

WAYLAND · PUBLIC · SCHOOLS

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Dear Parents, Guardians and Staff:

I would like to take a few minutes to share with you some of the experiences our elementary students are having in science, a part of our ongoing work to give our Wayland students hands-on, authentic learning opportunities.

Recently, I observed third and fourth grade students try to piece together what they had just seen during their science lesson. In Ms. Rossi's third grade class, students sketched the pathway of liquids with different temperatures as they passed through room-temperature water in glass containers. The third grade students confidently explained to me why hot water travelled to the surface whereas cold water dribbled to the bottom. In Ms. Olivier's fourth grade class, students drew arrows to indicate the pathways that light travelled as it "penetrated" a book. During the fourth grade experiment with light, the students explained how the mirrors were actually reflecting the light around the book, not through it. The students clearly understood the major points that Ms. Rossi and Ms. Olivier had explained to them earlier.

Their learning, however, was not over. During their investigations, students had spotted some subtle differences in the behavior of the red-colored liquid (hot) when it was manipulated by different students. As a result, some drawings showed a more subtle distribution of colors. In the fourth grade class, meanwhile, one boy could not convince another group to configure the mirrors in the same way that he had at his table. He was subsequently somewhat surprised to discover that their method for bouncing the light to the other side of the book worked also. Their teachers encouraged the alternative approaches, expressing their own curiosity about what might happen differently.

The surprise that authentic scientific investigation and experimentation yields is what makes it a particularly crucial learning experience for our students. The implementation of our new k-5 science curriculum, called FOSS (Full Option Science System), not only provides the opportunity to experience that surprise, but in the hands of our skilled teachers, the opportunity to explain the unpredictable results to classmates. If you take the same hot liquid and pour it in different ways, you may initially get a slightly different result, forcing you to apply your understanding to different contexts. Students also learn that if they are going to find scientific truths, and be able to account for individual variations in how an investigation is conducted, they will need to describe their observations precisely through drawing and written analyses.

Our 2016 Massachusetts State Science Standards expect our students, beginning at pre-kindergarten, to spend time struggling with what they observe during investigations, and, with the support of their teachers, construct an "evidence-based account of nature." ([Grades Pre-K-2: Overview of Science and Engineering Practices](#))

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It is the experience of having unpredictable scientific experiences, just like tackling a new and engaging math problem, or hearing an entirely different perspective on the Great Depression, that challenges our students, helps them learn, and, just as importantly, gives them the resilience to tackle other problems. Over the next several months, the elementary staff is studying its own and others' practices to figure out how we can deepen the science experiences of our children, emphasizing those practices and those lessons that particularly harness the resilience and insights of our children.

I look forward to talking to you further about your child's engaging science experiences in elementary school and throughout their K-12 journey in the Wayland Public Schools.

Thank you and have a wonderful Winter Break.

Sincerely,



Arthur Unobskey, Ed.D.
Superintendent of Schools