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Montessori school dials up the ISS

Golden Oak to Major Tom

BY **JULIAN ANDREWS**

The Golden Oak communications team

On Monday, October 28, students, parents and community members at Golden Oak Montessori School in Castro Valley, California, packed together in the school auditorium to make a long-distance call. But it wasn't to an out-of-state relative, or even a Montessori school from another country—students spoke to Astronaut Col. Andrew Morgan, currently stationed in the International Space Station (ISS).

The chance to talk to a working astronaut isn't just exciting, it is rare. Only a handful of schools nationwide get the chance to do so each year. A Golden Oak parent, Alessio Sangalli, who is an armature HAM radio operator, made the school aware of the opportunity to apply to contact the ISS through Amateur Radio on International Space Station (ARISS), an organization that coordinates and helps carry out calls between amateur radio operators and the ISS.

Once Golden Oak applied and was accepted last February, the countdown to the big day was on. There is a lot that goes into making a call to space and many educational opportunities to go with it.

"We tried to make it as all-encompassing of an experience for the kids as possible," said Golden Oak Operations and Data Analyst India Rodriguez. "This was a big deal and we wanted to try and squeeze every last drop out of the experience for these kids as we could."

While the actual call to the ISS was made via an antenna in Maryland that patched Golden Oak in (there weren't enough HAM radio operators on site to do the call directly from the school), thanks to Sangalli, students were well-aware of the technology used to make the connection.

Sangalli brought his HAM radio antenna—a 20 foot tall, 30-foot wide contraption strapped to the roof of his car—to Golden Oak, and took turns with each class working on moving the antenna around the blacktop and finding the right coordinates to home in on to pick up radio signals from all over the world.

Teachers at the school took the opportunity to teach students about space exploration, astronomy, physics and almost anything else they could think of related to space and the ISS. The school hosted ISS viewing parties at a local park where they gathered together to watch the station pass overhead, just as it would pass over Maryland when they made their call. The October date also meant that classrooms had just finished with the first great lesson when the call took place. Students' models, diagrams and research projects about the planets and the solar system lined the walls of the auditorium when the school gathered together to talk to Col. Morgan.

The call also provided both unexpected learning opportunities for students and a chance for Golden Oak to connect with the local community in interesting ways.

Because contact with the ISS only lasts for about 12 minutes, not every student had an opportunity to ask questions. Classrooms each democratically elected a student to represent them. This meant standing up in front of the classroom to give a speech about why they wanted to be their classroom's

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representative, then standing up again on stage in front of their peers and community and asking a question that would be broadcast over the airwaves and streamed on the internet for all to hear. That's a lot of pressure! Several students mentioned to Rodriguez that they overcame real fear of public speaking in order to pursue the chance to talk to an astronaut—and it was worth it.

Additionally, Golden Oak students sourced questions from all over the community, taking submissions at their annual science fair, accepting suggestions from students and teachers and eventually generating a massive list of potential queries for their conversation with Col. Morgan. The elected students not only had the responsibility of asking the questions, but picking a solid selection of questions from the list, refining them and preparing them for delivery.

When the big day came, Golden Oak was ready, with help from people all over the country. Sangali was standing by to assist, and an ARISS volunteer from North Carolina drove across the country to help make sure everything went smoothly. HAM radio operators in Maryland picked up the signal as the ISS came over the horizon, radioed Col. Morgan and patched him through to California.

"Golden Oak Montessori, welcome aboard the International Space Station."

Col. Morgan's voice rang out through the auditorium speakers and after months of preparation, it was finally time to begin the conversation.

Students asked a wide range of questions of the astronaut. What do astronauts do for fun? How do they communicate with each other given that they're from different countries? Do they get any fresh produce on board? While the call itself was short, it more than lived up to expectations. The chance to bring so many people together to create an important moment in the lives of so many students doesn't come along every day, but thanks to buy-in from many, many people, students at Golden Oak all walked away with an unforgettable experience.

"The level of community and parent involvement was very high," said Rodriguez. "We all appreciated that this was such a unique experience for our kids."

Julian Andrews is a Montessori graduate, journalist, and Communications Assistant for the National Center for Montessori in the Public Sector.

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Citizen science at St. Vrain

Engaging upper elementary students in authentic science work

BY **KATE GOSS**

Purposeful work

It's 9:30 on a Friday morning, and the Willow World Lab at St. Vrain Community Montessori School (SVCMS), a public Montessori charter in Longmont, Colorado, serving over 260 students ages three through 8th grade, buzzes with purposeful work. Groups of upper elementary students prepare and pack equipment to collect data in the watershed in the coming afternoon. Others practice skills—pouring water in precipitation gauges and adding up the millimeters, slotting pebbles through gravelometers to analyze the range of habitats in a stream bed, or spinning a sling psychrometer to determine relative humidity. Off to the side, students introduce a new peer team to the purpose of a transparency tube and how to use it. All these students are engaged and empowered to study their world through a Citizen Science program that connects students with NASA and the local environment.

The Citizen Science program at SVCMS integrates a triad of resources. Montessori philosophy and a strong science curriculum form the foundation. NASA's international science and education program, Global Learning to Observe and Benefit the Environment (GLOBE), compliments that foundation by enabling students to participate in real, hands-on citizen science work. Through GLOBE, citizen scientists from around the world collect and share data, providing granular local data that helps NASA refine satellite imagery as well as performing original experiments that aid understanding of the local environment. The standardized science protocols from GLOBE extend the SVCMS science curriculum by providing context and real-world meaning for student work. Finally, collaboration with a local watershed group practicing adaptive management gives students critical access to the local biome, providing both place and purpose.

Curriculum and Connections

At SVCMS, upper elementary students engage in a robust three-year cycle of scaffolded Montessori science curriculum. Fourth years follow the Coming of the Universe into studies of matter and energy, and then explore the foundations and organization of life. Fifth years begin to integrate information into understanding processes, such as studying the atmosphere to understand weather and layers of the earth to understand changing formations. As sixth years, they synthesize these processes into integrated systems, beginning with the hydrologic cycle, adding in constructive and destructive forces of a dynamic earth, and taking chemistry through energy flow in ecosystems. Throughout this path, the lithosphere, atmosphere, hydrosphere and biosphere frame student learning, just as the data collection protocols from GLOBE are centered around these spheres—providing a strikingly aligned series of real-world connections to the school's Montessori scope and sequence.

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These connections between Montessori and GLOBE become deeper by employing familiar Montessori materials to analyze and understand citizen science data. Hundred boards, with tiles flipped over to their painted white backs, become the perfect material to introduce and practice percentage of cloud cover, and then to internalize their perception of the ranges of cloud cover. Water and air quality analysis, involving amounts as small as parts per million, become crystal clear when students compare the million cube with the astonishingly small unit cubes. Even measuring, a perennial activity, takes on new meaning when turned upright and used to capture rainfall.

