

## 1. Introduction: Setting the Stage

When I think about the journeys art has taken me on, I remember a profound experience at Lincoln Center in New York City. I was immersed in an aesthetic education intensive, and one day we were shown a performance—an archival, contemporary ballet and musical number that had rarely, if ever, been seen. It was breathtaking, and as a musician, it challenged me. I was asked to create something inspired by this performance, but it had to be outside my own artistic medium. In stepping into this unknown territory, I felt a combination of challenge, vulnerability, and an undeniable energy that reminded me of why we create—to explore, to empathize, to experience the thrill of discovery.”

Today, as we explore the intersections of AI literacy, computational thinking, and aesthetic education, I find myself drawn back to that experience. I was stepping out of my comfort zone, entering a different medium and rhythm. In a way, AI is asking us all to do this—to engage with something new, powerful, and transformative. But there is also a deeper question: How do we bring humanity, empathy, and reflection into the heart of AI and technology education?

Through my journey in aesthetic education, I’ve come to understand that the arts aren’t simply “extra” or “decorative.” Rather, they instill in us habits of mind that are fundamental for approaching complexity, ambiguity, and change—skills that are equally essential in our work with AI. Art teaches us to move slowly, to wonder, to hold questions. These habits are not just valuable; they are essential as we prepare students to navigate an increasingly AI-driven world. Today, I hope to share with you how these ways of thinking can shape a more holistic, ethical, and human-centered approach to AI literacy.

## 2. The Aesthetic Lens: Habits of Mind and Learning

One of the most impactful lessons I took from aesthetic education is that learning is not just about mastery of content; it’s about cultivating habits of mind that shape our approach to the world. In my own work, whether in the arts or in technology, I’ve come to see these habits as essential companions to computational thinking.

Some of the habits that stand out most to me—and that have guided my work across disciplines—are curiosity, observation, questioning, and empathy.

- Observation and Attention to Detail: My time in the arts ingrained in me the power of observation—of deeply seeing and valuing nuance. At Carnegie Mellon University, where I worked alongside technologists and computer scientists, I found this attentiveness was invaluable. Where others might focus on building quickly, I felt compelled to question and observe, slowing down to ask, What are we really creating? What impact will it have? This tendency to look deeper allowed me to see technology not as an isolated tool but as part of a larger social and ethical context.

- Questioning and Curiosity: In aesthetic education, we are taught to ask questions without rushing to find answers, to dwell in spaces of wonder. This approach fundamentally shaped how I approached technology at Carnegie Mellon's research lab, particularly in the development of EarthTime, a project funded by the World Economic Forum. Many of my colleagues were eager to build and deploy quickly, but I found myself asking deeper questions about systemic impact: What data are we choosing to show? What story are we telling? How will users interact with this interface over time? These questions ultimately led us to establish shared values for EarthTime, creating a framework grounded in purpose and empathy rather than mere efficiency.

- Pattern Recognition and Synthesis: Artists are trained to see patterns not just as repetitions but as connections that convey meaning. This skill aligns seamlessly with computational thinking, which is built on identifying and breaking down patterns in information. Yet, in the arts, patterns serve as invitations to interpret, to synthesize, and to find personal or societal relevance. When applied to AI, this habit helps students go beyond technical skills to see the interconnectedness in data and models—appreciating not only the mechanics but the meaning.

- Empathy and Perspective-Taking: At the core of both art and ethical AI is the ability to see from multiple perspectives. The arts foster empathy, inviting us to imagine ourselves in someone else's experience. This is precisely what's needed in AI education. When we think about societal impact, for example, we're not just considering what technology can do, but for whom and to what end. AI has the power to shape society, and empathy allows us to shape it responsibly, with humanity at the center.

These habits of mind are not abstract or ancillary; they are the very skills that the field of AI needs to thrive ethically and sustainably. If we can teach students to approach AI literacy with the same care and nuance that an artist brings to their work, we are empowering them to understand not only how to create, but why they should create responsibly.

Imagine a classroom where students approach perception in AI not just as a technical skill but as an exploration of what it means to see, interpret, and understand. It's this depth that aesthetic education brings to the table, allowing students to engage with AI as both creators and thoughtful citizens.

