Spiders are weavers; they are creators. I too am a creator. I have come to notice the persistent presence of spiders in my life, so much so that they have become personally symbolic. Upon recently returning to my art studio after a long hiatus, I remember watching several baby spiders, crawling across my desk from an unknown location. Every so often, I would see one and then another scurry past my buttons, corks, and odds and ends that needed putting away. The newborn spiders seemed to be telling me that I was about to birth some creative ideas. Much like deciphering dreams that appear in sleep, I often find that there are messages to be decoded in nature, if we listen. Spiders have succeeded evolutionarily because of the strength and flexibility in spider webs. As a spider plucks on the silk strings of its web, it may read the vibrations, receiving vital information. Children may evolve educationally with interdisciplinary art experiences, strengthening and unifying their web of ideas until they become a harmonious and balanced interconnected web of understanding. Harmony, balance, and unity are principles of art and of nature.

To weave art learning and nature together, in the hopes that I could foster a deeper understanding of ecological concepts for my 5th grade students and for myself, I embarked on a qualitative research study that focused on the connections between the natural sciences and art. Qualitative research is an effort to understand and richly describe the nature of a situation and the ways in which people make meaning out of their experiences. The investigator often spends a considerable amount of time in the setting with the participants. This type of research is not about finding one answer, or the truth; it is more about process over product. “Qualitative researchers build toward theory from observations and intuitive understandings gleaned from being in the field” (Merriam, 2009, pp. 14–15). Through the development of this research, I recalled that as a child, I identified more as an “arts” person than as someone who is more comfortable with math and science, which carries over to the present day. Had art been integrated with those subject areas, perhaps I would have grown to understand them more fully and found them to be organically entwined. Although my expertise is in the art world, I tackled a topic in the realm of science, journeying via the natural world.
If I am able to rediscover my own first experience of the basic spiritual existence with nature, it might help others rediscover and honor the same things in themselves. It does not matter that I possess no expert training or special knowledge, only the ability to open up and channel the intuition of my own self. (Gablik, 1991, p. 45)

In the instructional unit I designed for my research study, I sought to utilize multiple art forms, in order to reach multiple types of learners. Interdisciplinary, or integrated art instruction is a way to enhance understanding of and the connections between dominant subjects, while targeting many of the varying types of intelligence. Gardner’s (1983) theory of multiple intelligences proposes that there are nine intelligences, or ways of interacting with the world, and every human has a configuration of all of them, in different amounts. All of these intelligences have a relationship to and easily feed into the art world. Goldberg (2012) supports this in her book on the subject of arts integration, maintaining that Gardner’s theory proves useful to educators who are seeking to adapt to the learning styles and intelligences of their students (p. 34). She asserts that arts integration “broadens the definition of the role of the arts in learning to include their (the arts’) use as a medium or language to translate, reflect on, and work with ideas and concepts” (Goldberg, 2012, p. 6). As children engage in the creative process through artwork linked with other branches of study, they will make newfound discoveries and connections.

**Connecting Threads**

In discussing arts integration, Julia Marshall (2005) describes generating abstract ideas as “weaving,” or “connection making,” and “spinning” as taking those ideas or connections further. Just as weaving is akin to integrating—both bring parts together—arts integration is comparable to interdisciplinary art curriculum. In the literature, these terms are used synonymously, with substantial overlap. There are many different definitions of arts integration, from learning with or through the arts (Goldberg, 2012), to the necessity of meeting dual learning objectives, both in art and in the subject area in which the integration is taking place (Layne & Silverstein, n.d.). Arts integration can be thought of as simply an effort to build relationships between the arts and other subject areas. According to Heidi Jacobs (1989), the seminal proponent of interdisciplinary education, “The central aim of this interdisciplinary model is to bring together the discipline perspectives and focus them on the investigation of a target theme, issue, or problem” (p. 54). What differentiates integrated instruction from interdisciplinary instruction is the use of this theme as a connecting factor or lens through which to view subjects, as well as facilitating the recognition of the connections between the disciplines to aid in the learning process. “We want students to be conscious of the relationships among disciplines as they investigate subject matter” (Jacobs, 1989, p. 54). I believe in the value of arts integrated instruction and interdisciplinary art instruction; weaving together subject areas in any way, shape, or form is indeed a positive endeavor. My research encompasses both approaches, but with a particular focus on interdisciplinary art curriculum. I wished to deeply examine the curricular use of a theme in educating my students, especially because it fully supports the pedagogical methods already in place at my school. Jacobs also addresses the need for an “organizing center” in order to focus the curriculum.

