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Preparing a Montessori Studio

by ANNIE STONE

As part of her new role as NNM Art Director, former Primary teacher Annie Stone guides students in their work during daily open-studio time in the third-floor art room. Here she talks about her early experiences with this process, and about the thinking behind her approach.

Gabi and Myra came into the art room with several labeled pictures of flowers that they had traced from a book in their classroom. The drawings were the result of a good amount of studying and collaborative effort, and the students were looking for a way to make use of this research. We talked about the ways that scientists and artists see the natural world, and about methods that are used to represent three-dimensional things. We looked at a real flower from several angles, referring to the labeling that they had done to accurately name the parts, talked about the function of the parts, wondered about where it had grown, and decided that representing each part with paper was a good next step. They used construction paper and pastels and then made paintings and plans for an embroidered design.

While cutting out and coloring paper petals, Gabi made a very small scene on a tiny oval of paper. She showed it to me as she was cleaning up to go back to her classroom and said that it was “a beach.” I could tell by the satisfied look on Gabi’s face that she really liked it, and that making this tiny horizon had started her thinking. She came back the next day to work more with the flower designs and to complete a piece of art built around the tiny beach. Myra had developed an idea for embroidery based on her flower research, so I took out some fabrics for consideration, including some wool shorn

from my mom’s sheep in Colorado. Myra picked up a piece of the wool and quietly said that it smelled like India. She had traveled to India over the summer and remembered seeing sheep and goats. I traveled in India twice as an adolescent and have very strong, very wonderful memories of the smells and sounds of the different regions I visited. Myra also remembered waking up before dawn and hearing the sound of peacocks calling. She made paintings based on memories of India, skillfully applying what she had figured out about tempera from her painting of flowers.

Since the morning that Gabi and Myra first came to work in the art room, many other children have followed. Their conversations are great, their questions and insights are awesome, and it’s evident that they’re using this environment to examine ideas and build new skills. Children’s research about daily life in ancient civilizations has led to thoughtful costume design; dynamic outdoor play has been translated into complex and vivid board games. We’re now at work on a quilt that will be our contribution to a nationwide effort to send a message of welcome and care to immigrants and refugees arriving in the United States. Directed by a real love of the Montessori curriculum and a commitment to my role as a guide and advocate, I am very happy to serve as a supporting and invested witness to this work.

Maria Montessori reminds us that all of our adult skills, intelligences, emotional understanding, and social competencies were built by us as children.



CLOCKWISE FROM TOP LEFT: "TAJ MAHAL," WATERCOLOR PAINTING BY MYRA; "THE FOXGLOVE, THE TULIP, THE SUNFLOWER, AND THE HIBISCUS," TEMPERA AND INK PAINTING BY GABI; "INDIAN PEACOCK," OIL-PASTEL DRAWING BY MYRA; VIOLET AND SHINE AT WORK ON "WELCOME BLANKET"

Like all gifted scientists and great artists, Maria Montessori understood the value of close observation as a basis for discovery and shared truth. Driven by strong curiosity and interest in the social evolution of human beings, she came to recognize that many of the conventional modes of education were not designed with children's developmental needs in mind. She challenged the image of the child as a blank slate, of children as wild and undisciplined creatures that needed to be bent and broken in order to be rebuilt whole by adult instruction. Montessori instead talked about preparing environments that would speak to a child's deep interests, and about the vital role of adults as observers who are able to put children's true needs at the center of society.

Montessori wrote extensively about the "universal child," the child born to adapt to her time and place, the child who shares

fundamental needs and interests and patterns of growth with all other children. She reminds us that all of our adult skills, intelligences, emotional understanding, and social competencies were built by us as children. Drawing and painting, building and invention were critical practices in all of our childhoods.

Art is a part of life that is completely human. When art is fully realized, it is both deeply personal and also universally accessible. In my many years working with children as a Montessori guide, I have found common ground and frequent insight about how children learn—about the way in which they are building their understanding and coming to really know themselves as individuals—when I pay true attention to what they choose to make and how they go about translating ideas into visual language.

Tracing the Roots of Achievement

by EVELYN LAUER



The Montessori method may not rely on testing to quantify students' achievement, but that doesn't mean there's no way to objectively measure what's going on in Near North classrooms. NNM has recently implemented a classroom observation tool called the Developmental Environmental Rating Scale, or DERS.

