



The Thinking Classroom  
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Imagine learning Algebra in an environment that is more of a social mixer than the prototypical math classroom – bowed heads and scrunched shoulders, lost in step four of the equation, confused as to whether an error occurred in step three, unsure of whether to raise your hand, the teacher unclear whether any students are floundering. For some, the traditional classroom works. But for others, this increasingly antiquated model fails them.

Enter Stacy Winters, Mathematics Supervisor for School District of the Chathams. Ms. Winters was already familiar with the pedagogical shift happening in mathematics, away from the dated teacher directed approach to a more student-centered approach. In the modern approach, the teacher is more of a facilitator. Through Ms. Winter's own intensive research to align Chatham's math department with the highest, most progressive standards in the field, she encountered the work of Canadian professor of mathematics and researcher Peter Liljedahl. Liljedahl is the brain power behind his innovative classroom comprised in part of vertical, non-permanent spaces, called The Thinking Classroom.

The main goal of Chatham's Thinking Classroom is to encourage active learning as opposed to passive learning whereby teachers share content. Liljedahl created a classroom based on fourteen variables which serve as prescriptive points for teachers to create mathematical thinkers. One of the components is to build a classroom populated with vertical glass boards, whiteboard tables, dry erase markers and erasers. Standing in a classroom as opposed to sitting has been demonstrated to increase productivity, critical thinking, and wellness. In The Thinking Classroom, some students are standing side by side at glass boards working through equations as the teacher comes by to help students who might be stuck in the middle of solving a problem. Teachers are able to offer immediate and personal feedback. Mistakes are caught quicker; frustration is alleviated. Other students are sitting in clusters at tables, working through equations with dry erase markers, easily able

to collaborate with each other, with the equation splayed out before them in red, black, or blue marker ink.

Ms Winters, inspired by the Thinking Classroom, adapted a few of the conceptual principles in formulating her own thoughts for math classrooms at the high school. In the spring of 2019, just as the school year was about to draw to a close in Chatham, Ms. Winters submitted a grant request to the Chatham Education Foundation to pilot The Thinking Classroom at SDOC in the Honors Algebra II classes of two visionary teachers, Ms. Mallory Lynn and Ms. Jennifer Kessler. The Chatham Education Foundation approved the grant, and the classroom was in place by the fall of 2019.

The classroom speaks for itself. One merely has to enter the classroom, bright, airy and light. It has an almost celestial feel, all white spaces and glass. In Ms. Lynn's classroom, a few students are up at the board working on equations as she comes around and surveys their work, helping students where needed. Other students are sitting or standing at whiteboard tables, sharing equations and reasoning with one another. Students do not have to self identify as struggling with a problem. Proximity to the teacher takes care of this. Here, there is no judgment or shame. Students are working together. There is no reluctance to seek help. There is even...dare we say...a happiness, an enthusiasm, an energy. The oppressiveness some may feel associated with the typical math classroom and presentation has been eliminated, and the classroom has been deconstructed and rearranged. The teacher is accessible to all, and there is a vibrant flow of information and energy as opposed to passive receptivity. Students initiate discussion more easily in this format.

When you speak with the students, one understands the transformative power of environment. Some of the students in Ms. Lynn's class have stated the following:

**“I like the boards because it gives a lot of space to work and allows you to work with others easily.”**

-Luke Lagunowich

**“The whiteboards help me to see where I made a mistake and help me determine what I need to study and work on.”**

-Ausonie Guillot

**“The whiteboards are very helpful for doing problems and seeing how others do it easily.”**

-Madeline Liu

**“The whiteboards are really fun! I love being able to get up and work somewhere besides my desk.”**

-Jack Pasacreta

Chatham Education Foundation is proud to be a part of The Thinking Classroom and applauds the innovation and efforts of Ms. Winters, Ms. Lynn, and Ms. Kessler in helping to implement a revolutionary methodology to learning and teaching mathematics - an approach that is helping to create problem solving mathematical thinkers, not just students. It is the hope that these pilot classrooms will pave the way for more innovation in the math classrooms across the SDOC at various grade levels and topics.