The topic can be a theme, subject area, an event, issue, or problem… Conceptual topics lend themselves to study because they are by definition abstract. Concepts such as observations, patterns, light, revolution, humor, flights, pioneers, the future, and world hunger have proven highly effective as organizing centers. (p. 54)

**Ecoliteracy-Based Curriculum**

At the progressive Los Angeles K–8 charter school where I teach, a philosophy of ecological literacy is built into the general curriculum and serves as an organizing center, our interdisciplinary core. In order to foster the development of ecoliteracy and integrate social, emotional, and ecological intelligence,

A first step in this endeavor must be to understand in some detail how nature sustains the web of life… Education for sustainable living… is a pedagogy that facilitates this
understanding by teaching the basic principles of ecology, and with them a profound respect for living nature, through an experiential, participatory, and multidisciplinary approach. (Barlow & Stone, 2005, pp. xiii-xiv)

The interdisciplinary seeds rest in a program founded by restaurateur and sustainable food activist Alice Waters, called the Edible Schoolyard, in which all students take gardening and cooking classes and eat healthy, organic lunches that are cooked onsite. We are one of a handful of schools in the country that participate in the program. The Edible Schoolyard makes it easy for the teachers to integrate concepts of ecology, which are used as “big ideas,” into their lessons. As the art teacher, I have the potential to assist the students in weaving connections between subjects, realizing the schoolwide goal of interdisciplinarity.

Rounding out our school’s ideology is a constructivist notion that students are active meaning-makers and take part in constructing their own knowledge. Stewart and Walker (2005) state, “Artmaking conceived as an exploration and expression of big ideas reflects a constructivist approach” (p. xiv). Big ideas are representative of broader life issues “characterized by complexity, ambiguity, contradiction, and multiplicity” (p. 1). Since these big ideas are overarching life concepts, they feed into artmaking seamlessly, allowing students to recognize that creative expression is something that connects to their lives and enables them to connect with other people.

**Cycles and Flows**

The big idea, theme, or integrative lens through which the 5th-grade students view all of their school subjects is Cycles and Flows, which means, according to our charter school’s section on BIG IDEAS: Principles of Eco-Literacy and Social Justice from its petition for renewal document (Larchmont Charter School, 2014), “All members of an ecological community exchange resources in continual cycles and require a continual flow of resources to stay alive” (p. 59). In science, for example, students learn about the cycles of life inherent in nature, how nutrients cycle or flow through a plant, or about blood circulating through the body. In language arts, they may dissect the parts of a story and how things are connected, one character or event affecting another, in a flow.

I used the big idea of Cycles and Flows to help my students actively and deeply delve into eco-art, in the hopes that they would construct their own connections and understandings. Through the use of art illuminating the beauty of nature, I discovered that my city-dwelling students became deeply engaged and appreciative of the natural world as we delved with ease into eco-art education.

