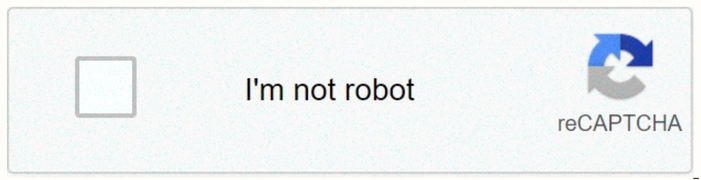

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Hattie math strategies

HATTIE: 1.2 sizeUSEFUL effect FOR: practically all subjects; potentially can be used for deep learning and transfer learning as well as place: The puzzle classroom that is probably familiar with this method, which starts with 4, 5 or 6 students (we prefer 4) each learning a piece of content. Next, students go to expert groups to check their understanding and make sure they can teach the material to other students. Then they go back to their home group and take turns teaching the material. The part we often forget is this, but it's possibly the crucial part: check each student's understanding of each piece of content (either with a quiz or another method). Jennifer Gonzalez's super useful video summary (Cult of Pedagogy) provided above has some interesting insights into how to combine individual and group-scoring aspects in the puzzle lesson/check finale. In addition, there are many possible extensions. John Hattie, Nancy Frey and Douglas Fisher (writing in Visible Learning for Science; Corwin, 2018) mentions a next step in which students return to their expert teams and talk about how different content components relate to each other (this may be an opportunity to move from the surface to deep learning or transfer learning). Grassroots teams could also take the information learned from expert teams and combine it to solve a problem, apply the knowledge to do something new, or to create an interpretive project. One topic that arises quickly as it is scanned through strategies for teaching at surface, depth and transfer levels is that determination, activation and integration of prior knowledge is one of the most powerful teaching strategies. While the research is clear at this point, less well known are the variety of ways to do it in our classes. The links (and book extract recommendations from our lending library) then try to address this issue. Edutopia: Are you taking advantage of previous knowledge often enough in your classroom? 8 Strategies to Quickly Evaluate Prior Knowledge This post by Jennifer Gonzalez does a great job of summarizing (and quoting) much of the latest research on good note-taking practices that can help students learn more. She helpfully includes a video about ideas to combine Cornell Notes and sketch-noting, and there are plenty of excellent ideas here. CULT OF PEDAGOGY: Note-Taking: A Research Roundup (2018) While note taking is a key strategy for surface learning (acquisition of reading, video and conference), deepening returning to notes and adds great power to its value. CULT OF PEDAGOGY: Note-Taking: A Research Roundup (2018) We have republished here the research summary of Jennifer González because it includes aspects of organization and transformation of notes returning to it. Check back as we try to add more resources and and to effectively transform these notes. HATTIE: 0.74 sizeUSEFUL EFFECT FOR: Reading comprehension in almost any subject, but can be adapted for Math problem solving (see the third video below) Reciprocal teaching is a specific strategy that combines cooperative learning, classroom discussion, reading comprehension, and metacognitive approaches learning to learn (all of which are highly effective approaches). These are students who participate in one of four different specified roles (summarizing, interrogator, clarifyer, predictor) with each paragraph they read. It is therefore a collaborative close reading strategy that is ideal for challenging reading material. VIDEO EXPLANATION FOR TEACHERS (click on the image immediately below): Below: A variation in which the 4th student connects reading ideas to the world, instead of predicting what's next (other variations include drawing the ideas) VIDEO EXPLANATION FOR STUDENTS: USING RECIPROCAL TEACHING WITH SOLVING MATHEMATICAL PROBLEMS (example): Example 1 to 5 comparison evaluation and contrast The taxonomy structure of observed learning outcomes (SOLO) it is a notion that describes the learning stages that students go on to reach a real depth of understanding on a subject. Describes the journey from the surface to deep learning. SOLO is John Hattie's taxonomy of choice and is currently being studied in depth at his Visible Learning Laboratories (Osiris Educational... Visible Learning is John Hattie's mantra. I've written previously about being a big fan of Hattie's work about what affects achievement. It has collected almost all academic research and collected a classified taxonomy of factors affecting achievement. Visible learning is your suggested approach to teaching in a way that incorporates many of the significant drivers of achievement.... I'm a big fan of John Hattie's work. Many people have great ideas for improving attainment in education. What makes John's work unique is that he tells you how much things improve achievement. In a time-pressed world, what makes his work so useful is that it tells you what to prioritize and focus on, and above all, on what to ignore. I... A balanced and informative article from the Teach Thought blog about John Hattie's famous work on effect sizes: Hattie's Index Of Teaching && Learning Strategies: 39 Effect Sizes In Ascending Order Engagement of students in their learning. The E Factor you know when you see it; you know it when you hear it. Sustained cognitive effort by students who are working on the edge of their skills. The commitment we want to see as teachers is not about keeping students it's about keeping them thinking for extended periods of time.... I see students working in groups all the time... Students working collaboratively on couples or small groups who have rich discussions as they order by specific properties, students who identify and expand the visual patterns of their partner, students who play games intended to improve their procedural fluidity, students who cooperate to make sense of a low-floor/high-ceilinged problem..... When we see students actively engaging in rich mathematical activities, working collaboratively, it provides opportunities for teachers to effectively monitor student learning (note student thinking, provide opportunities for rich questioning, and lead to important comments and next steps...) and prepare the teacher for the closing lesson. Classrooms engaged in this type of cooperative learning opportunities see students actively engaged in their learning. And more specifically, we see students showing Agency, Property and Identity in their mathematical learning (see TruMath's description on page 10). On the other hand, some classrooms might be driving a different view of what groups may look like in a math classroom. One where a teacher's role is to continuously diagnose student weaknesses, then put students in capacity groups based on their deficits, then provide specific learning for each of these groups. To be honest, I understand the concept of small groups being formed for this purpose, but I think many teachers

