

QUESTIONS FOR THE SUNFLOWERS



Cultivating science, imagination, and art through sunflowers

By Uchenna Ogu, Katie Malone, and Sarah Hassing

The Reggio Emilia approach serves as a strong pedagogical foundation for children to collaborate and construct deep understandings of the world around them. Reggio-inspired projects are a part of an *emergent* curriculum, one where both teachers and children have the ability to make decisions that inform learning. Our kindergarten project, Questions for the Sunflowers, was a joyful, imaginative, scientific inquiry where creativity, botany, and technology synthesized to create a complex, child-driven exploration of sunflowers. This investigation began in the second month of school and continued until the end of the school year. When the students wanted to ask questions of the sunflowers, many ideas emerged on how best to ask, and answer, these questions. Kindergarten teachers took this opportunity to facilitate rich discussions and explorations hinging upon the students' interest in both the flowers and the natural world at large.

The Reggio approach promotes the creative process and the arts as vehicles through which children explore and



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FIGURE 1

The Sunflowers by Mary Oliver.

*Come with me
into the field of sunflowers.
Their faces are burnished disks,
their dry spines
creak like ship masts,
their green leaves,
so heavy and many,
fill all day with the sticky
sugars of the sun.
Come with me
to visit the sunflowers,
they are shy
but want to be friends;
they have wonderful stories
of when they were young -
the important weather,
the wandering crows.
Don't be afraid
to ask them questions!
Their bright faces,
which follow the sun,
will listen, and all
those rows of seeds -
each one a new life!
Hope for a deeper acquaintance;
each of them, though it stands
in a crowd of many,
like a separate universe,
is lonely, the long work
of turning their lives
into a celebration
is not easy. Come
and let us talk with those modest faces,
the simple garments of leaves,
the coarse roots in the earth
so uprightly burning.*

engage fully within their personal and community environments in order to deepen their learning. The classroom teachers work in tandem with an *atelierista*, a studio arts specialist, who provides a multitude of creative experiences for young children. As founder of the Reggio approach Loris Malaguzzi states, "This whole approach causes children to be better known by their teachers. Therefore, they feel more open to challenge, more able to work with their peers in unusual situations, and more persistent because they realize that what they have in mind can be tried out. Children know that when pursuing their goals, they can make their own choices, and that is both freeing and revitalizing" (Edwards,



Forman, and Gandini, p. 87). Engaging children through a Reggio-Emilia inspired approach supports current science pedagogy and allows students to successfully construct their own self-directed and experiential learning.

Engage

When Devyani, a kindergarten student, brought in a sunflower harvested from her garden, it captivated the children's interest and imagination: *Where did it come from? How did Devyani harvest it? How many seeds are there?* These questions sparked a scientific investigation and discussion, where children thoroughly observed and interacted with the sunflower. Before beginning the investigation, teachers asked questions to determine prior knowledge: *What do you know about sunflowers? What do you want to learn about them?* Children excitedly chimed in. Sammi: "I know how to bury the seeds." Anthony: "The flowers grow really tall."

In the atelier, the art studio for kindergarten students, the children were given a wide range of creative mediums and artistic materials through which to explore and deepen their relationship to the scientific inquiry at hand. Within the Reggio approach, these mediums are referred to as "languages," each with the capability to aid young children in better explaining, expressing, and developing their theories, ideas, and understandings. This work began when the students created a collection of tempera paints for the class to use. Inspired by the golden yellows and fresh, bright greens of the sunflowers, they mixed their own paint hues in order to match those they found during close observations of the large flower heads, stems, and leaves. These paints were used often in both the atelier and classroom when painting sunflowers, which allowed the children many opportunities to represent their expanding knowledge. These hues served as a naturalist's palette to accurately depict the intricate observations they continued to make. The spiny, tall, hollow stems;

the soft, honey-colored petals; and the dark, textural crown of seeds became the focus of in-depth study, observation, and representation.

Explore

Dramatic play allowed students to investigate the life cycle of a sunflower as they pretended to be a sunflower plant, growing and changing from seed to plant and back to seed again. At first, children used both their drawings and real sunflowers during their storytelling. Later on, the question "What wonderful stories do the sunflowers tell?" emerged, which encouraged students to explore the perspective of the sunflower through imaginative storytelling. Natural materials such as pebbles, small twigs, wooden disks, seashells, dried seed pods, and real sunflowers aided students in finding their stories. These materials were utilized by the children, as they developed stories to construct various playful scenes and narratives. Playing with natural materials enhanced the children's ongoing storytelling about sunflowers by adding rich and complex visual accompaniment to their evolving ideas and musings. Teachers listened to and observed the great interest and care the students brought to their relationship with these flowers. Nathan stated, "Our sunflower is so special. I want to take good care of it." Jocelyn said, "Sunflowers help us and the insects, we will look out for them, and if they need help we will help them." And Jayla: "I just love sunflowers so much!"

Explain

To further students' understanding that sunflowers are living things and what living things need to live and grow, teachers shared science texts and time-lapse videos. Interested in furthering students' imagination, empathy, and perspective taking, teachers introduced the Mary Oliver poem, "The Sunflowers" (2004; Figure 1, p. 53).





