

How Students Should be Taught Mathematics:
Reflections from Research and Practice.

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Mathematics classrooms should be places where students:

Develop an inquiry relationship with mathematics, approaching math with curiosity, courage, confidence & intuition.

Talk to each other and the teacher about ideas – Why did I choose this method? Does it work in other cases? How is the method similar or different to methods other people used?

Work on mathematics tasks that can be solved in different ways and/or with different solutions.

Work on mathematics tasks with a low entry point but a very high ceiling – so that students are constantly challenged and working at the highest and most appropriate level for them.

Work on mathematics tasks that are complex, involve more than one method or area of mathematics, and that often, but not always, represent real world problems and applications.

Are given growth mindset messages at all times, through the ways they are grouped together, the tasks they work on, the messages they hear, and the assessment and grading.

Are assessed formatively – to inform learning - not summatively to give a rank with their peers. Students should regularly receive diagnostic feedback on their work, instead of grades or scores. Summative assessments are best used at the end of courses.

Mathematics classrooms should be places where students believe:

Everyone can do well in math.

Mathematics problems can be solved with many different insights and methods.

Mistakes are valuable, they encourage brain growth and learning.

Mathematics will help them in their lives, not because they will see the same types of problems in the real world but because they are learning to think quantitatively and abstractly and developing an inquiry relationship with math.