WHAT AND HOW Schools Teach

The multiliteracies approach brings learning to life

Picture a photograph of a school in 1920. Beneath sepia tones, individual desks faced front, in rows, with stacks of books casting shadows on solemn faces. Students prepared mainly for assembly-line jobs and were trained to follow routine tasks and comply in ways that made job performance efficient. Fast-forward. What makes the 2019–2020 school year different? Today, employers want graduates whose curiosity and self-directed inquiry have been sparked by societal context and personal relevance. They want workers ready to tackle cross-disciplinary real-world challenges. Employers need creative problem solvers with the ability to collaborate well with others.

Preparing Students for the Future

World Economic Forum's *The Future of Jobs Report* states, "Sixty-five percent of children entering primary school today will ultimately end up working in completely new job types that don't yet exist." Technological trends are creating an unprecedented rate of change in the core content of many academic fields. This has significant implications for curriculum at every level of education, elementary through college. The report cites that "nearly 50 percent of subject knowledge acquired during the first year of a four-year technical degree will be outdated by the time students graduate." The World Economic Forum challenges educators to consider what relevance elementary and middle school content taught today will have when these students enter the workforce.

Futurists predict that today's students will have at least three unique careers. It is no longer practical nor is it desirable to have students memorize content. Instead, future careers will require knowledge of how to create and curate new content that is not yet known. Cindy Emerson, principal of Vero Beach Elementary School in Vero Beach, Florida, has focused her Title I school vision on preparing students for this demanding future. "We have a moral imperative to change educational emphasis from facts to finders. Our school expects students to be globally aware scientists, mathematicians, engineers. Our school is shifting to being a child-centered, future-mindful school, filled with inquiry and discovery."

Multiliteracies: Blending Ways Humans Convey Meaning

Principals committed to changing

outdated notions seek strategies that holistically blend content with interactive discovery processes. The multiliteracies approach, which merges visual literacy with written and mathematical literacy, is a tangible way of breaking content silos and bringing nonfiction content to life. Emerson brought the Crayola creatED® Multiliteracies course to her teachers to embed this approach schoolwide. "The field has a lingering misconception on how to teach math," she says. "It is not about memorizing facts. Math is a literacy, a way humans convey meaning with symbols, just like art and writing. Our teachers saw this firsthand in the professional development as they created math manipulatives and used visual symbols in math stories."

Multiliteracies make big ideas visible and provide teachers with a means of seeing what their students understand. Students learn by creating artifacts, manipulating concrete objects, and sketching math challenges. "Multiliteracies and art integration provide teachers with many authentic assessment opportunities. There is a clear understanding of expectations when students co-create rubrics that look at collaboration as well as math concepts represented in their projects," says Emerson.

For example, Vero Beach students created a multiliteracies project to redesign learning spaces, called "Zen Zone." Emerson shared the school's standardized test scores and behavior referral data with fifth-graders. Using these facts, students visualized problem patterns and generated solutions. Emerson proudly described the process: "The data revealed students needed a place to de-escalate when behavior got intense. Their analysis of the reading scores led them to hypothesize that a comfortable place could increase interest in reading. They did research on chromotherapy, aromatherapy, and the impact various textures and lighting have on behavior. They created a cozy reading nook to increase the joy of spending quiet time with books. We are tracking how reading for pleasure increases test scores. The impact of the calming space on discipline is already documented. Students dealt with real data about their school, which increased relevance."

Relevance

Youth Truth Student Survey found that only 54 percent of middle school students feel that what they are learning in class helps them outside of school. Students across the nation are asking, "When will I ever use this in real life?" Art-integration projects that connect students with their local communities or explore real-world problems create the relevancy intersections students crave. National conversations about chronic absenteeism and student engagement underscore the importance of projects that lead to self-directed learning. Dr. Wendy Kerr, principal of Live Oak Elementary School in Fallbrook, California, speaks passionately about self-directed learning: "Our Fallbrook Union School District's blueprint for success emphasizes student ownership of their learning through choice, self-direction, and personal progress monitoring." She continues to explain why art integration is the strategy her faculty are using to bring that portion of the blueprint to life. "Art is

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the bridge between all the languages humans speak—written, spoken, pictorial, mathematical, and multimedia digital literacy. For many of our students who are beginning to learn English, art levels the playing field and enables them to demonstrate and apply the conceptual knowledge they have acquired."