Developed at the National Center for Montessori in the Public Sector, the DERS is an evidence-based tool that allows trained observers to assess the class environment, taking note of characteristics that research has linked to student achievement, both academic and personal.

"Montessori is not about preparing kids for first grade, for high school, for college," head of school Audrey Perrott says. "We want to get students ready for life. And in order to prepare them for life, we obviously have to prepare them for every step along the way. We're taking a much more holistic look at what are the skills needed to be successful."

Scientists who study learning emphasize the role of executive function, the command system within the brain that governs things like task initiation, flexible thinking, concentration, and the regulation of emotions.

"The DERS was built on the model that recognizes that executive function skills—the skills necessary to really be successful in life—are most important," Audrey says. The DERS was selected as an objective and consistent standard for evaluating how well classrooms promote these skills.

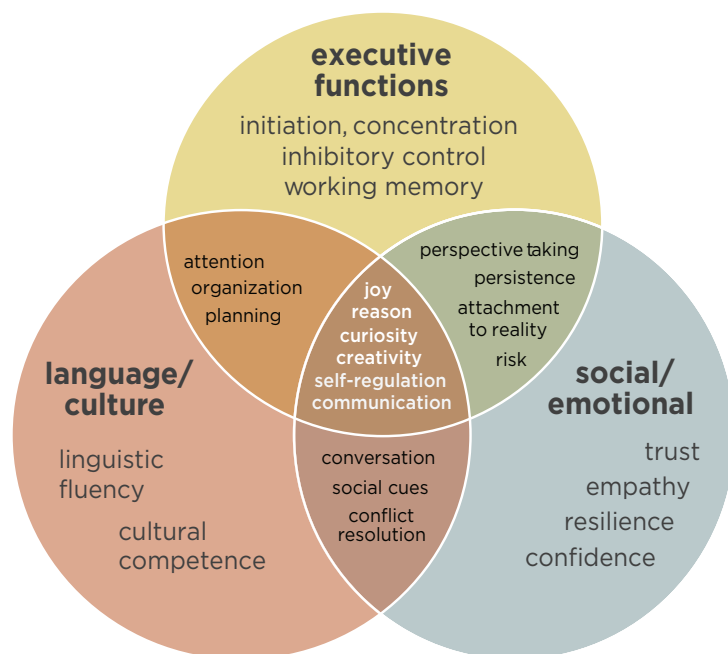
It works by focusing on specific aspects of child behavior, teacher behavior, and classroom environment. For instance:

- Do children sustain focus on one work?
- Do teachers introduce new materials in the form of an invitation rather than as an instruction?
- Have classroom materials been chosen for developmental appropriateness and function?

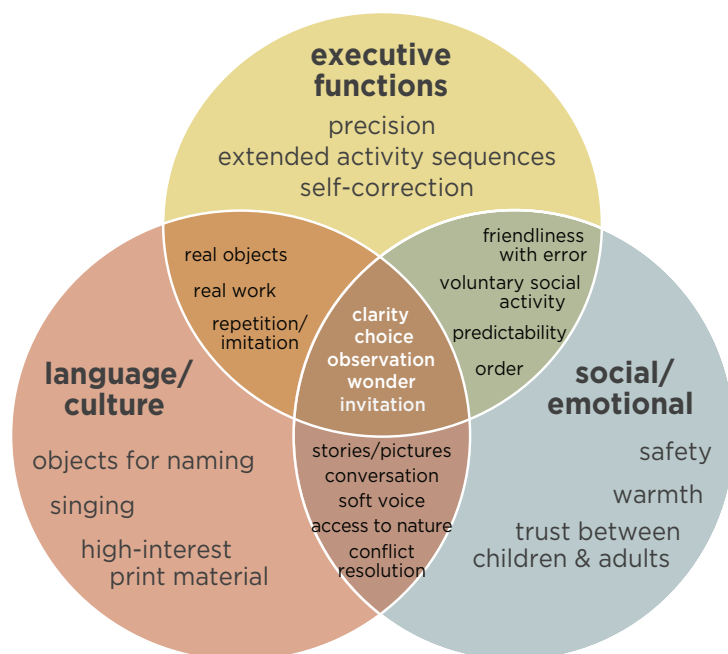
The DERS observer looks for 60 such behaviors and attributes, and scores their relative strength. These 60 traits, called inputs, correlate to five different areas of mastery NNM hopes to help its students acquire. Three of these areas—initiation and concentration, inhibitory control, and working memory—are characteristic of executive function. The other two—social-emotional development and linguistic and cultural fluency—are closely related to executive function, and also to qualities like empathy, curiosity, and the ability to form healthy interpersonal relationships.

