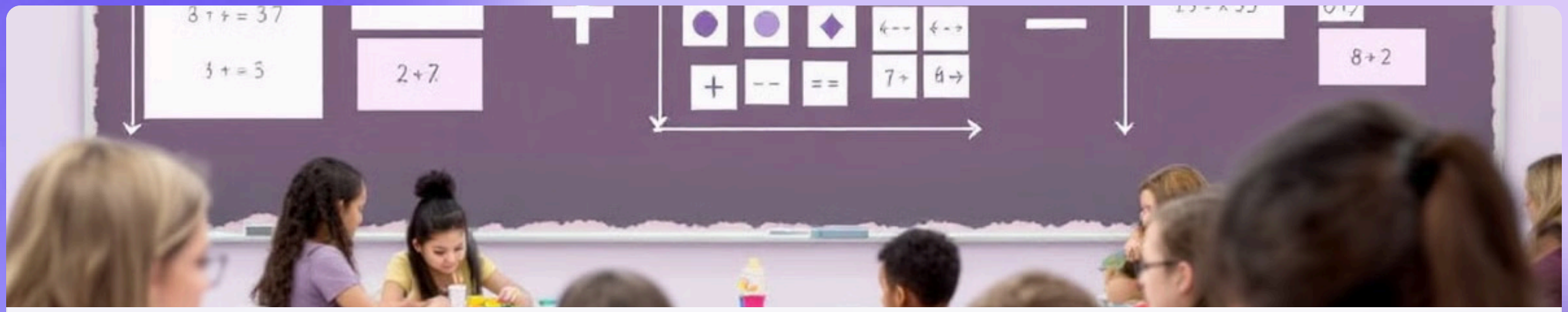
Slide designs intentionally minimize unnecessary elements, directing student attention to the mathematical content that matters most.

Reducing Cognitive Overload for Learning That Sticks

Many math programs overwhelm students with **too much information at once**. **EMBRS avoids this by:**

- **Breaking information into short segments** (Instructional Loops).
- **Minimizing distractions** (clean slide designs and clear instructions).
- **Focusing on essential concepts** (no unnecessary jargon).

By using **Minimum Viable Explanations (MVE)** —concise, high-impact instruction— and **INTERLEAVING PRACTICE** at the beginning of each lesson, EMBRS helps students **grasp key ideas faster and retain them longer**.



Concrete-Representational-Abstract Progression

Concrete

Hands-on manipulatives to build understanding

Abstract

Symbolic notation and algorithms

Representational

Visual models like number lines and diagrams

E**From Hands-On to Abstract Thinking: The CRA Progression**
Many students struggle with math because they jump too quickly to abstract symbols. **EMBRS follows the Concrete-Representational-Abstract (CRA) model to ensure deep understanding**:

- **Concrete**: Students start with **hands-on manipulatives** (e.g., blocks, counters).
- **Representational**: They transition to **visual models** (e.g., number lines, bar diagrams).
- **Abstract**: Finally, they apply symbols and equations.

This gradual approach helps students **make meaningful connections between physical experiences and mathematical reasoning**.

Inclusive Design: Supporting All Learners

Multi-Language Support

Recorded explanations available in 5 languages ensure English language learners can access high-quality instruction regardless of their English proficiency level.

- Clear, consistent language
- Audio recordings on every slide
- Multiple language options

Executive Functioning

Short instructional loops reduce working memory demands, helping students with attention or executive functioning challenges stay engaged and focused.

- Bite-sized instruction
- Frequent response opportunities
- Clear visual organization

Differentiation Options

ON-RAMPS and **ACCELERATORS** provide built-in differentiation, ensuring all students can access appropriate content regardless of their starting point.

- Support for prerequisite skills
- Grade-level core instruction
- Extension for advanced learners

Feedback and Assessment: Driving Instruction

Formative Assessment

Whiteboard responses during **TRY** phases provide immediate insight into student understanding, allowing teachers to adjust instruction on the fly.

AI-Marking-Assistant

AMIS - our Automated Marking and Insight System provides quantitative data and insights, helping teachers identify patterns and plan targeted interventions.

High-Information Feedback

Students receive specific guidance on not just what mistakes they made, but why they made them and how to improve.

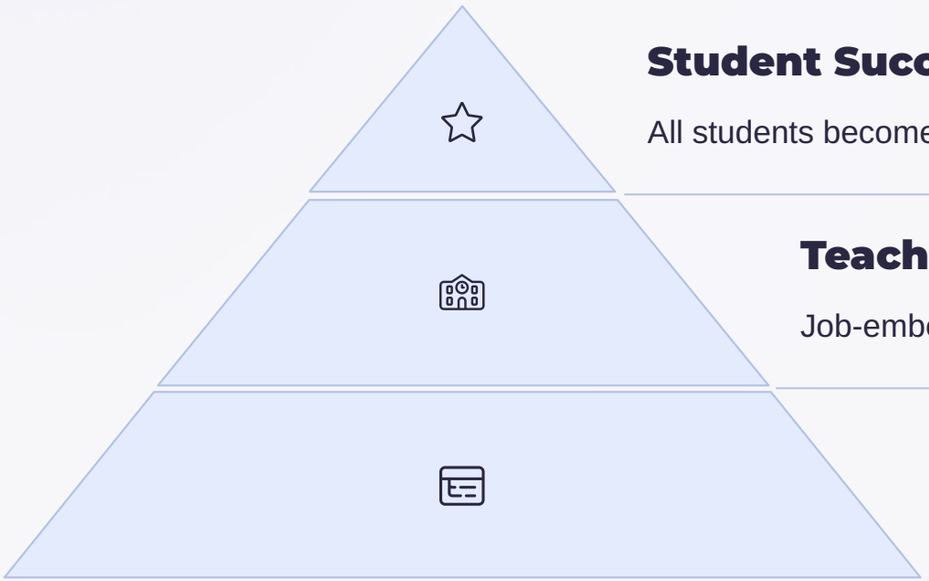
Progress Monitoring

Regular assessment helps teachers track student growth and make data-informed instructional decisions.

Providing Actionable Feedback, Instantly

EMBRS equips teachers with a powerful, integrated assessment system that delivers **real-time, high-impact feedback**. Teachers assess and provide feedback in the moment, ensuring students stay on track through each skill progression. **AMIS, the AI-Marking-Assistant** goes beyond grading—it analyzes student responses to identify trends, pinpoint misconceptions, and provide both **individual and class-wide insights**. With a combination of **in-the-moment formative assessment** and **data-driven decision-making**, EMBRS ensures every student receives the support they need—**when they need it**.

Teacher Support: Excellence Made Accessible



Student Success

All students become "math people"

Teacher Excellence

Job-embedded professional learning

Structural Support

Ready-to-implement lessons

Effortless Implementation, Lasting Impact

EMBRS is built for **seamless classroom integration**, combining **ready-to-use lessons** with **built-in professional development**. Designed to be as intuitive as a pre-made unit, yet far more **comprehensive**, EMBRS equips teachers with **structured support and proven strategies** to deliver high-quality math instruction from day one—while continuously refining their instructional practice.

By **reducing planning time** and providing step-by-step guidance, EMBRS lets teachers focus on what matters most: **engaging students,** addressing **learning needs,** and fostering mathematical **confidence**. The result? A classroom where **every student sees themselves as a "math person"—and has the skills to prove it**.

The Research Behind EMBRS

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Connect with EMBRS Math

Ready to transform math education at your school? Our team is here to help you take the next step.

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