### 3. The 5 Big Ideas in AI: A Creative and Critical Framework

The five big ideas in AI—Perception, Representation & Reasoning, Learning, Natural Interaction, and Societal Impact—provide a foundational framework for students to understand, engage with, and ethically navigate the technology shaping their world. When coupled with aesthetic principles, these concepts transform from technical abstractions into meaningful, student-centered explorations. Let's look at each idea in turn and consider how habits of mind from aesthetic education can deepen students' engagement.

- Perception: AI's perception involves how systems interpret the world—through images, sounds, and data. But as Maxine Greene says, “when consciousness is opened to the appearances and to the sounds of things,” students engage more deeply. In teaching this AI concept, we might encourage students to think about perception both technically and artistically. For example, they could explore how artists interpret landscapes versus how an AI algorithm might “see” them, sparking discussions about the limitations and possibilities of both human and machine perception.

- Representation & Reasoning: This AI concept concerns how machines represent and make sense of information. Through aesthetic education, we learn that representation is not neutral; it's interpretive and can carry profound implications. Just as artists choose colors, forms, and symbols to convey ideas, AI systems “choose” ways to model data and make decisions. Here, we might ask students to consider the ethics of representation in AI: How are certain groups represented in AI training data? What biases may emerge, and why does it matter? Greene's quote about authentic learning speaks to this idea—when students “perceive and name dimensions of their lived worlds,” they're equipped to critically examine AI's choices in representation and their broader impact.

- Learning: Machine learning is often the most engaging aspect of AI for students, as it reflects how AI systems “learn” over time. But learning is more than an accumulation of skills, as John Dewey warns. He reminds us that “automatic drill” can erode students' capacity to think critically. By framing AI learning alongside human learning, we invite students to question how true understanding differs from rote learning in both machines and people. What, for instance, can AI truly “understand” or “experience,” if at all? This kind of questioning transforms AI literacy from a technical task into an exploration of what it means to learn and grow.

- Natural Interaction: Natural interaction in AI involves creating interfaces that people find intuitive, like speech or text. Yet, true communication requires empathy and perspective-taking. Aesthetic education cultivates these skills, teaching students to consider others' viewpoints and to express themselves thoughtfully. As educators, we might ask students to analyze what it means to interact naturally with AI—does it fully honor the richness of human interaction, or does it reduce it? Can we ever create AI systems that engage with us as deeply as art or human conversation? These questions, while challenging, open up pathways for students to consider the nature of human connection in the digital age.

- Societal Impact: This final concept is perhaps the most expansive and the most urgent, as AI systems are increasingly embedded in social structures and policies. Just as Greene cautions against learning that lacks real-world relevance, we must avoid teaching AI in a way that feels distant or disconnected from students' lives. Through projects, storytelling, and reflection, we can prompt students to consider AI's impact on society: How might AI change their communities, schools, or future workplaces? By blending aesthetic and ethical inquiry, we guide them not only to understand AI's power but to ask, What kind of world do I want to create with this power?

Together, these big ideas in AI, approached through an aesthetic lens, encourage a more personal, ethical, and empathetic understanding of technology. They transform AI literacy from a technical curriculum into a vehicle for nurturing whole, conscious learners.

#### 4. The Synergy: Why Aesthetic Education Enriches AI Literacy

“How many students, for example, were rendered callous to ideas, and how many lost the impetus to learn because of the way in which learning was experienced by them? How many acquired special skills by means of automatic drill so that their power of judgment and capacity to act intelligently in new situations was limited? How many came to associate the learning process with ennui and boredom? How many found what they did learn so foreign to the situations of life outside the school as to give them no power of control over the latter?

John Dewey, *Experience & Education*

These words resonate deeply in a world where education is increasingly driven by benchmarks, standards, and efficiency. Dewey reminds us that learning, when stripped of its vitality, can turn students away from their own curiosity. But what if AI literacy could inspire students, not just instruct them? What if we integrated aesthetic education and computational thinking in a way that encouraged them to bring their full selves to the learning experience?