With the goal of facilitating the "continuous improvement" of the classroom, the researchers who created the system propose various ways to integrate DERS analysis into a school's culture, from encouraging teachers to reflect on the findings all the way to filming selected classroom interactions to highlight examples of successful inputs. Audrey and the three academic directors, Reena Morgan, Anne Matern, and Chris Ambroso, were trained in the DERS this past summer and are currently familiarizing themselves with its use in the classroom and developing ways to apply the eventual findings. Teachers will ultimately be trained in the DERS as well.

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WIDE-SCOPE DEVELOPMENTAL OUTCOMES



MAPPING INPUTS AND OUTCOMES

Audrey believes that Montessori classrooms provide the ideal environment to foster the skills that will make children successful later in life, and that the DERS will help students get the most out of their experience at Near North.

"There is research behind what is important to be successful," she says. "It isn't that you got all A's, it isn't that you got into a specific high school—it's how you do school, not what school you get into."

For more information about the DERS, including papers describing the research behind it, go to www.ders-app.org.

Learn to Look at Learning

What child behaviors should parents be looking for in their classroom observation? Here are some suggestions from Reena Morgan and Anne Matern:

Follows daily routines

- Greets adults and peers
- Participates willingly in daily responsibilities
- Spontaneously cares for the environment

Engages in purposeful work

- Independently selects and begins work
- Moves to another activity (or can easily be redirected) if preferred work is unavailable
- Follows multi-step directions; is able to plan steps needed for multi-step works
- Attempts multiple ways of solving a problem
- Persists when frustrated; follows through on work to completion
- Sustains appropriate focus during work; able to focus amidst peer interactions

Participates in lessons

- Accepts invitations
- Engages with teachers and peers

Maintains academic expectations

- Completes work and meets goals and deadlines
- Maintains a work journal (6-9 and older)

Manages freedom within limits

- Manages transitions
- Is successful beyond the classroom (library, hallway, gym, etc.)

Regulates social behavior

- Refrains from interrupting ongoing conversations
- Observes peers' work without interrupting
- Follows conventions of grace and courtesy

Regulates physical behavior

- Safely navigates the room without disturbing peers' work
- Shows restraint when upset
- Engages in cooperative play during free time

Math with Meaning: Exploring the Montessori Math Curriculum

by LIZ BRANDT



Maria Montessori said, “The hands are the instruments of man’s intelligence.” She believed that in order for children to form an understanding of abstract concepts, their first introduction must be tactile and accessible in order to meet the children at their developmental level.

This belief underlies all aspects of the Montessori curriculum, but it is particularly striking in math: parents new to the method can have trouble understanding what’s going on because Montessori math work involves so many specialized materials and terms. Over time, though, the benefits become apparent. By starting with physical representations of math principles, Near North students acquire a mastery of the concepts through repetition, rather than simply memorizing the answers. Just as important, this approach also tends to work well for a range of learning styles, including visual, auditory, and kinesthetic.

As each individual work leads from the objects students use to the ideas underlying them, over a period of years Montessori math guides the student from a grounding in physical materials to engagement with higher-level mathematical concepts.

Math for Primary Students

Prior to age three, the mathematical mind is still in its unconscious stage, and abstract concepts aren’t yet easily grasped. In Toddler Community, students begin developing an understanding for math by using hands-on materials. Montessori work using the pink tower and the number box are examples of this kind of sensorial learning.

The number box, for instance, has interchangeable wooden panels that fit into the top of the box. Each panel is marked with a numeral and has the corresponding number of holes. The toddlers drop a peg through each hole, then trace the number with their fingers.

This incorporates learning numbers in multiple ways: children count the pegs and holes, see how the numeral is drawn, and trace it for themselves, making a connection between the value of the number and its abstract representation. Toddler Community teacher Vinkle Thakkar says that it also provides “order and routine, which gives the children ways to adapt to society—the more they do something, the more they participate with joy.”