Willow World Lab

Student empowerment is an essential element of Citizen Science, and it begins in the Willow World Lab. The lab is a small space that was converted from an underutilized kitchen. The walls and shelves feature science equipment and Montessori materials to support their use. There's a cork board to highlight the latest field data as well as the new equipment to learn. Students can sign up for lessons, practice, and even master skills well enough to become trainers themselves. One such student trainer, compelled by the real equipment and math involved in measuring precipitation, reported practicing 53 times.

Freedom to practice independently in the Willow World Lab also supports students who may not be comfortable in science by providing a low-stakes, time-independent environment to reach a level of mastery that builds confidence. By removing emotional barriers, the result is higher engagement and a more inclusive body of citizen scientists both during practice and out in the watershed. One student who had not yet engaged deeply in science began self-identifying as a citizen scientist, even signing her name as "Dr." in her journal.

The Willow World Lab also empowers students' intellectual and functional independence. Practice leads to deeper understanding of data, with students being able to identify outliers and problem solve solutions. Student competency flourishes to the point that they feel empowered to assist peers. Having a difficulty with dissolved oxygen? See Susan or Zach. Students also plan their field outings, identifying the overall purpose and their roles in the team, determining, packing, and loading appropriate science equipment, and being responsible for returning it to the lab in good condition. A compelling driver for this engagement is the opportunity to be out in nature in the local watershed.

Place and purpose

Like many charter schools, SVCMS struggles with not being able to offer a prepared outdoor environment. Fortunately, collaboration with the Left Hand Watershed Center gives the school access to four unique sites along the Left Hand creek to center both the students and their work. Students follow the creek through a canyon, an alluvial plain, a high plain, and an urban setting—observing and collecting data through the seasons. They measure and map the banks, determine the slope and features, locate riffles and pools, observe the sky, and note the changing life surrounding it all. Their sincere joy in being out in nature with a purpose is evident in their first moments in the field, in their smiles and excited chatter, and in the earnest care they take in collecting data. They embody both being citizens of these beautiful places and scientists measuring and caring for them.

Authentic citizen-science and service

Guides at SVCMS have observed that this deep engagement and connection fosters curiosity, which is the grounds for authentic scientific questioning. Students are internalizing science as a process of observing, wondering, and finding out how to fulfill their desire to understand. They have begun to prepare and take an additional Curiosity Box on their field study outings, filled with additional equipment and resources to answer things they just might wonder about while out in nature.

This spring the fifth-year students will present original work at a Science Symposium centered on the watershed. As the program continues to develop, there is great potential and opportunity for sixth-year students to engage in service in adaptive management and care for their watershed. A deep knowledge of place and long-term data will support their developing understanding of ways to slow erosion and foster biodiversity. Then, like Montessori citizen-scientists, they will roll up their sleeves and make it happen.

Kate Goss, Curriculum Developer at SVCMS and former molecular biologist, has worked in Montessori education for more than 14 years.

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Remembering Jackie Cossentino

An inspiring figure in public Montessori

BY **NCMPS STAFF**

Jacqueline (Jackie) Mary Cossentino, co-founder and Executive Director of the National Center for Montessori in the Public Sector, passed away on December 15 last year after a brave eleven-month battle with colon cancer. She is profoundly missed by her husband Keith Whitescarver, their son Jack, and many relations, friends, and colleagues who were deeply inspired by her passionate nature and her tireless work for public Montessori.

Jackie first came to Montessori through her son Jack's experience in a Montessori school. At the time a professor of educational leadership at the University of Maryland, she began research into Montessori pedagogy and took on leadership roles in both private and public Montessori schools. Elsewhere in this issue, we've reprinted an excerpt from her scholarly work, and a bibliography.

In 2012 Jackie co-founded, with her husband Keith and AMS Executive Director Rich Ungerer, the National Center for Montessori in the Public Sector. She served as its central inspiration and driving force until her death.

Jackie's influence on those around her was immeasurable. In the days and weeks immediately after her passing, deeply moving remembrances and tributes flowed into NCMPS and spilled out on social media. We're sharing a few of those here to let everyone know how powerful her impact was on people's lives and on the Montessori movement.

Jackie was a bright light and leader in the Montessori world. She was eloquent, passionate, honest, and a visionary.

She was a tremendous source for good for so many in our profession—intelligent, visionary, passionate, kind, inclusive and insightful. Her work has made an incalculable difference to raising the possibility for and quality of high-fidelity Montessori practice for children in public schools. But more than that, she was a lovely, joyful person. We have all improved because of her tremendously important work.

Jackie was a connector who cared for others and appreciated the beauty of the every day… the world is a richer place for having had her in it.

She was an incredible force for good and will be missed dearly. We are thankful to have known and worked with her.

Ah, Jackie, we miss you dearly… such a bright light! Her light continues to live in each of us as we go about continuing her good work in the world…. we grieve and give thanks for her presence in our lives.

Jackie's passion, love, and commitment to making the world a better place was evident in all of her outstanding work.

… a friend, mentor and inspiration…

Her vibrancy and passion for our good work was an inspiration to so many—she inspired us all.

Her life's work continues in the many projects she initiated and in the hearts and minds of all of us.

Jackie was a strong, committed, passionate voice for Montessori education. She will be missed greatly.

What a tragic loss to the Montessori public sector. She made a lasting contribution, a great work for all of us to carry on.

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Jackie was such a great contributor to Montessori in the Public Sector. Such a huge loss. I am grateful for the work she did to bring more equity for children.

Jackie's strong intellect and deeply caring heart have graced Montessori practices for several decades. She was committed to sharing her insights and determined to do all she could to support every child.

Public Montessori may not have gotten as far as it had if not for Jackie.

Jackie did such fabulous work and really moved important initiatives along. The work she leaves behind is really important.

She was responsible for an astounding amount of progress for Montessori education. She helped us to expand our thinking and stretch both within and across organizations. We were stronger with her and she will be missed.

Jackie has been a force in Montessori education and her death is an enormous loss for our community. Few have contributed as much as she has and in so many ways. To say she will be missed is a huge understatement.

She was an amazing leader and educator committed to helping as many children receive an exemplary education irrespective of their backgrounds, an education that affirmed each child's infinite worth and boundless creativity and imagination.

Jackie was such a gift to the world. I'm so grateful that she found her cosmic task in public Montessori and was a trailblazer and a cheerleader. Her legacy is long and wide and deep

Jackie did such big work for a better education for children across the country.

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Montessori math for the adolescent

A conversation with creator Michael Waski

BY **DAVID AYER**
AND **MICHAEL WASKI**

Michael Waski has been a conventional public school math teacher and a Montessori high school teacher, and is the writer of two volumes on a Montessori approach to algebra for middle and high school, with a book on geometry in the works. MontessoriPublic sat down with Waski to talk about his work.

AYER: Can you tell us about your background in teaching and in Montessori? How did you get here?