Teachers noticed dynamic conversational “seeds” to nurture from the poem. For example, excitement surrounded the line, “Don’t be afraid to ask them questions!” Children began to express questions they would like to ask the sunflowers, if they could: *How long do your roots grow? Can we sleep in your leaves? Can we be your friend?* The children’s questions became the foundation for further investigations using Reggio Emilia’s concept of “100 languages of children” (Edwards, Forman, and Gandini 1998, p. 3). Each child illustrated their question for the sunflowers through multiple drafts and mediums. With each draft, new detail and depth were added to their inquiries. These visual representations of sunflowers gave the children challenging opportunities to test their theories and answer their own questions. For example, children created small illustrations of sunflowers or other characters, cut these out of paper, and used them along with string to figure out how to make their characters or sunflowers move to express their questions. When first attempts (or second or third) did not work, children asked others in the classroom for advice and tried again. During this process, children took time to explain their thinking, theories, and attempts to other classmates and their teachers.

In one instance, a child worked on many drafts of drawing, cutting, and staging a sunflower and individual clusters of its roots in order to test their ideas about how these roots might grow and how one could demonstrate this through video.

Elaborate

Later, during a brainstorm session, children joyfully shared ideas for furthering their investigation. This allowed the students time to reflect on and revisit the questions they had previously asked of the sunflowers, which then informed their ideas for where to go next. During this session, the student’s suggestions ranged from planting sunflower seeds, to keeping flowers alive during the winter, and to perhaps even creating a sunflower movie.

While the final product of this project could take many different forms—such as a play or puppet show, an illustrated book, or the creation of a diorama—after much discussion, the children chose the creation of a movie as the best way to showcase their questions and learning. As a result of their earlier experiences in representing the sunflowers through illustrations, paintings, and storytelling, the children gained both the confidence and knowledge they needed. They were ready to take a leap toward synthesizing their understandings in new and innovative ways.

Children toured the recording studio at school and learned how to record audio for their film. A visiting videographer shared technology and video techniques and offered suggestions to inspire students. These firsthand experiences with new, technical equipment and the mediums of video and audio prepared the class for their own chance to express themselves through these new languages. Tablets, some mp3 players, smartphones, and laptops all have the ability to record audio, and are excellent options in lieu of a recording studio.

Artistic “languages” became the foundations for a much larger scientific inquiry that interlaced multiple creative mediums, such as the use of colorful illustrations and video, in order for students to better and more fully articulate their expanding knowledge.

For example, students designed backdrops, scenery, detailed sunflowers, and characters to star in a series of film shorts. Each short asked a student’s question to the sunflowers. The kindergarten class collaborated in small groups to help one another navigate these small, illustrated pieces





and to problem solve how best to have their pieces move across the screen. Additionally, children worked in teams to direct and film each other's scenes. Teachers thoughtfully paired each student grouping in such a way that the students could learn from one another or continue to develop a specific skill. For example, a quiet and reflective child might be paired with someone similar. This type of pairing creates space for such students who shine when given extra time and peacefulness to express their ideas. Likewise, a child with stronger technology or engineering skills might be paired with someone who was new to the field, with one child teaching and the other learning from their peer.

Logistical challenges, such as what to do when the green screen makes the green stem of your sunflower disappear, strengthened the students' problem-solving abilities. Weathering unexpected complications together, they deepened understandings of these new languages and how best to use them within a collaborative environment. In short, children needed to work together to fully realize their potential and to effectively use the language of video.

In culmination, with support from teacher-facilitators, the students produced an 11-minute film, using many artistic languages which synthesized their learning. Their video *Questions for the Sunflowers* was presented to the kindergarten families and to the larger school community, thus giving the class different platforms for its collective and individual voices to be heard. The children enjoyed watching the sunflower movie together and sharing their thoughts on the project; Stacy: "I like all the questions." Augustus: "I think it sounds better with the voices." Meg: "It was the best thing ever."

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Uchenna Ogu (uogu@thecollegeschool.org) and **Katie Malone** (kmalone@thecollegeschool.org) are kindergarten teachers and **Sarah Hassing** (shassing@thecollegeschool.org) is an Atelierista and Early Childhood Coordinator, all at The College School in St. Louis, Missouri.

Evaluate

Observation was a powerful evaluation tool throughout this project. Students were observed collaborating with one another to solve problems such as how to make a sunflower spin on camera or how to ensure the camera angle is accurate. Teachers noted when students named various parts of the sunflowers while engaged in the film-making progress. The final tangible products—the video and accompanying wall displays—serve as historical documentation of the investigation. These pieces, which students can access, highlight the knowledge, learning, and voices that developed over the year. One of the foundational concepts within the Reggio Approach is the idea that creating documentation of children's work gives voice to the children and to their methods of learning. Documentation was an essential assessment tool during this study. It combined photos, conversations, observation, and reflection by teachers, in order to create a holistic image of each child as a capable learner while highlighting the ways in which their knowledge grew over the course of the project.

Conclusion

A Reggio–Emilia inspired approach to learning allows for integration of core disciplines, innovation, and creativity, while supporting current science pedagogy. Working with students in this way creates a plethora of opportunities for self-directed learning. Rich experiences and dynamic, creative provocations allow students to sustain and nurture their love of learning. As the children themselves reflected during a discussion, "We learned it is important to help each other. We learned how to stick with something, even if it is hard. If you are a kid, you can be a scientist or a filmographer. Kids can do important things." ●

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