Montessori math guides the student from a grounding in physical materials to engagement with higher-level mathematical concepts.

At the 3-6 level, students focus on learning to grasp concepts such as the sequential order of numbers and grouping. Primary Director Reena Morgan says, "If they have an interest in counting and are able to sequence objects from thinnest to thickest or biggest to smallest, we see that they've developed a sense of order and pattern and are ready to move on to the concrete Montessori math materials."

These include the golden beads, which are strung into bars, squares, and cubes as a physical representation of the decimal system. Working with materials like the beads is essential in helping the 3-6ers perfect their fine motor skills, and physically manipulating and counting the beads promotes the discovery of patterns. From this comes a foundational understanding of the relationship between the powers of ten and the place values at the core of our numerical system.

Math for Elementary Students

The idea of using concrete materials to practice math carries over into the 6-9 level: students work with the checkerboard and bead bars, for example, to learn to multiply large numbers and decimal fractions. They also begin to experiment further with abstract concepts, and teachers may use narrative to introduce these more complicated ideas. For instance, 6-9 teacher Viola Lee says, "When we teach how to measure angles, we tell the story of the ancient Babylonians and how they created a system to track the stars."

Students at the 9-12 level are given greater freedom in how to apply the math they're learning and work more and more in groups. While teachers may guide them with an initial lesson on a given subject, the students can take it from there, discussing concepts with classmates and exploring them together. Trish Joy, a 9-12 teacher, says that often "students create their own math problems to solve, and those problems end up being much bigger and more challenging than you

thought. This is great because they can practice with the problem on their own terms." Aidan Chung, now in eighth grade, recalls one particularly satisfying self-directed project in Jeff Peters's 9-12 class: he and some friends worked with computers to create a map of the solar system to calculate how far apart the planets are.

Junior High Math and Beyond

In 12-14, the Near North approach begins to converge with a more traditional math curriculum—concepts are often presented via lesson plans and textbooks, both to suit the more advanced subject matter and to help prepare students for the way math will be taught in high school.

Alumnus Lucas Shifrin, now a senior at Jones College Prep, says that his experiences at Near North shaped how he does math today. The way concrete math materials helped guide the transition into more abstract problems and ideas allowed him to grasp the underlying concepts and learn from his mistakes. Lucas says, "I like math because it's very visual for me, and I can show every step of my process and thinking. If I get something wrong I can see where that happened."

Montessori ideas in math are moving beyond Montessori schools as well. Jill Tani, a former teacher's assistant at Near North, has been teaching math at Walter Payton College Prep for the past ten years. She says that many of the CPS high schools, and Payton in particular, are beginning to adopt the Montessori method of working in groups. Whenever possible, Jill promotes discussion among peers and encourages students to seek more than one way of thinking about and solving a problem: "Exposure to more ways of seeing and representing math is helpful for students to further understand and ultimately retain the information." After years of work that meets them at their level, Near North students are well-prepared to meet work at any level.

Alumni News

by JEANNE DOUGLASS

Hayden Holbert '09 graduated from Warren Wilson College in North Carolina this past May. Having completed an environmental studies major with a concentration in sustainable agriculture, Hayden created a full-time job out of work he'd been doing for years: growing food at Avrom Farm in Green Lake, Wisconsin, where his mother grew up.

Hayden's mission at the farm is to "regenerate the land by farming in accordance with nature." He says that Avrom is managed "as an ecosystem through integrating livestock, crops, pasture, vegetables, and forest plants, creating an agricultural system that is both resilient and productive. By farming in this way, we are able to produce exceptionally flavorful and nutritionally dense food." His plans include launching an online shop to sell chicken and pork and offering shares in a vegetable CSA.



Hayden says his interest in ecology and how farming can help the environment began when he was a student at NNM. "I knew I wanted to be a farmer when I was a sixth-grader in Mr. Ambroso's class." Since then he has been growing vegetables on the farm every summer and more recently began raising livestock.

Avrom Farm supplies produce and meats to Chicago residents and businesses including Big Delicious Planet, a catering company owned by former NNM parent Heidi Coudal. For more information, go to www.avromfarm.com.

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