Aesthetic education offers a pathway to make AI literacy more than just a set of technical skills. By grounding AI concepts in habits of mind—observation, empathy, questioning—we teach students to see technology not as a fixed tool but as a creative, ethical medium. Just as aesthetic education fosters open-ended exploration, our approach to AI literacy can invite students to dwell in questions, to approach challenges with curiosity, and to imagine new solutions.

When we teach students through this dual lens, we’re doing more than expanding their skill sets. We’re nurturing the kind of learners who will approach the world—both physical and digital—with care, critical insight, and an ethical compass. In a rapidly evolving technological landscape, these are the qualities that will help students make decisions that honor not only their individual growth but the well-being of their communities.

In my own work, particularly with EarthTime, we constantly balanced the need to create with the need to question. It would have been easy to focus solely on technical accomplishment—to build without pausing to consider the broader impacts. But by slowing down, by allowing space for questions and empathy, we created a project that didn’t just show data but told stories, connecting with audiences on both an intellectual and emotional level. This, I believe, is the power of aesthetic education in the context of AI—it humanizes our work and invites us to bring students on a journey that is both technical and deeply human.

#### 5. Practical Applications: Teaching for Whole-Brain Learning

When we think about AI literacy and aesthetic education in the classroom, we're talking about something more expansive than learning isolated skills or content areas. The arts and technology can work together to provide students with transformative learning experiences. Two approaches that are particularly effective in integrating these realms are inquiry-based learning and project-based learning.

- Inquiry-Based Learning: This approach centers on the questions, interests, and curiosities of students. Rather than focusing solely on answers, inquiry-based learning invites students to explore, hypothesize, test, and reflect. In the context of AI, students might begin with a question such as, How do machines "see" the world? They could investigate machine perception through hands-on exploration and artistic experimentation, perhaps by comparing how humans and AI systems interpret visual images or sounds. This process not only helps students understand AI concepts but also cultivates their critical thinking, curiosity, and creative problem-solving skills. Importantly, they learn that technology is not just a subject to be learned, but a tool to be questioned and explored—much like art.

- Project-Based Learning: Project-based learning (PBL) allows students to engage deeply in long-term projects that address real-world issues or challenges. This method is ideal for connecting AI and aesthetic thinking with meaningful, hands-on experiences. For example, a class might work together to create a visual data project that explores an environmental issue, such as pollution in their community. Students could design, collect, and represent data visually, creating a narrative that highlights their insights. Competitions such as the World Artificial Intelligence Competition for Youth (WAICY) offer opportunities for students to showcase these projects and see the impact their work can have beyond the classroom. These experiences empower students to see technology as a tool for social good, to experiment, and to apply their learning to make tangible contributions to their community and the world.

Shifting Classroom Practices and Habits: The real focus here isn't about specific tools but about adopting new ways of teaching and learning. As educators, we can encourage students to see technology as a collaborative medium—one that interacts with disciplines like art, science, and social studies to enrich their perspectives. These interdisciplinary, inquiry-driven approaches develop whole-brain learning, bridging technical and creative thinking in a way that makes both realms more accessible and more relevant to students' lives.

## 6. Conclusion: Inspiring a New Vision for AI and the Arts

I often tell people that even though I might not know how to sculpt, I would sit beside someone learning to sculpt and ask questions, explore the process with them, and learn alongside them. Learning, in all its forms, is a shared journey. To cultivate curious, engaged learners in our classrooms, we must first embody that same curiosity and openness ourselves. This, I believe, is one of the greatest responsibilities we hold as educators and leaders. The curiosity we model inspires others, creating a learning culture that transforms not just students but the entire school community.

Imagine, then, a classroom—your classroom—where students are not only mastering skills but are exploring the unknown with confidence, blending the analytical with the creative, and applying what they learn to the world around them. As school leaders, you have the unique opportunity to shape this vision, to foster a learning environment that is future-ready, deeply human, and committed to lifelong growth.

As I close, I leave you with a simple message: Stay curious. Make art—even if it's uncomfortable. We don't have to be perfect or fully understand the tools and technologies we're exploring. What matters is that we are humans in development, helping other humans to develop. By embracing this mindset, we lead by example and empower the next generation of learners to approach life, learning, and technology with wonder and empathy.

Thank you.