**Eco-Art Education**

Hilary Inwood (2008) is a Canadian eco-art educator who writes and speaks widely on the “greening of art education” as it integrates into environmental education, to form “Eco-art education” (p. 57). Inwood believes that the arts are a powerful vehicle for raising environmental awareness, while allowing students to deepen connections and formulate a personal relationship with nature. Eco-artists and those engaging in art of place create art in partnership with the environment. Inwood calls for qualitative research to give voice to the students who are specifically involved in eco-art interdisciplinary learning, in order to enrich the field of eco-art education. In my Cycles and Flows unit, I answered this call as I initiated a dialogue about natural science with my students through the contemporary eco-art of Andy Goldsworthy, a British artist who works directly with the land, in an attempt to understand nature and connect more intimately with the earth.

**The Cycles and Flows Unit**

The unit began with visual art in a PowerPoint presentation featuring photographs of Goldsworthy’s site-specific work. We also viewed a segment of his documentary *Rivers and Tides* that featured what we termed the stick dome, in which he builds a structure specifically in a spot where it will be set into motion.

Figure 3. A 5th-grade boy shows another student in his partner group a beat that he would like played when his own group performs.
by water and eventually fall apart. Creative writing ensued, in which the students wrote pile poems based on instinctual word generation, which they later fused together to create collaborative performance art pieces inspired by one of Goldsworthy’s photographs or his stick dome. The performance art wove together the creative writing and visual art, along with movements that the students choreographed and music that a partner group created for them. In the following sections, I discuss elements of the unit in more detail.

**Pile Poetry**

“Whooooa!” A sea of 5th-grade voices rang out each time I changed a slide in the Andy Goldsworthy art presentation. A large boulder balanced on a sharp point standing strong atop a cliff… “WHOAA!” Leaves curling, sewn into a sculptural horn that seemed to blare loudly… “WHOAA!” My students had fallen in love with Goldsworthy’s work, just as I had; their immediate excitement and wonder were striking. The use of unique eco-art, unlike anything many of the kids had ever seen before or considered to be art, provided the impetus for major engagement in my classroom.

One student, who at first sight exclaimed, “That’s impossible!” about Goldsworthy’s rock-balancing artwork, later expressed admiration and appreciation of the artist, likening him to a sort of mysterious superhero. Completely captivated, he stated in class, “Andy Goldsworthy will just be like a man that’s walking around and he has a secret life about art… and like no one knows that he has the artist in him.”

The roots of engagement are varied, though focus and absorption are its abiding characteristics. When works of art and the materials are intentionally compelling and aesthetically attractive, they draw students toward them and their possibilities. They invite learners to pay attention and wonder about them. (Seidel, Tishman, Winner, Hetland, & Palmer, 2009, p. 30)

My students were able to express prolific ideas in their poetry, created in response to looking at art that intrigued them. The students would jot down the first words that came to mind as they looked at an art piece, such as a pile of leaves arranged by color gradation, and build a pile of words. The pile of words turned into a pile poem when they circled a few words of their choice and tried to form a sentence around each one:

- He had to arrange the leaves without wind.
  It looks like a snake
  It looks like a line
  like a road.

According to Anderson and Milbrandt (2002), “As people’s ideas change and grow, the most powerful force driving them is often their influence on one another… learning is actually manifested in relations with others” (p. 27). When one student would plant an exemplary seed on how to take it further than only using words like awesome to more prominent words, the poetry started to spark and the others’ creative writing took root.

- A beautiful line.
  Still and hopeful.
  It’s color so brilliant and bright.
  Very natural, using nature as art.

**The Stick Dome**

The students watched silently, in awe over the man inside the stick dome. “How is he going to get out?” they wondered. Moments later, we discovered that he had left a small hole for himself on the side of his sculpture, which he could cover up with more branches after making his escape. Two students, Gaetano and Aidan, compared this creation to a beaver dam as they made the realization that there is a connection between animals and humans; beavers are their own architects and artists. They discovered that the artist built the structure specifically in the spot where the river meets the ocean, creating a whirlpool to set it adrift. Seeing the sculpture float gently away was all at once a surprising, mesmerizing, and relaxing experience.