WASKI: I got my B.A. in Elementary Education, and I taught 2nd, 3rd, 5th, and 8th grade math over five years in public schools. I got very frustrated with standards-based education—having to post on the wall what standards were being taught, being held to "students should be able to tell you what standard they are working on," all of that. For third grade!?? Not for me. And I guess I've been part of the AMI/NAMTA Montessori Orientation to Adolescent Studies for about 13 years.

AYER: So what is Waski Math?

WASKI: Do they call it that? I guess I've heard that. "Waski Math" started out as book, *Teaching Algebra to the Adolescent: A Montessori Approach*. Now there's a forthcoming *Teaching Geometry to the Adolescent: A Montessori Approach*, and The Math Institute at Great Work Inc., which is a platform for the books, workshops, and supporting materials. (You can find all of this at greatworkinc.org/adolescent-math-institute-1)

But really, it's an approach to teaching mathematics for adolescents developed originally for Montessori middle school and high school, but applicable to just about any exploration and discovery oriented secondary school program.

AYER: Tell me the origin story, then. How did this come to be?

WASKI: When I was at Montessori High School, I needed to document my work I had been developing in Montessori secondary environments, which I generally hadn't done with much detail. The only way I could think to do that was in the style of my Elementary albums. That summer at the Orientation to Adolescence I used my notes to show some work with algebra tiles and participants asked if they could see my documentation. I spent another year cleaning it up, getting it reviewed by AMI Elementary Kay Baker and her husband Terry, a math professor at Yale, and finally got it published.

AYER: And then…?

WASKI: When the Montessori High School closed, I started working for Great Work Inc. (GWI) here in Colorado. We've spent the last year trying to define the "Math Institute." But essentially we're trying to bring high quality math education, using a Montessori approach, to as many people as we can. Part of that is the books. We are also working on getting materials that accompany those books produced, so there are math materials that are appropriate for the adolescent.

When I was at MHS, I also developed a series of questions (the Daily Reviews) which is a spiraling approach to the curriculum and can be used as an organizing principle and follow-up work to the lessons. Several schools have adopted them, including Compass and Denver Montessori Junior/Senior High (DMHS) and have been using them for the past three years as the core of their curriculum.

I have also been able to offer webinars, on-line classes for math teachers, create instructional videos, and travel to do workshops to help spread the math love!

AYER: So about the book itself—is this a textbook?

WASKI: No, it's really not! Maria Montessori wrote, "What needs to be known is the little we need to teach. However, it must be taught in an absolutely exact manner." This is simply a set of lessons based on Montessori elementary material, which has been uniquely adapted and expanded for the adolescent. It is hopefully "the little we need to teach" in our Montessori adolescent communities.

AYER: What is it about adolescents that's different?

WASKI: Well, for example, the Montessori prepared environment for an adolescent mathematics classroom has to take advantage of students' social drives. Group work, discussions, hands-on activities, and an atmosphere of collegiality—of "fearless learning"—need to be present.

I use frequent math seminars, and prepare the environment for open exploration and extended work time.

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Really, it's the environment and the approach, more than any list of lessons, that makes it work.

AYER: OK, but there is a list of lessons. How do you suggest we use them?

WASKI: The book is organized very much like my Elementary albums. There's a table of contents, and lessons with prerequisites, materials, and some "teacher talk" and directions. Within topics, lessons are in a basic order of sequential knowledge, but you wouldn't present them in strict order, first page of the book to the last. Students should have lessons across topics as interest and ability indicate, and many topics cross over one another. I've included some sample charts of how one might move through the book, but every student's path might be unique.

AYER: And you have Geometry for Adolescents coming out, including for middle school. Isn't that usually for high school?

WASKI: Yes, geometry is usually relegated to tenth grade, which is a shame—it's such a beautiful and natural subject. When people think geometry is only for older children, they often think of the traditional proofs. Younger students may find these challenging or unappealing, but geometry is so much more than proofs! It's measurement and experiment; it's history and puzzles and logic. By "saving geometry for later" we're missing out on many amazing learning opportunities.

AYER: We do a lot of history, puzzles, and measurement in the elementary—how is this different?

WASKI: The elementary observation of patterns and developing rules continues for the 12-15-year-old as it deepens in sophistication and students apply these rules to the world around them.

Geometry for the adolescent should be alive and dynamic. So much of the work should be project-based and hands-on. Many of the concepts will have been introduced in elementary school, and perhaps early elementary school. Revisiting these concepts in ways that appeal to the adolescent—such as in practical social work, exploring philosophy, or more sophisticated blending of mathematical skills and topics, including algebra—brings the work alive and keeps it fresh. Students don't have to do formal deductive reasoning to engage with geometric concepts at a deep level. Deductive reasoning is important, but we can build the foundations early on, and revisit later with a new level of sophistication.

AYER: How are you seeing this used in schools? In public schools in particular? Can it be used in non-Montessori schools?

WASKI: It's always amazing to walk into a school and see the Timeline of Mathematics in the room, or some of the materials that have been developed for adolescents in use. What I love about Montessori is the entire structure of freedom, discipline, and responsibility, the way the day is structured around work, etc., that makes everything else work. To get the maximum out of what I have developed, one needs this whole-school or whole-person approach. Everything makes so much more sense when there are all these components present. It allows so much more for the individualization, the flexibility, the ability to allow students to work deeply and follow their own interests – so many things that ALL teachers want, but unfortunately are locked into a system that doesn't give them what they really need. It is hard to imagine what students are really capable of, but as Montessorians, we get to see that all the time.

What I hope is that the approach and materials that I can offer appeals to the sensitivities of the teachers who want more, and for them it is useful and helpful. But more so, I hope they see how it still isn't enough until they have the whole picture, and then this is where it would be great to have people changing over to a whole-school Montessori approach – because they see what is possible and see a path to getting there. And it is so exciting they are willing to take those risks and do something different and unique.

Michael Waski, a 20-year veteran teaching math to adolescents in public and private Montessori schools as well as conventional public programs, is the author of Teaching Algebra *and* Teaching Geometry to the Adolescent, *and is the director of the Math Institute as a part of Great Work Inc.*

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Safer science in the classroom

Real science experiments include being smart about safety

BY **GREG MACDONALD**

Did you have science experiments in your training? Do you shy away from them because of the complexity, or the preparation, or the mess? Or perhaps you've thought about the risk of some of the chemicals involved. (We'll come back to that!)

But the science experiments are an intrinsic part of our Cosmic Education presentations, allowing the children to get "hands-on" with the scientific principles demonstrated in the Great Stories and Key Lessons. And they can help reconnect distracted or disengaged children back to the classroom and prepare them for independent exploration and work in all subject areas. In fact, they perform a similar function to the Exercises of Practical Life in the Casa dei Bambini.