The School Museum project is an example of how Live Oak Elementary is using the multiliteracies approach to add relevance. "Students researched nonfiction topics that were of high interest to them and aligned with our inquiry approach. They integrated art with writing (opinion, informational, and narrative genres) and posted their multiliteracies projects in a museum-like display with informative labels and evidence citations. The building came alive as students were docents explaining the content, inquiry, and creative processes to families and visitors."

Curiosity at the Root of Cognition

Many school districts' blueprints for success include *"Effective use of technology."* Futurists' view of current and upcoming roles of technology in school, work, and life can be humbling.

Computers are already more adept than humans at doing many tasks. They work tirelessly, processing mountains of data and retrieving relevant content in nanoseconds. They have better memories and deliver more accurate computational results. As programmers push machines to higher levels of artificial intelligence, what is their source of inspiration? Childhood curiosity.

Computer science researchers Deepak Pathak and Pulkrit Agrawal have been working on creating software that can learn on its own. Traditionally, computer scientists have used "reinforcement rewards" to teach machines new tasks. Computers would keep track of what actions led to a reward and repeat that successful sequence of actions. The problem with "reinforcement learning," which is the basis of most artificial intelligence programming, is that computers, like people who are rewarded for remembering and repeating what was already figured out, were getting stuck. They would repeat the same successful strategy over and over again instead of risking something new.

Historically, when information was a finite asset that schools dispensed, education systems rewarded retaining and retrieving information. In the digital era, the value of that behavior is diminished. Playful curiosity that drives children to try new ways, without external rewards or fear of failure, will soon be guiding computers.

Curiosity has been the edge that humans have had over computers. Until now. Drs. Pathak and Agrawal have figured out how to make computers curious. Instead of giving rewards for repeating prior success, they reward the machine for being wrong—by giving it extra chances to try again and explore new possibilities. When computer scientists treasure and emulate childish curiosity, educators receive a wake-up call that we,

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too, must honor this natural desire to discover. Curiosity drives creative problem-solving that until now was a skill unique to humans.

Pedagogy Shifts to Adapt to Future Needs

In 2017, Adobe surveyed 2,000 educators on creative problem-solving.

- 86% said they believe students who excel at creative problem-solving will have opportunities for higher-earning jobs in the future.
- 75% predicted that professions that require creative problem-solving are less likely to be negatively impacted by automation.
- 90% of educators stated their schools need to find better ways to integrate creative problem-solving into the curricula.

How can schools respond to the story told by these data?

Champion Creatively Alive Children grant winners have adopted the art-integration multiliteracy approach to foster creative problem-solving. Julia Coggins, principal of Lee Expressive Arts Elementary in Columbia, Missouri, states that the school's philosophy is "Learning through the arts best prepares children for life." Although new to the position, Coggins is excited that for 20 years, this school has been grounded in the studio experience and multiliteracies approach. "Braiding the arts into the entire curriculum enables students to apply and demonstrate what they understand. Even more importantly, it keeps them curious," she explains. "Visual literacy, drama, mathematical literacy, all come together in our grant-sponsored *Braided Stories* project. Students weave nonfiction facts with their personal, artistic interpretations, and the results are remarkable."

Cognitive flexibility, problem finding, and multimodal means of communicating are key skills that make us human. With such dramatic shifts in future workforce requirements, it is critical that we cultivate learners' mindsets to be curious and open to continuous improvement. Roger Havens, principal of Franklin Elementary in Wadsworth, Ohio, explains their grant project: "What if … was our grounding point. We focused on open inquiry so students would think of big ideas and many perspectives. Art integration helped them visualize abstract ideas that came to life when they sketched and then 3D-printed them."

Albert Einstein summed up these complex ideas very simply and beautifully with the following two passages: "I have no special talent. I am only passionately curious," and "It's not that I'm so smart, it's just that I stay with problems longer." Consider how these quotes apply to the role of humans and machines in the era of artificial intelligence. As educators, we have a unique opportunity to explore the differences between what is now known and what can be imagined and prepare students for a successful future.

Cheri Sterman is the Crayola director of education and vice chair of the Partnership for 21st Century Learning.