

## Real World Application

Productive Practices / Beliefs / Actions (What it IS)	Unproductive Practices / Beliefs / Actions (What it is NOT)
<p><b>A balance of grouping for students - whole group / small group / individual</b></p> <ul style="list-style-type: none"> <li>Groups need to be based on a variety of factors: homogeneous/heterogeneous, long &amp; short-term groupings, collaboration.</li> <li>Teachers choose grouping structures based on the tasks being worked on.</li> </ul>	<p><b>Teachers lead discussions</b></p> <ul style="list-style-type: none"> <li>“The one doing the talking is the one doing the learning.” Let’s let the students do the learning!</li> <li>This practice robs students of opportunities to collaborate and engage in productive mathematical discourse.</li> </ul>
<p><b>Mathematical discourse with engagement</b></p> <ul style="list-style-type: none"> <li>Teachers and students develop mutual respect, utilize strategies to build a safe and supportive culture while constructing viable arguments and critiquing the reasoning of others in a courteous manner</li> <li>Teachers assume facilitator role to pose questions in a strategic way that meets students needs, honors students current level of thinking, and progresses their thinking in the search for understanding and skill</li> <li>Students share in the responsibility of listening, questioning, constructing, and critiquing</li> </ul>	<p><b>Silent classrooms with compliance</b></p> <ul style="list-style-type: none"> <li>Teacher delivers instruction to students, with minimal regard for students’ prior knowledge</li> <li>Students listen and reply directly to the teacher when requested, with little to no peer interaction</li> </ul>
<p><b>Teachers facilitate the discussion, allowing conversations off “planned” path and intervene only as needed</b></p> <ul style="list-style-type: none"> <li>Teachers assume facilitator role to pose questions in a strategic way that meets students needs, honors students current level of thinking, and progresses their thinking in the search for understanding and skill</li> <li>Teachers allow students to take the discussion in a new direction in solving the problem.</li> </ul>	<p><b>Teacher asks few questions, often answering them himself/herself</b></p> <ul style="list-style-type: none"> <li>Teacher directs instruction, only asking questions to a few students that are engaged.</li> <li>Teacher directs questions to one or two students, leaving the rest of the students to only listen.</li> <li>Teacher asks and answers their own questions.</li> </ul>

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<p><b>Primary focus is rich mathematical tasks or projects that promote understanding and relevance</b></p> <ul style="list-style-type: none"> <li>● Students reason qualitatively and quantitatively.</li> <li>● Students persevere while creatively and critically solving problems.</li> <li>● Students make multiple connections</li> <li>● Students embrace challenges as learning opportunities.</li> <li>● Teacher implements tasks that promote conceptual understanding prior to teaching procedures</li> </ul>	<p><b>Primary focus is computation problems and practice</b></p> <ul style="list-style-type: none"> <li>● Teacher assigns a set of procedural problems without context.</li> <li>● Students perform rote procedures without understanding.</li> </ul>
<p><b>Community partners to make connections to mathematical concepts</b></p> <ul style="list-style-type: none"> <li>● Community members, parents, other adults are brought in to share their experiences with this type of real-world problem to help students see the relevance in their learning</li> <li>● Teachers become more aware of the mathematical needs in the current real-world reality</li> </ul>	<p><b>Isolated algorithms and formulas with no connections</b></p> <ul style="list-style-type: none"> <li>● Students see not relevance to their learning</li> <li>● The question “When are we ever going to use this?” can only be answered with “In the next math course you are taking”</li> </ul>
<p><b>Teachers pose questions that promote productive struggle for learning</b></p> <ul style="list-style-type: none"> <li>● Teacher and students recognize struggle as part of meaningful learning experiences</li> <li>● Teacher and students view struggle as valuable learning opportunities</li> <li>● Teacher provides scaffolding needed to prevent student frustration while still allowing the student to grapple with the math concept.</li> </ul>	<p><b>Teachers assign students easy problems that they will get right</b></p> <ul style="list-style-type: none"> <li>● Teacher provides no scaffolding.</li> <li>● Teacher lowers the demand of the task to alleviate frustration.</li> <li>● Teacher shows how to work the problem step by step.</li> </ul>

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<p><b>Assessment encourage students to reason about the units or rounding that makes sense for the situation</b></p> <ul style="list-style-type: none"> <li>• Problem situations on assessments allows students to determine the reasonableness of their answers.</li> <li>• Students are allowed the flexibility to use the units and estimation strategies they deem most appropriate for the problem situation.</li> </ul>	<p><b>Assessment directions specify units or rounding directions</b></p> <ul style="list-style-type: none"> <li>• Detailed instructions are provided for students to eliminate any deviation from the intended answer.</li> <li>• Students are provided “one way” to solve the problem situation in order to reach the “right answer.”</li> </ul>
<p><b>Honor and learn from mistakes</b></p> <ul style="list-style-type: none"> <li>• Teacher intentionally acknowledges mistakes using responsive teaching</li> <li>• Students are encouraged to analyze their mistakes and learn from them</li> </ul>	<p><b>Rewarding “correct” answers</b></p> <ul style="list-style-type: none"> <li>• Teacher only looks for the right answer</li> <li>• When a wrong answer is shared, it is dismissed and the search for the correct answer continues</li> </ul>
<p><b>Tasks chosen based on state standards, student interest and relevance</b></p> <ul style="list-style-type: none"> <li>• Planning of real-world problem situations / tasks starts with the math standard, then the problem is chosen</li> </ul>	<p><b>Tasks based on great project idea without regard to the standards</b></p> <ul style="list-style-type: none"> <li>• A project idea comes to mind and the teacher tries to find a standard that would fit the project</li> </ul>