In *From Childhood to Adolescence*, Montessori noted that the experiments "are similar to those of practical life," and the importance of Practical Life cannot be overstated. Montessori pointed out that such activities "coordinate the mind and fix the attention in a simple manner. They are a necessary preparation for subsequent constructive work." Montessori also compares science experiments to the "Silence Game" of the Casa, saying:

> *Calm and attention are required. The psychological effect produced on the children at this age may be compared to the that of the silence lesson on the younger children. The younger children severely restrict their movements, while the older ones must measure their movements and must therefore pay concentrated attention to them.*

So the science experiments, like Practical Life activities and the Silence Game, can help children to focus their attention and to concentrate, and as an outcome children may re-acquire the ability to work. They have in this way prepared themselves for the elementary guide's other (non-science) presentations, and for the independent work that follows them. The best part (if you ask the children)? Those "preparations" were *fun!*

How can you tell if such a chemical is safe to use, or what precautions one might take when using it?

However, science experiments have many purposes beyond this important, personally empowering effect. When they are first presented, they provide an image for a story or for a presentation, and so they are an important part of our storytelling toolkit. Paper pieces sprinkled on water, for example, enable the children to imagine how atoms form the many complex substances that make up our universe.

When the children are older, this same experiment may be examined in order to identify the scientific principle that it illustrates—in this case, surface tension of water. Later, we can return to the demonstration to explore the *mechanism* of surface tension, leading to the idea of hydrogen bonding. From these explorations, the children can extend their studies further, engaging in deeper and more sophisticated studies of the fields of chemistry and physics.

Perhaps you already incorporate science experiments into your class. (The experiments were likely a part of your training, so why wouldn't you?) However, have you taken a look at them lately, in the context of current knowledge about the chemicals involved, and the regulations and policies that might govern their use in an elementary classroom? Many of the substances that were a part of early Montessori elementary trainings we now know present real hazards. They may be one or more of the following: *toxic, corrosive, carcinogenic, mutagenic,* or *teratogenic*.

Mercury was used in the training that I received, for example, and we now know how dangerous that metal is. Schools have been evacuated just because a mercury thermometer was broken, and the cleanup of a mercury spill at an Arizona school cost a reported $800,000!

We also used ammonium dichromate for the volcano demonstration. How can you tell if such a chemical is safe to use, or what precautions one might take when using it? As it happens, the international science community has developed a standard for Safety Data Sheets (SDS) to detail

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occupational safety and health information for just about any chemical you will encounter. Google "ammonium dichromate SDS" (or any other chemicals from your training) and take a look at the result. Are your palms feeling a little sweaty? There are many materials that I stopped using decades ago, and I think that now you'll understand why.

I would strongly urge you to review an SDS for each of the chemicals that you use in your classroom. (Fisher Scientific has a good free database of these sheets at thermofishersci.in/technical_msds) Note their dangers, and the safety precautions recommended for each. If your school district has a Laboratory Safety Handbook, or a policy statement, refer to this document also. The limits to the reagents that may be used, and the conditions under which they may be used, are becoming more stringent year by year.

This doesn't mean that you can no longer include "experiments" in your class! It just means that some of the experiments need to be replaced by safer alternatives. (You can download my own collection of *Safer Experiments* for free, at montessorimentoronline.com). YouTube is also a great resource if you just can't let go of those unacceptable demonstrations—the sugar and sulfuric acid experiment can be observed without the danger of inhaling sulfuric acid vapor or sulfur oxide fumes, for example. The children can then follow up with safer experiments that illustrate the same principle.

Remember when you heard about Practical Life for the first time? One thing that was probably emphasized was that these activities should be *real*. The same is true of the elementary experiments, and even with these precautions, the work can be very real. Real apparatus should be used, and real laboratory conditions should be maintained (even though we're only using safer materials such as sugar and vinegar).

By implementing laboratory conditions, we are preparing the children for later life, when the chemicals at high school will be more dangerous. Laboratory safety will be a habit for our Montessori children. The bonus in the Montessori elementary is that when the children know that they are conducting experiments in the same way that high school and college students do, the whole activity is more attractive: *"This is real science, and we're working just the way that high school students and real scientists work!"*

So set up a laboratory area (near a water source preferably) in your classroom. Prepare your classroom environment properly for experiments. For example:

- Store the chemicals in clearly labeled scientific-looking containers. Use containers that hold only enough of each reagent for two or three repetitions of the experiment. Each substance is less likely to be used to excess, and you have some control over how often the experiment is performed each day.
- Have a table reserved for experiments, or if this is impossible, have a set-up that includes a water and stain-resistant covering for the designated table.
- Have special science area clean-up materials available.

And insist on good laboratory safety practices such as:

- Special aprons (or even lab coats) and eye, skin, and breathing protection that must be used for science experiments, as applicable. Make it part of the instructions.
- Never touch your face when conducting an experiment.
- Always wash your hands when the experiment and clean-up have been completed.
- Never use food preparation equipment for science experiments, and if this happens by accident, keep that piece of equipment permanently in the science area.

Local district handbooks and policies can guide you so that the safety of the children is optimized. On no occasion should you stray from these requirements. The safety of the children is your top priority at all times.

By introducing (safer) science experiments into your Montessori classroom, you are bringing an important aspect of Cosmic Education to life for your children. You are also, as a side benefit, enabling the future scientists in your classroom to explore their interests and their gifts. And most of all, you are offering children in your class a chance to rediscover their own unique path towards optimal self-construction.

Greg MacDonald is an AMI Elementary Trainer who has conducted Montessori 3-6, 6-9, 9-12 and 6-12 classes. He consults schools, and provides teacher, parent and public workshops, nationally and internationally. He has taught, and served as Principal, in traditional public schools, and Montessori schools. Contact him at: montessorimentoronline.com

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Montessori benchmarks

Meeting standards by putting Montessori first

BY **KATY MATTIS**
AND **NCMPS STAFF**

Montessorians working in the public sector have been faced with the challenge of meeting standards and preparing students for standardized testing for decades. In the early 2000s, No Child Left Behind increased the pressure on public schools as schools began being measured through "high stakes" summative testing. In response to this added pressure, individual Montessori schools as well as larger Montessori organizations began "aligning," "mapping," or "cross-walking" the Montessori curriculum to the Common Core State Standards or to individual state standards.

Through our work in the field, we have found that the practice of aligning and/or "cross-walking" Montessori curricular elements with those outlined by standards' developers tends to degrade the integrity of the Montessori program and to negatively affect overall outcomes. While we, as Montessorians, feel confident that the Montessori curriculum when fully implemented surpasses nearly all of the expectations set by Common Core and other state standards, we have seen schools respond to the pressures of standards and assessments by "supplementing" the Montessori curriculum with worksheets or district textbooks to teach students how to take the test, as well as rushing to abstraction or holding a student back because the work they want to do is not a standard of their grade and they have grade-level standards that they have not yet met.

