I am Jeff Leake, the arts coordinator and co-founder of NWNOGGIN. When Bill and I began this program it was with arts integration into STEM education in mind. For us, investigating the underlying biological mechanisms that drive our behavior through art and art making seemed like a very natural fit. So one of the things that we particularly appreciate about the "Every Student Succeeds Act" is that it allows for, and acknowledges, the real potential that a STEAM approach has to engage students in the act of learning.

Over the past four years we have worked with thousands of students. Our goal has always been to enthuse and encourage them to pursue science, art, and their own education in general. However, many of the students we work with have disengaged with school for one reason or another. This art based teaching gave us new and adaptive methods that allow our students to explore these materials and concepts in a way that accommodates multiple solutions. And, for us as teachers, is inherently differentiated and, perhaps most importantly, can be made personally relevant to the students themselves.

We approach this through student driven projects like the pipe cleaner neurons, which are direct and interpretive representations of physical structures or processes. However, these are not just simple illustrations...they allow and encourage students to embellish the basic physical facts of these structures. Which, in turn, aid them in remembering what the various components are, and also, allowing us, as teachers, to easily differentiate these lessons. In fact, as you can see here, we've asked all of our students to create their own neurons and you can see the wide range of responses. All of these represent different existing cells in our bodies and yet they are all done with varying degrees of complexity and individual expression.

We also have projects that serve as visual and tactile illustrations of complex biological processes. For example, these blind touch sculptures ask our students to recreate objects based solely on what they can perceive through touch. This can serve as a very direct example of how our tactile systems gather and interpret the information around us. More importantly projects like this can allow students numerous different ways to understand these concepts.

Lastly, we have projects that allow students to explore concepts in a way that can be assessed for understanding while at the same time accommodating a wide range of solutions. These Neuron visual metaphor drawings don’t need a single right answer and they don’t require a list of the parts of a neuron, yet they still require an understanding of the basic function of a neuron and can be assessed directly for that understanding.

These are just some of the examples of science through art that have engaged thousands of students across all ages, backgrounds and experiences. Not only does it excite the students that we are teaching, it is an invaluable tool for the Undergraduate and Graduate students that are teaching them. The passion that they have in teaching the subject carries over to the kids that are learning from them. This program has expanded every year since it was started in 2012, with more educators seeking out a chance to have NW Noggin in their schools.

Bill and I are very excited to see what the future holds for us and this STEAM approach to learning.