



Welcome fellow Recovering Traditionalists to Episode 222 - Hands-On Math Isn't Just for the Little Kids {Plus Virtual Math Summit Preview}.

Today I want to revisit one of my favorite topics, something I haven't talked about in a while, but it's more important now than ever.

The CRA Model.

Welcome to Build Math Minds the podcast, where fidelity to your students is greater than fidelity to your textbook. I'm your host, Christina Tondevold, the recovering traditionalist and

BuildMathMinds.com Founder, where my mission is to change the way we teach elementary math to our kiddos. Are you ready to start building math minds and not just creating calculators? Let's get started.

If you've been around Build Math Minds for a while, you know I talk about Concrete, Representational, and Abstract. But I don't view CRA as a linear path where you start concrete, move to representational, then move to abstract. That's actually the wrong way to think about it.

I view it as a Venn diagram. Three overlapping circles. And when you hit an activity right in the middle—what I call the **Sweet Spot of CRA**—that's when the magic happens. Kids are working with manipulatives AND connecting it to a drawing AND connecting it to the written symbols... all at the same time. Those are the lessons where kids have light bulb moments. Those are the lessons where, at the end, you think, "That was SO awesome!"

Now, why am I bringing this up again?

Post-pandemic, we're seeing students who are missing foundational understanding. They've got gaps. And when students don't have that foundation, the abstract symbols of mathematics alone won't cut it.

But going ALL concrete, all hands-on, all the time, doesn't work either.

Students need the connections. They need to see how the blocks connect to the drawing, and how the drawing connects to the equation. That's the Sweet Spot.

I see this a lot in upper elementary: the idea that concrete and representational are for the little kids. That by 3rd, 4th, 5th grade, students should be past all that. They should just work with numbers and symbols.

Yes, upper elementary is when the math gets MORE abstract. But if students don't have concrete and visual experiences to anchor their understanding, they end up memorizing procedures without any idea of what they actually mean.

So if you work with upper elementary, hear me on this: The CRA Sweet Spot isn't just for younger kids. It's for you too.

Let me show you what I mean with a couple of examples—one from early elementary and one from upper elementary.

Let's start with an early elementary example: 7 plus 8 on a Rekenrek.

**Concrete:** Students model  $7 + 8$  on the Rekenrek. They push over 7 beads on the top row, then they need to add 8 more. Maybe they push over 3 more beads to fill up that top row—now they've got 10. Then they push over 5 beads on the bottom row. They can see the answer: 15.

**Representational:** Now they draw what they just did on a number path. They circle 7, then show the jump of 3, then the jump of 5.

**Abstract:** Below their number path, they write the equation that matches:  $7 + 3 + 5 = 15$ .

See how all three are connected? The student didn't just push beads around. They connected the physical action to a visual model to the written symbols.

That's the Sweet Spot.

Now let's look at an upper elementary example: 4th graders multiplying a fraction by a whole number. 3 times  $1/4$ .

**Concrete:** Start with fraction tiles. Give students the tiles and ask them to show 3 groups of  $1/4$ . They physically lay out three  $1/4$  tiles and SEE that it makes  $3/4$ .

**Representational:** Have them draw it. They might draw three rectangles, each partitioned into fourths, with one part shaded. Or they might draw a number line and show three jumps of  $1/4$ .

**Abstract:** NOW we attach the symbolic notation:  $3 \times 1/4 = 3/4$ .

Without the concrete and representational steps, students might memorize "multiply the whole number by the numerator." But they won't understand what that actually means.

One more thing about the use of manipulatives in a lesson.

Don't make them optional or for "struggling students only."

If you say, "If you need help, you can use the blocks," you're sending the message that manipulatives are for kids who aren't smart enough to do it on their own.

Instead, make them available for everyone. Model using them yourself. Show students that even YOU use tools to think through problems.

Normalize manipulatives use, they're just part of how we do math. Help students see them as thinking tools.

Now let's talk about actual tools.