To that end, we advise against aligning the Montessori "scope and sequence" to any other curricular framework. The Montessori program is larger, more complex, more integrated and, perhaps most important, nonlinear. That is to say, there's a very wide scope, but the idea of sequence just doesn't map to what we do very well. Particularly at the elementary level, there are many paths to attainment supported by multiple materials, lessons, and extensions. Indeed, a signal strength of the program is its personalization, which includes not just differentiation in terms of place, path and pace but a course of study that by design is ceiling-less.

Furthermore, when we align Montessori to the standard, there's a danger of twisting and distorting the Montessori in order to fit the Procrustean bed of the standards. Why not put Montessori "in the left-hand column," in an order and organization that makes sense for Montessori, and let the standards be out of order on the right?

So we set to work on our own set of benchmarks, drawing on our own trainings as well as the Montessori National Curriculum, developed in partnership with AMI and adopted by Australia in 2011. As a first step, we developed Skills Inventories for each level of Montessori education (which can be found in Chapter 5 of our Assessment Playbook). The Skills Inventories are benchmarking documents which give a clear, detailed statement of what a child can be expected to know and do *after three full years at a given level*.

For example, the Early Childhood Skills Inventory covers executive function and social learning domains as well as language and math (and more), and includes elements such as "manages transitions" and "completes multi-step sequences" as well as "reads with purpose and understanding" and "understands numbers 1–100". Lower Elementary and Upper Elementary Skills Inventories work the same way. The Inventories capture key outcomes that can be measured via observation or through specific tasks, and can be used to show accountability to schools, districts, and other authorizers. And of course they are used well before the end of a three-year period to help teachers stay on track and to identify children who may need additional support along the way.

The Inventories capture key outcomes that can be measured via observation or through specific tasks

Now, based on feedback from the field, we are working on a set of Montessori Benchmark Guidelines to expand and improve the Inventories. You can see a draft of this work on page 3, in green. The Guidelines are organized generally by album, and within that by chapter title (such as "Lines" or "Polygons" in Geometry). We know there's a range of organizational structures for

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albums emerging from different trainings, but we've done our best to create something we think most Montessorians can work with.

Within each album, we've stated a Benchmark for each chapter and identified the Montessori lessons which teach the relevant concepts, providing examples of student work to meet the skills inventory as well as evidence that could be used in a digital or paper portfolio as evidence of progression towards mastery. We include information about what students might be asked to show on summative assessments. Finally, on the far right we include the Common Core State Standards are covered by each Montessori benchmark.

It's important to note that the lessons, work, and standards map to the whole benchmark, preserving the integrity of the Montessori approach. We don't think of it as teaching an individual lesson to meet an individual standard. What we're saying is, if you present all the lessons in the chapter, and your students are doing the kind of work we're describing, that's how you meet the standard.

We hope these documents can serve as a tool for teachers to make sure they are covering required curriculum, rather than being primarily a compliance document. At the same time, we expect that the tool will help demonstrate the richness, complexity, coherence, and completeness of the Montessori "curriculum" to outside observers who may not speak our language.

The Montessori program is larger, more complex, more integrated and, perhaps most important, nonlinear

Currently, we are working on completing this work for Math and English Language Arts for Lower and Upper Elementary followed by Primary. We look forward to sharing this project with you as it evolves over the coming months.

Katy Mattis is Director of Tools and Assets at the National Center for Montessori in the Public Sector, and a former public Montessori elementary teacher and school principal.

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Geometry: Polygons

[Draft version of the Montessori Benchmarks Guide]

Montessori Benchmark	Associated Lessons	Student Work (Examples)	Portfolio Evidence (Examples)	Assessment Considerations	Common Core Standards
Recognizes, names and classifies plane geometry shapes: triangle, square, circle, types of triangles, types of quadrilaterals, regular polygons pentagon, hexagon, heptagon, octagon, nonagon, decagon, curved figures, compound and curvilinear figures.	Types of Plane Geometric Figures Types of Regular Polygons According to the Number of Sides Types of Planar Simple Closed Curves Parts of a Triangle Triangles According to Sides Triangles According to Angles Triangles According to Sides and Angles Types of quadrilaterals Parts of a Quadrilateral Parts of a Parallelogram and Rhombus Parts of a Trapezoid The Family Tree of Quadrilaterals Types of Polygons	Sorting shapes and replacing in frames Labelling images and shapes Tracing, cutting, gluing, drawing, labeling and writing activities Creating charts and booklets Researching shapes and plane figures in the environment Using pairs of triangles to construct a variety of triangles and quadrilaterals Discovering more shapes by sliding, pivoting and flipping triangles Using sets of triangles to construct hexagons, pinwheels and related complex shapes Constructing, manipulating, comparing and labelling plane figures using concrete material Building and reading definitions	Drawings of plane geometric shapes: curved figures (circle, ellipse, oval) compound and curvilinear figures (curvilinear triangle, 'flowers') Observation notes of students recognizing and naming constructed shapes Drawings of constructed shapes Classifying quadrilaterals (common quadrilateral, rectangle, square, parallelogram, rhombus, kite, trapezium) Classifying regular polygons (pentagon, hexagon, heptagon, octagon, nonagon, decagon) Classifying plane figures (closed curves-polygons, concave-convex) Classifying types of polygons (irregular-regular, the seven types of triangles, polygons with more than four sides) Identifying and labeling the parts of polygons (surface, perimeter, sides, angles, vertices, base, height, diagonal)	Students can understand and tell about the parts that make different shapes unique. Students can build and draw shapes that have certain parts. Students can create two-dimensiona l shapes (rectangles, squares, trapezoids, triangles, half-circles and quarter-circles). Students can name and draw shapes. (triangles, quadrilaterals, pentagons, hexagons and cubes.) Students can place shapes into categories depending upon their attributes (parts) Students can name a category of many shapes by looking at their attributes (parts).	**1.G.A.1** Distinguish between defining attributes (e.g., triangles are closed and three-sided) versus non-defining attributes (e.g., color, orientation, overall size); build and draw shapes to possess defining attributes. **1.G.A.2** Compose Two-dimensional shapes (rectangles, squares, trapezoids, triangles, half-circles, and quarter-circles) or three-dimensional shapes (cubes, right rectangular prisms, right circular cones, and right circular cylinders) to create a composite shape and compose new shapes from the composite shape. **2.G.A.1** Recognize and draw shapes having specified attributes, such as a given number of angles or a given number of equal faces. Identify triangles, quadrilaterals, pentagons, hexagons, and cubes. **3.G.A.1** Understand that shapes in different categories (e.g., rhombuses, rectangles, and others) may share attributes (e.g., having four sides), and that the shared attributes can define a larger category (e.g., quadrilaterals). Recognize rhombuses, rectangles, and squares as examples of quadrilaterals, and draw examples of quadrilaterals that do not belong to any of these subcategories.