Aidan connected deeply to the stick dome and provided a deeper learning experience for the community because of his appreciation for this part of the documentary. He blew me away time and time again with his brilliant remarks. An athletic kid, he is usually more comfortable on a court or field than in the art room; however, he was highly engaged during the Cycles and Flows unit, especially with the visual art viewing. Aidan demonstrated that he had an understanding of the concept of cycles and flows and the art returning to nature: “When he gives it to Mother Nature… she destroys it, but makes it like another thing maybe on a different side of the world, maybe in Brazil, a beautiful tree.” He brought up reincarnation and the idea that once that structure submits to the flow of Mother Earth, we may not bear witness to the possibility of its rebirth in a new place.

**Performance Art: Weaving It All Together**

After writing individual pile poems, students were assigned a group and one art piece by Andy Goldsworthy. They fused their individual pile poems together, creating a three-to-four-person pile poem, such as:

- Pattern of leaves and color
  It looks like a snake,
  a lightning bolt coming to you
  like a creek that flows in the wind.
  The long never ending curved line
  balances nature and color.

Once they thought the poem had a nice flow, they added music and choreographed movements to go along with it. Movement would prove to be a creative gateway for understanding on another level. The body and mind link is one that cannot be denied. Brain-based research has shown us that the same area in the brain that processes movement, also processes learning. It is integral educators make attempts to infuse movement into their curriculum; art experiences lend themselves seamlessly to doing so. According to Sousa (2006),

The arts are not just expressive and affective, they are deeply cognitive. They develop essential thinking tools—pattern recognition and development; mental representations of what is observed or imagined; symbolic, allegorical and metaphorical representations; careful observation of the world; and abstraction from complexity. (p. 26)
The students exhibited many of the essential thinking tools Sousa described, throughout the Cycles and Flows unit, in the pile poems and especially in one performance.

**The Portal Kids**

“Step through!” I thought to myself as I watched the four students enact their performance art piece. “Walk through it!” I shouted in my head as I waited for Aidan to move his body through the human circle his group had created by curving their arms with their hands connected, mirroring the miraculous snow-packed brick circle that Goldsworthy had made in the North Pole. With musical accompaniment from a partner group, the students moved their bodies to the words of the poem they had written together:

> When you walk through it you walk through another dimension
> The circle looks like a teleportation device
> Some people would say it is a meteor….

Later I found out why Aidan chose not to step through the human circle. Olivia illuminated her group’s intent: “We did a portal transferring to the future and then everything was dead there.” The students did not want to see the day when everything died and made a conscious and creative choice to remain on the other side of this portal to impending disaster. I believe that students who are attuned to environmental changes taking place will not allow this to be our future. As Olivia later said,

> We have to preserve nature… we have to keep it going, because otherwise it won’t keep us going and we’ll just all die out, humans, because nature had the world first and then we came along and we changed it so much… if we keep polluting, and we keep doing what we do, we’ll just, everything will be dead.

Olivia brought up integration several times, especially connections to science and social studies. She mentioned a book they read for another class, *Blood on the River*, in which a boy goes off to a new world because apparently Earth ran out of ingredients and people started killing each other. The students wove their art ideas together, intuitively combining the experience of reading *Blood on the River* and seeing Goldsworthy’s other-worldly image. This performance art narrative became a portal of creativity and enabled their web of understanding to expand, encompassing multiple subject areas.

**Interwoven Art Understanding**

The students saw the way that nature affected Goldsworthy’s work; with a gust of wind or an incoming ocean tide, the work would often be destroyed, leaving only a photograph or video to prove that it had existed. Several class discussions were prompted by my own or the students’ questions about Goldsworthy’s work and his process. Shahn explained,

> You know when it gets destroyed, it’s actually a natural wave—it’s a natural way of occurring, like when he made it out of leaves, the wind blew it away and then when he made the stick dome thingie the ocean and the river washed it away, so something natural occurs to destroy it.

I witnessed the students in the process of examining art through big ideas as they wove their own theories about the meaning of the work and cultivated the connection to Cycles and Flows.

