

Re-engagement

What is this structure?

Re-engagement is using student work for the purpose of uncovering misconceptions, providing feedback on student thinking, and helping students to go deeper into the mathematics. Students have the opportunity to reflect on their own learning while make connections between mathematical ideas. There is a focus on metacognitive development as student analyze other student work in the search for possible mathematical misconceptions.

Why do I use this structure?

Re-engagement pushes students to address their conceptual understanding of a topic in order to make connections and eliminate misconceptions. Research has shown it to be more effective than re-teaching the same content, because it engages all students in a metacognitive activity with high cognitive load.

When do I use this structure?

Re-engagement should be used when students have had some opportunities to learn about a topic. At some point, some students will be developing a strong understanding, while others will have significant misconceptions. A re-engagement lesson allows all students to think again about the topic, deepening their understanding through a collaborative experience.

How do I use this structure?

First, formatively assess students to identify common errors. Then, for each common error, ask, "What might students have been thinking?" By trying to understand the students' reasoning, a teacher can identify next steps. Opportunities for re-engagement range from small scale (10 minutes) to large scale (2 class periods).

Examples of Re-engagement Activities

Re-engagement Activity	Time Required	Description
Math Talk	10 minutes	If many students in a class are making a common error, lead a Math Talk that will allow students to make that error. As part of the Math Talk discussion, have students who do not make the error share their reasoning and engage all students in discussing the misconception.
Revising Work Based on Feedback	20 minutes	After students complete a piece of work, provide constructive feedback for revision. Then provide time, either in class or for homework, for students to revise their work. The feedback should help students recognize what they can do, what they need to be able to do, and how they might narrow the gap. One way to do this is to ask them to find their own mistakes, eg.: "You have 3 calculation errors. Find and fix them." Another is to ask a pointed question, eg.: "What does this 4 represent?").
Math Hospital	10 minutes - 1 class period	The teacher creates a sheet compiling common mistakes that students make about a given topic, sometimes including problems that are completed correctly. Student teams identify what mistake is made in each problem, if any, explain why that mistake is a common one, and correct the mistake. This structure allows students to correct mistakes that they might make by addressing the mistakes directly but in an impersonal context.

Re-engagement Activity	Time Required	Description
5 Practices	1 class period	Use the 5 Practices for Orchestrating Productive Mathematics Discussion to Anticipate likely student responses to a task, including what errors they might make, Monitor students' actual responses to the task, Select student responses that will allow discussion of misconceptions, Sequence the responses for discussion, and Connect student strategies and thinking during discussion. This purposeful preparation for conversation allows you to address known and emerging misconceptions.
MARS Tools	1 class period	The MARS tasks, included in many of our units, come with extensive teacher materials that include guidance for analyzing student work, implications for instruction, and direction for how to construct a re-engagement lesson based on that analysis. More guidance is provided within the MARS teacher materials.
Formative Re-engagement Lesson (FRL) Formative Assessment Lesson (FAL)	2 class periods	These highly-structured lessons come in many varieties, but the format for most are similar: ⁴ <ol style="list-style-type: none"> 1. Start with a problem to assess current understanding. 2. Students work in collaborative teams to develop a problem solving strategy. 3. Students examine and make sense of other strategies, think about why strategies work, and decide which is most efficient or useful. 4. Students analyze errors and, in the process, let go of misconceptions and clarify their thinking about the big ideas. 5. Students return to the original problem or a similar problem to apply their learning through revising their work.

Re-teaching... ⁵	vs.	Re-engagement...
<ul style="list-style-type: none"> ❖ is teaching the unit again ❖ is addressing missing basic skills ❖ is doing the same problems over ❖ is more practice ❖ is focused on procedures ❖ is focused on underachievers ❖ has lower cognitive load 		<ul style="list-style-type: none"> ❖ is revisiting student thinking ❖ is addressing conceptual understanding ❖ is examining the task from different perspectives ❖ is critiquing approaches ❖ is making connections ❖ engages the entire class in mathematics ❖ has higher cognitive load

⁴ adapted from "General Guide: Elementary Formative Assessment Re-engagement Lessons," http://www.svmimac.org/images/GeneralGuide_Elementary_FRL.pdf

⁵ Adapted from Illustrative Mathematics, <http://www.insidemathematics.org/classroom-videos/formative-re-engaging-lessons>