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Equity aligned practices in Montessori math

Mixed ages and materials extend access to learning

BY **TAMI O'KINSELLA** AND
CARREN SENN WALKER

Dr. Montessori approached children with an open mind, stubbornly refusing to cloud her observation of any child with the negative judgments made by mainstream culture. On the contrary, she paid close attention to children from a variety of socio-economic and ethnic backgrounds as well as children with different abilities. Because of this, she has had a global influence.

Montessori pedagogy includes an inherently equity/inclusion-focused approach to math instruction which puts Montessori public schools in a strong position to provide leadership in American education. Montessori practices that bring equity to math instruction, increasingly supported by research as both equitably delivered and educationally sound, include mixed-age groupings, uniquely created mathematical materials with a built in control of error, the three hour work cycle, and a storytelling tradition.

Montessori distinguishes itself as an alternative program with a consistent pattern of mixed age groupings. Mixed *age* groupings implicitly allow for and endorse the practice of mixed *ability* groupings. In her book *Building Equitable Classrooms*, Dr. Rachel Lotan promotes these grouping as a feature of equitable classrooms because they promote "equal status interactions." All students have equal access to qualified and experienced mathematics teachers, quality curriculum and equally challenging tasks.

Mixed-age groupings change how students view and interact with each other. Historically, American schools have practiced "tracking," or placing students into groups based on notions of their abilities in mathematics. These math groups have at the extremes used labels such as "low-achieving" and "high-achieving" or "gifted math students" and "remedial math students." The idea is that such groups enable the teacher to cater their lessons towards specific ability levels. But tracking in the U.S. has been associated with segregation and discrimination of children from nondominant ethnic groups or low socio-economic status. However, it continues to find its way back into classrooms in the United States, particularly in the area of math instruction, albeit with different nomenclature.

The materials appeal to a diverse group of children

Montessori noted children's social behavior in her scientific observations over many years and in a variety of cultures. What these children revealed to her was surprising and consistent: They knew what they needed, and they learned from each other. In present-day Montessori classrooms, children are at times attracted to peers and materials that offer something the child is lacking. In mathematics, this might look like an elementary child being drawn to a peer because that child understands something that their reasoning mind wants to know. Conversely, it could also look like a child being attracted to a peer because they are excited about a concept and want to share it. Having the freedom to converse with each other, children can gain an understanding of (and be fascinated by) the logic of a peer. Through these interactions they come up with a different strategy to demonstrate the concept and, as a by-product, expand their pool of strategies and deepen their own understanding. This is a wonderful process that happens when children can work and receive lessons with each-other because of their curiosity and attraction, rather than from a perceived notion of their ability.

Like Montessori, Carol Dweck, the proponent of a "growth mindset," states that it is the teacher's job to unlock those students who are not learning. Contrary to the "fixed mindset" mentality, the idea here is that there is no such thing as a "math person" but rather, all children are equally capable of learning math given the opportunity and access. Dr Danny Martin, a leader in math education and professor at the University of Chicago articulates the axiom that

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Black Children Are Brilliant. (Video here: youtu.be/cdFMN4Rr_JI)

We guide by helping children become aware of the different kinds of capabilities, strengths and talents among their group. It is equally valuable to help them realize the rich repertoire of experiences each student brings from their cultural and ethnic backgrounds, as well as the multiple intellectual abilities which rich mathematical tasks require. Equal status is fostered when students are working in small groups on such tasks. The guide walks among them observing, giving feedback and changing expectations. This can be done by highlighting and making use of the contributions of individual students, especially those with lower social status among their peers because they have not been recognized as the mathematically "smart" ones.

The Montessori materials also support equity with their built-in control of error and their appeal to multiple modes and senses. These multi-dimensional materials are visually and tactically attractive to children, they feed their desire to move, and they provide opportunities for a sensory-motor exploration of mathematical concepts. The materials appeal to a diverse group of children. Children from cultures that stress visual, auditory, tactile or kinesthetic ways of perceiving the world or children whose language or dialect is different from that of the adults in their classroom, still have access and opportunity to mathematics via these materials.

The uninterrupted three-hour work cycle provides the time for children to extend their exploration. During these explorations, children learn, by experiencing, such concepts as squared and cubed numbers, commutative and distributive law of multiplication, or the measurement of a liter of water through such exploration. The process of trial and error, taking risks during individual and small group exploration and making mistakes brings about learning.

A study done comparing Chinese and American teachers' understanding of fundamental elementary mathematics highlights the importance of such freedom. In the study, while the majority of Chinese teachers were enthusiastic about exploration of concepts on their own, even when unsure of an answer, most U.S. teachers held back in exploration and avoided wrong answers. A guide can draw their attention to the exploration children do and point out that such risk taking happens in the same way when they make verbal attempts at answering math questions in front of their peers. Errors are to be celebrated as pathways to learning.

Finally, then Montessori story-telling practice supports equity and inclusion in mathematics instruction. Besides the Story of Numbers, many elementary lessons either begin with a story or application of a concept to real life situations, or include a story about some aspect of the lesson. For example, negative numbers can be applied to penalties on a football field or to an overdrawn bank account. Telling stories to children that connect to the context of their culture presents an opportunity to build equity and inclusion. Encouraging them or their parents to tell such stories helps the reasoning elementary child to understand that mathematics is fundamentally related to the needs of human beings and it fosters the learning of mathematics. Research suggests that when problems are rooted in the contexts of learners, students can demonstrate much deeper mathematical understanding and their performance is also higher on traditional mathematical measures.

Dr. Montessori started with the child and came up with a method continuously cultivated by what the children showed her. Montessori public school educators and leaders are called to do the same. As Dr. Montessori stated, "Knowing what we must do is neither fundamental nor difficult, but to comprehend which presumptions and vain prejudices we must rid ourselves of in order to educate our children is most difficult." Montessori public school leaders must continue to observe the child and to be bold in stating principles and practices that move towards building equity.

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Cossentino on Montessori rituals

An outsider's appreciation for the method

BY **JACQUELINE COSSENTINO**

The following is an excerpt from a paper published in the *American Journal of Education 111* in 2005. The full paper, and more of Cossentino's academic publishing, can be found at public-montessori.org/cossentino.

Cossentino had two books in the final stages of publication at the time of her passing in December, 2019. *Visual Thinking in Montessori Environments* (with Philip Yenawine), and *Following the Family: Practical Lessons for Educating Human Potential* will appear later this year.

Ritualizing expertise: A non-Montessorian view of the Montessori method

This article examines the practice of Montessori education through the lens of ritual. Anchored by description and analysis of a lesson in an elementary classroom, the lesson is viewed as a series of ritualized interactions in which both teacher and student act out multiple layers of expertise within the cultural frame of the Montessori method. Analysis is grounded in frameworks drawn from ritual theory and explores the role of ritual activity in delineating both the contours of Montessori practice and the boundary between Montessorians and non-Montessorians.