Technology can be powerful for the concrete phase. With digital manipulatives, you and your students don't get bogged down by organization. They're right there at their fingertips, no digging through a long-forgotten box in the back of the closet.

One tool I love is **Brainingcamp**. In fact I've been using their tools in the video for this episode to model what I've been talking about. They have digital manipulatives for all kinds of concepts; fraction models, number lines, base-10 blocks, rekenreks. For years, Brainingcamp has given away free access to participants at the Virtual Math Summit. This year is no different. Anyone who registers for the summit will get a code for **6 months of access to Brainingcamp - completely free**.

Digital manipulatives are great, but physical tools matter too. There's something powerful about physically moving objects, especially for kinesthetic learners. Having BOTH digital and physical manipulatives gives you flexibility. Some students prefer the screen. Some prefer holding physical pieces. Some need both. When you have options, you meet more students where they are.

**Didax** is a great place to get physical math tools. And they're celebrating their **50th anniversary** this year. 50 years! The Virtual Math Summit is in its **10th year**. So we're celebrating together.

To celebrate both anniversaries, we're giving away Didax manipulatives at the Virtual Math Summit. To be eligible, you need to be there during the live sessions, we'll be picking people randomly from those in attendance on February 28th and March 1st.

Beyond the giveaways, we've got incredible sessions this year to help you bring more hands-on, visual learning into your classroom.

**John SanGiovanni** is doing a session for 3rd through 5th grade teachers called "*More than Numbers: Geometry, Measurement, and Data in Elementary Math.*" A lot of teachers think hands-on work is just for number sense. John's going to show you how visuals and manipulatives work for geometry, measurement, and data too.

**Ryan Dougherty** has a session called "*Breaking it Down: Decomposing at All Levels of Math.*" Decomposing is something we teach in the younger grades, but Ryan's going to show you how it applies all the way up—and how manipulatives and visuals help students SEE decomposition in action, whether it's with whole numbers, fractions, or problem-solving.

**Sara VanDerWerf and Nina Smith** are doing a session called "*Utilizing Counting Collections as Formative Assessment*." You might think counting collections are just for little kids. Sara and Nina are going to show you how this hands-on, concrete activity works in upper elementary, and how it gives you incredible formative assessment data about where students really are.

**Dr. Alison Mello** has a session called "*Math Workshop Plus*." She's going to show you how to structure your math time so that hands-on stations, visual supports, and concrete experiences are built into your daily routine, not just an extra when you have time.

All four of these sessions give you practical ways to bring more hands-on and visual learning into your upper elementary classrooms.

And they're completely free.

Go to **VirtualMathSummit.com** and get registered. The summit starts February 28th...that's less than 2 weeks away!

Sessions are live on February 28th and March 1st. That's when we'll be selecting attendees at random for the Didax giveaways. If you can't attend live, there's a limited replay window.

Over 30 sessions for coaches and teachers. Brainingcamp is giving 6 months free access to everyone who registers. We are doing Didax and BrainingCamp giveaways during live sessions. Plus during some of the live sessions we will be giving away a total of 10 memberships to the Build Math Minds PD site.

**VirtualMathSummit.com**. To get your spot. Make sure you're there live for a chance to win those giveaways.

Okay, hands-on and visual learning aren't just for little kids. Upper elementary students, especially post-pandemic, need concrete and representational experiences connected to the abstract.

Don't skip the CRA Model. It's what makes the learning stick.

Whether you use digital manipulatives like Brainingcamp, physical manipulatives like Didax, or both, give your students the tools they need to truly understand the math.

Alright, my fellow Recovering Traditionalists, I hope this helped build your math mind so you can build the math minds of students.

This episode is brought to you by the Build Math Minds PD site. If you're an elementary math coach or instructional coach and you loved this episode, you need to check us out. Whether you're supporting teachers with number sense, helping them move beyond worksheets, or trying to shift mindsets about what math teaching should look like—we've got the PD you need, right at your fingertips.

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