might be running for these interventions too quickly. First, we understand that small group interventions come from the RTI model (Response to Intervention). Below is a graph created by Karen Karp shared in mathematics focused on Van de Walle's teaching student to help explain RTI: Response to Intervention - Teaching students maths-focused as you can see, given a high-quality maths program, 80-90% of students can learn successfully considering the same learning experiences as everyone else. However, 5-10% of students (who probably aren't always the same students) might struggle with a given topic and might need additional small group interventions. And an additional 1-5% might need even more specialized interventions at the individual level. The RTI model assumes that we, as a group, have had several different learning experiences over several days before Level 2 (or Tier 3) approaches are used. This sounds much healthier than an instructional model where students are tested on the first day, and placed in fixed groups based on their deficits, or a classroom where students are placed in homogeneous groups that persist for periods of time. Action Principles (NCTM) suggests that what I'm talking about here is actually an equity issue! Action Principles We know that students who are placed in skill groups for extended periods of time come to have their mathematical identity fixed because of how they were placed. In other words, in an attempt to help our students learn, we could be damaging and, therefore, their long-term educational results. Level 1 instruction while I totally agree that we should be paying attention to students who might be struggling with math, I think the first thing we need to consider is what Level 1 instruction looks like that is meant to make learning accessible to everyone. Level 1 instruction cannot simply be direct instruction classes and full group learning. To make learning maths more accessible to a wider range of students, we need to include lower/higher-ceilinged tasks, continue to cater to our students to explain the concepts they are learning, as well as having a better understanding of developmental progressions so that we can effectively monitor student learning so that we can both know the experiences our students will need to succeed and how we should be responding to their thinking. Let's not underestimate how many of our students suffer from an experience gap, not an achievement gap! If you're interested in learning more about how Level 1 instruction can be as a way to support a wider range of students, please take a look at one of the following: Level 2 level 2 instruction is important. It allows us to give additional opportunities for students to learn the things they have been learning in recent days/weeks in a small group. Learning in a small group with students currently struggling with the content they are learning can give us opportunities to better understand the thinking of our students. However, I think some might be jumping past Level 1 instruction (partly or completely) in an attempt to make sure we are intervening. To be honest, that doesn't make sense of instruction to me! If we care about our content, and care about our students' relationship with math, this might be the first wrong move. So, let's make sure level 2 instruction is: Always after several learning experiences for our Flexibly students created, and easily changed based on the content learned at the time focused on student strengths and areas of need, not just weaknesses aimed at honoring student agency, property and identity as temporary mathematicians! If you're interested in learning more about what Level 2 interventions may seem to take a look at one of the following: RTI for Adult Targeted Instruction Continue to Improve Together Instead of seeing math as you learn each day as an approach to intervene, we'll continue to learn more about what Level 1 instruction may look like! Or maybe you need to hear from Hattie: O de Jo Boaler: Final Thoughts If you are currently in a school that uses small group instruction in mathematics, I suggest you reflect on a few things: How do your students see themselves as mathematicians? As can the issues of the Agency, the Authority of the Identity related to the instruction of small groups? What fixed minded messaging do teachers in your building share tall kids, level 2 students, she's one of my low students....? What fixed-minded messages could your students hear? When in a learning cycle small groups are used? Every day? After several days of learning a concept? How flexible are your groups? Do they rely on a totally nationalist leveling of their students, or based specifically on the concept they are learning this week? How long do these small groups receive? Is it beyond regular instructional timelines, or do these groups form your Level 1 instruction time? If Karp/Van de Walle suggests that 80-90% of students can succeed at Level 1, how does it match what you're seeing? Is there a need to learn more about how Level 1 approaches can meet the needs of these many students? What do other students do when you work with a small group? Is he as mathematically rich as the few you're working with in front of you? Do you think all your students are able to learn mathematics and think mathematically? I'd love to continue the conversation. Type a reply, or send me a message on Twitter (@markchubb3).).

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