Introduction: culture, method, and practice

This article is about how teachers teach by practicing the Montessori method. It began as an attempt to examine the construction of Montessori teaching expertise as it occurs in practice. As a researcher trained in ethnographic methods who had gained access to observe a Montessori classroom, and as an educator congenial to what I understood to be the child-centered, constructivist bent of Montessori education, I was confident that I could capture the essence of the "method" from "the native's point of view." I was wrong.

As the title suggests, I am a non-Montessorian, which is to say I am—or was, as will be explained later—a stranger to the ways of Montessori education. It was, indeed, the strangeness of what I encountered when I first visited a Montessori classroom in order to investigate schools for my then three-year-old son that prompted me to linger (first figuratively and now literally) in the environment. Having spent several years as a researcher attempting to make strange the familiar worlds of U.S. high school classrooms, I was initially baffled to find a classroom that was alien to anything I had known as a student, teacher, or researcher. From the way the classroom was organized—large, carpeted spaces punctuated by low shelves containing meticulously placed trays of "materials"—to the manner in which students and teachers interacted—minimal discourse, usually conducted in whispers—nothing was as it should be, at least not according to the classroom norms with which I was familiar. Equally baffling was the discovery that, despite its geographic and theoretical reach (Montessori is a worldwide movement with over 3,000 schools in the U.S. alone), both the method and the movement remain largely unstudied by mainstream educational researchers. My initial observations, coupled with the dearth of research on Montessori practice and culture, suggested that the cultural meanings of Montessori practice were worth a closer look.

My initial experiences as an observer in a Montessori classroom also suggested the importance of being an insider if one is to practice the Montessori method. That is to say, the "method," as Montessorians are quick to point out, cannot be reduced to a collection of instructional techniques or curricular objectives or didactic materials. Rather, the practice of Montessori education entails participation in a highly coherent and deeply textured culture. Within that culture—what I understand to be the values, beliefs,

I was initially baffled to find a classroom that was alien to anything I had known as a student, teacher, or researcher

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and norms shared by Montessorians—members construct the meaning not only of a particular type of teaching and learning but of a particular type of living. How they do it is the subject of this article.

While my status as a non-Montessorian precludes the sort of participation that would enable a complete portrayal of Montessori culture from an insider's point of view, I aim to capture some of the complexities of that perspective by focusing on the action of Montessori practice. Drawing from McIntyre's definition of practice as "coherent and complex human activity. . . through which goods internal to that activity are realized," I elaborate a theory of practice in which the action of teaching is constitutive of culturally derived values, beliefs, and norms through which the "goods" of Montessori culture are realized. The "goods" or virtues of Montessori culture are defined in Maria Montessori's voluminous writings, which elaborate a holistic or "cosmological" worldview centered on concentration, coordination, order, independence, and respect. Those same goods are visible in the actions of Montessorians, who construct their practice within the cultural and technical bounds of the Montessori worldview. Relying on both a close reading of Montessori doctrine and a close analysis of an instance of Montessori practice, I highlight the relationship between the doctrinal and embodied dimensions of practice, attending especially to the manner in which actions constitute values, beliefs, and norms.

My central argument is three-pronged. First is that the Montessori method is an exemplar of a particular type of "coherent" practice, which is most obviously demonstrated in the consistency in language and behavior evident within as well as across classrooms and schools. Second is that the coherence of Montessori practice—both action and worldview—is located in Montessori culture. Like all teaching, the practice of Montessori education is best understood as "cultural activity," and the beliefs, values, and norms of the Montessori worldview are encoded in a distinctive set of cultural scripts that are known collectively as the Montessori method. Third is that those scripts—as encoded in the method—are enacted in the routines and rituals that punctuate life in Montessori schools. From the way a child learns to roll and unroll a mat or the intricate choreography of a lesson in hand washing to the larger ceremonies of the Great Lessons, ritualized activity is among the most distinctive features of Montessori education. In marking time, shaping space, and enacting values central to the culture, these rituals define the contours of Montessori practice and, in so doing, they illuminate both the coherence and complexity of the method.

Ritualized expertise in the classroom

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You can read the rest of this article at public-montessori.org/cossentino.

Jacqueline Cossentino was a co-founder and Executive Director of the National Center for Montessori in the Public Sector.

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Montessori vs. "No Excuses" discipline

Could self-discipline be what some families really want?

BY **JOLANNE GOLANN**
AND **MIRA DEBS**

This article first appeared in Education Week *as The Harsh Discipline of No-Excuses Charter Schools: Is It Worth the Promise? on June 9, 2019. Reprinted with permission from the authors.*

The school was calling again. This time, it was for humming. Esmeralda, a middle-class Latina mother whose daughter attended a high-performing charter school in a northeastern city was incredulous as she recounted the conversation. (As education researchers, we use pseudonyms to preserve parent and school anonymity). "I said, 'did she curse?' 'No.' I said, 'Did she disrespect another student?' No. I said, 'Did she disrespect you?' 'No. She was humming.'"

Another time, the school called when her daughter laughed during a fire drill. The punishment was a day spent wearing a yellow shirt and no talking with her peers. These frequent phone calls made Esmeralda feel disciplined too. "I'll swallow my pride," she told us, balancing her discomfort with her daughter's impressive reading gains. Esmeralda's experience echoed many parents we interviewed in our recent study (journals.sagepub.com/doi/full/10.3102/0002831219831972) who questioned whether a system of harsh discipline was worth the promise of academic achievement.

In recent years, research has shown that school discipline falls harder on the shoulder of Black and Latino students. The Obama administration drew attention to the higher suspension rates and the negative impact of zero tolerance policies. In 2014, they released guidelines aimed at curbing suspensions, an advisory that has now been rescinded by the Trump Administration.

But suspensions are the most extreme example of the many ways that Black and Latino children often experience controlling and punitive school environments, even in schools upheld as urban education success stories.

In the past decade, the "no excuses" charter model has proliferated around the country through prominent charter networks including KIPP, Uncommon Schools, Success Academies, YES Prep and Achievement First. The "no excuses" model is loosely defined, and more recently, a number of charter leaders no longer embrace the term. Whatever it's called, the model combines a college prep curriculum with strict discipline and a longer school day. These schools have been celebrated for their high test scores for black and Latino students and now form the most prevalent charter option in a number of American cities.

No-excuses students are typically required to wear uniforms, sit straight, hands folded on the table their eyes continuously on the teacher. At breaks, they walk silently through the halls in single-file lines. Violators are punished with demerits, detentions and suspensions.

When some have challenged this model as unethical and racist, supporters point to parent demand. Eva Moskowitz, CEO of Success Academies, which runs 48 no-excuses charter schools in New York City with long waiting lists, argues that parents, largely black and Latino and low-income, "believe in stricter discipline," and are "voting with their feet" by enrolling their children in these schools.

