Sussex Montessori School
Science Curriculum Revision Plan

Sussex Montessori School (SMS) signed the Delaware Science Coalition MOU which was an option in lieu of submitting a full Science Scope and Sequence. In order to illustrate the interdisciplinary nature of the Montessori Curriculum with the Coalition Science Kits, SMS submitted an interdisciplinary curriculum map. This map was not required; however, we view it as a tool to assist teachers as they align the Montessori Curriculum and Delaware State Content Standards. The map is currently based on the curriculum map developed for First State Montessori Academy in 2012. As a result, the map does not reflect the Next Generation Science Standards (NGSS). We understand that prior to Sussex Montessori School opening, this map will need to be fully aligned to NGSS. There are many ways that the Montessori Curriculum naturally supports the NGSS standards and ways that a focus on the NGSS standards will enhance the experience in Montessori classrooms.

NGS Scientific Content and Topics

The Montessori Curriculum is based on major understandings leading from the wholes to the parts. Children begin their interdisciplinary studies with a series of five great lessons: The Coming of the Universe and the Earth, The Coming of Life, The Coming of Human Beings, The Story of Writing and the Story of Numbers. These impressionistic lessons lead to exploration of specific scientific content as identified in the NGSS Disciplinary Core Ideas: Life Sciences, Early and Space Science, Physical Science, and Engineering, Technology, and the Application of Science. NGSS further identifies specific topics of study in each of these areas for each grade level (Table 1). SMS intends to work with the Science Coalition to evaluate and when appropriate redesign our interdisciplinary units and curriculum map to ensure that SMS teachers address these topics of study as outlined in the NGSS standards. Further, SMS as demonstrated in our initial Interdisciplinary document, SMS understands that the Coalition Science Kits are not the "curriculum" but a resource to help children explore the NGSS Disciplinary Core Ideas.

Table 1: NGSS topics for each grade level in the Montessori Multi-age classrooms

Grade	Life Science	Earth and Space Science	Physical Science
K	Interdependent Relationships in Ecosystems; Animals, Plants, and Their Environment	Weather and Climate	Forces and Interactions: Pushes and Pulls
1	Structure, Function and Information Processing	Space Systems: Patterns and Cycles	Waves: Light and Sound
2	Interdependent Relationships in Ecosystems.	Earth's Systems: Processes That Shape the Earth	Structure and Properties of Matter
3	Interdependent relationships in Ecosystems: Inheritance and the Variation of Traits	Weather and Climate	Forces and Interactions
4	Structure, Function, and Information Processing	Earth's Systems: Processes That Shape the Earth	Energy

			Waves: Waves and information
5	Matter and Energy in Organisms and Ecosystems	Earth's Systems Space Systems: Stars and the Solar System	Structure and Properties of Matter
6	Structure/Function Relationships Processing Information	Change over Time Earth Systems Tetonic Plates Solar System Earth's place in the Universe Seasons and Eclipses	Physical interactions between objects within a system.

Science and Engineering Practices

The Montessori cultural lessons which lead to the scientific explorations outlined in the chart above, are founded in the understanding that students have a natural curiosity about the world, they imagine various reasons for things being the way they are, and they experiment to test their ideas. Children in Montessori classrooms are challenged to question and then to figure out how to get to an answer. The NGSS Science and Engineering Practices will enrich the Montessori classroom. SMS teachers working with the Science Coalition teachers will develop a rich understanding of what it means to create a classroom where children think like scientist and engineers by: 1) asking questions and defining problems, 2) developing and using models to represent ideas, 3) planning and carrying out investigations, 4) analyzing and interpreting data, 5) using mathematics and computational thinking as a tool to interpret data and support conclusions, 6) constructing explanations and designing solutions, 7) engaging in arguments from evidence, and 8) obtaining, evaluating, and communicating information.

Crosscutting Concepts:

The NGSS Crosscutting Concepts provide another lens for the redesign of interdisciplinary studies. Many of the Crosscutting Concepts cross the various content areas in the Montessori Classroom. Each of the Crosscutting concepts can create a connector for understanding how the world works not only scientifically but also in the social systems that man designs.

Next Steps:

Upon approval of the charter, SMS will begin the interview process for the School Leader. This school leader and board members who have led Montessori Schools will attend Science Coalition meetings over the planning year to better understand the Coalition's approach to the NGS standards. We will engage with teachers currently teaching in Montessori Schools to address the integration of the NGSS standards with the Montessori curriculum and develop an understanding of what implementation will look like in the Montessori classroom. A redesign of the document submitted in the original application will be prepared for the summer of 2019 prior to the opening of the school. As a living document, we look forward to working with the Science Coalition to refine the document as our teachers participate with the Coalition.