> “Life is a seed,” said the very focused Dax, barreling past scattered laughter as he tried deciphering Goldsworthy’s possible intention for his earthworks. “You’re born and then you get older and then you become a flower or plant… you grow and then one day you just die.” Aidan added, “Some people believe that when you die you turn into like a butterfly or like a moth or a plant or a flower or anything.” I listened as the students put heavy concepts together into “aha” moments, related to the mysteries inherent in life.

One student recalled, “I learned that sometimes when you do an art piece it doesn’t always have to be about paintings, you don’t always have to go to an art store to buy like pencils, and stuff like that, you can just get what’s around you.”
Arriving at the Center of the Web

As we draw closer to Nature, two profoundly important and powerful qualities are experienced. One is that the entire world takes on a new degree of poignancy, luminosity, preciousness, subtlety, mystery, and intimacy. The other is that we increasingly experience ourselves in just the same way: as poignant, luminous, precious, subtle, mysterious, and intimate. For as we draw closer to Nature, we simultaneously draw closer to our Selves. (London, 2003, p. 2)

In exploring the use of “art to re-link the 21st century child with the natural world” (Strauch-Nelson, 2012, p. 33) alongside my students, I learned the value of utilizing arts integration to provide opportunities for making multiple connections. I witnessed my students making connections to nature, to each other, to daily life, and to other school subjects. In connecting to nature, students connected to themselves, as well as to our school ecocentric philosophy. Inwood (2013) affirms, “Art education offers a dynamic way to increase the power and relevancy of environmental education by providing an alternative means of furthering learners’ ecological literacy” (p. 130). This declaration is supported by environmental education experts such as Orr (1992), who argued that “ecological literacy would only be developed in children if it is integrated into a wider variety of subject areas such as the arts” (as cited in Inwood, 2013). According to Inwood (2008), eco-art education balances “the cognitive, positivist approaches of science education” with the “creative, affective and sensory approaches of art education” (p. 58). She asserts that learning cannot just touch your head, on the cognitive level; it has to touch you on an emotional level, in your heart, and it has to touch you experientially, in your spirit. “If it can touch you on a deeper level that somehow connects to your fundamental beliefs of why we’re on this earth … then you’ve got it” (H. Inwood, personal communication, March 31, 2014). Art is a vital portal into the exploration of not only the self and environmental studies, but all other interdisciplinary educational endeavors. Art can be interwoven into any discipline because it is a part of everything.

Sharing the eco-art of Andy Goldsworthy opened up the students’ minds to the possibilities in the art world. Many of them had previously thought of art as merely drawing and painting. I discovered that when students view art through the lens of a “big idea” and multiple art forms, multiple connections come to light, creative explorations deepen, and definitions of art expand. One student recalled, “I learned that sometimes when you do an art piece it doesn’t always have to be about paintings, you don’t always have to go to an art store to buy like pencils, and stuff like that, you can just get what’s around you.” The Cycles and Flows unit taught the students a valuable lesson—that there really are no limits in the art world. Likewise, arts integration can show educators that there are no limits in the world of education. Visualizing abstract ideas through an artistic lens is a viable teaching tool, one that allows us to expand our students’ web of knowledge in very engaging and eye-opening ways. Art is the very thing that connects us in life. It is this natural interconnection of all things that can be most dramatically woven in an artistic light. ■

Author Note
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References


Endnotes

1 An ecocentric model of education “takes the cultivation of emotional and social intelligence as its foundation and expands this foundation to integrate ecological intelligence. But rather than conceive of these as three separate types of intelligences, we recognize emotional, social, and ecological intelligence as essential dimensions of our universal human intelligence that simply expand outward in their focus: from self, to others, to all living systems. We also conceive of these intelligences in a dynamic relationship with each other: Cultivate one, and you help cultivate the others” (ecoliteracy.org).

2 Student names are pseudonyms.