As researchers who have taught in and studied these schools, we found that parents' attitudes were not as simple as Ms. Moskowitz suggests. The 25 black and Latino parents we interviewed in a no-excuses school valued discipline, but viewed it as *more* than rule following. They wanted demanding academic expectations alongside a caring and structured environment that would help their children develop the *self-discipline* to make good choices. Recognizing the peer pressures their children faced, these parents did not want their children to become "robots" or "little mindless minion[s], just going by what somebody says." Their concerns echo other studies that question whether the no excuses model adequately prepares students to be successful in college.

There are school models that offer parents a better balance of academics and a nurturing school environment.

There are school models that offer parents a better balance

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In our same study, we also interviewed 28 Black and Latino parents whose children were enrolled at two public Montessori magnet schools. Although many Montessori schools are private, there are over 500 public Montessori schools around the country, half located in cities, and these schools enroll a majority of students of color. Like the parents at the no-excuses charter, parents at the public Montessori schools valued high academic expectations. But they liked that their children were not being punished and their children had the freedom to choose their work in the classroom and collaborate with their peers on projects small and large.

Montessori schools aren't perfect: a recent study showed black students in a public Montessori school were still disciplined at higher rates than their white peers, even though overall discipline rates were lower than other area public schools. Others have called for more Montessori teachers of color and training in culturally responsive practices to support the diverse population of students. But parents in our study felt that Montessori school offered a better balance of academics and a nurturing school environment.

Charter schools were originally designed to reflect the desires of families and local communities. To give parents the choices they want and deserve, school districts and charter authorizers should encourage more schools to foreground student independence and downplay punishment like Montessori and other progressive models. They also need to hold charter schools more accountable at the approval and renewal stage by measuring of school culture including student satisfaction, teacher turnover, and school suspension rates, and by closely examining the nature of school disciplinary practices.

These parents did not want their children to become "robots" or "little mindless minions"

It's encouraging that a number of no-excuses schools are responding to criticism by incorporating social and emotional learning, making schools trauma informed, and using restorative justice circles to reduce suspensions. But this culture change is not easy, and the model is not changing fast enough. Recently, students have protested the disciplinary system at Success Academy high school in New York. A disciplinary scandal at one Achievement First high school could lead to leadership change of the entire network.

The parents who spoke with us questioned the assumption that different families need or even want different kinds of schools. As one black middle-class mother at one of the Montessori schools asked us, "Why is it that a certain population have to have so much structure in order to be successful compared to another population?" Parents from all backgrounds want strong academics and respect for their children, where no one has to swallow their pride. Why can't their children have it?

Joanne Golann is an assistant professor of public policy and education at Vanderbilt University and the author of numerous articles about no-excuses schools.

Mira Debs is executive director of Yale's Education Studies program and the author of Diverse Families, Desirable Schools: Public Montessori in the Era of School Choice. She is a former teacher at a no-excuses school.

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Elizabeth Seebeck and Oglesby Montessori

A tireless supporter of public Montessori

BY **HANNA RICHARDSON**

Elizabeth Bryan Seebeck, a passionate supporter of public Montessori in Chicago, passed away at the age of 55 on October 11th, 2019, after a thirty-three month battle with ovarian cancer.

Seebeck was in particular a champion of Oglesby Montessori, a PK–6th grade Montessori program at the Richard J Oglesby Elementary School on Chicago's south side. Inspired by her own children's experiences at Near North Montessori, one of the oldest and most prominent private Montessori schools in the country, Seebeck spent years driving donated materials to the school when it had none, advocating for the school and public Montessori in Chicago, and organizing the Oglesby Foundation which she founded to channel financial support to the school.

Hanna Richardson worked at Oglesby from the beginning and shared this remembrance.

But most of all, she loved the children

Elizabeth was a passionate educator who lived and breathed Montessori. There is a lot to love about Montessori—independence, concentration, joy, the golden beads, the movable alphabet, the Great Stories, and so much more. But the real spark, the real root, of the approach is in the joy of and respect for children. And in all the Montessori work I've done, over many years, I've learned that this is something you can't teach adults. Either they have it or they don't. And Elizabeth had it.

Nine years ago, I was one of several new Montessori guides joining a public school on Chicago's south side. I did not know what I was getting myself into, working for a large district, but I did know that I loved children, I believed all children deserved Montessori, and that this was the next step on my journey.

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Let me tell you, it was hard! I was to set up a new classroom with 30 children, all starting on the same day, with no materials and no assistant. And I got through the first day. No one got hurt, but it was NOT Montessori. I thought I'd made a bad choice. I cried all the way home.

After a couple weeks like this, I was headed upstairs to commiserate with Ta Promlee-Benz, the new elementary teacher—I knew she'd understand! As I was walking down the hall, I saw this tall, slim woman with olive-toned skin and long dark wavy hair walking in and out of the Ta's room, moving in boxes of materials. My first thought was 'She must be from downtown. I wonder what strings Ta pulled." (Because I sure still didn't have any materials!). But as I got closer, I noticed she was in jeans, boots, and a pale green long-sleeved shirt, kind of half tucked in, in a disheveled way. And she was squatting to shove materials here and there. And she was laughing as she talked. And at that moment, I knew—this lady had nothing to do with downtown. She was NOT from central office.

Ta noticed me but kept on working and I stood there watching, but this other woman turned my way and stood up. She walked over and stood facing me, hips leaning to one side, and as she tucked her hair behind her ear with her left hand, she stuck her right hand out and said "Hi, I'm Elizabeth. She pointed at Ta. "She taught one of my boys at Near North and when she told me she was doing this I asked her if I could come down to help. So here I am. Helping! I used to be a teacher too, so this is right up my alley." And she smiled. And all my anxieties sort of melted away. Elizabeth had this way about her. She just exuded this calm, natural ease that brought a gentleness to everything.

Elizabeth did everything in her power—and it was so much— to make sure that we had everything we needed to make Montessori happen here on the south side. She bought and materials, gathered resources, and set up classrooms. She planned, funded, and attended outings, field trips, and even camp. She helped start a school garden, and she made lunch. She found families medical care, transported them to appointments, and drove children to school. She fought for us downtown when they threatened to shut us down or keep children from napping. She organized parents when they weren't being heard. She spoke to parents and administrators, and brought the press to our doorstep. She talked about Montessori all the time, connected us to the Montessori community, and sent us to conferences. She took photos. She shared laughs. She lifted us ALL up. She invited us all into her home.

But most importantly, she loved the children.

She just exuded this calm, natural ease that brought a gentleness to everything

Elizabeth became so much more to me than random woman I met in Ta's classroom in those early days. She was my mentor. She was my friend. She was like family to me. She never once let me down. She always gave so much of herself. Without her, the Montessori program at our schools on the south side of Chicago would not have been what they were. As an educator, I would not be what I am. Elizabeth gave so much of herself to Montessori and the Montessori community has gained so much from her investing in us. I am so thankful she believed in the philosophy. She made the lives of so many of us better.

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