NEW FRONTIERS:

BRAIN SCIENCE AT WORK AT INDEPENDENCE

For anyone interested in ways that teachers can teach better, students can learn better, and schools can better prepare young people for success, this is a fascinating point in time. That's because advances in our understanding of the way the human brain works and learns are beginning to influence educational practice as never before.

"For decades, education was a practice unto itself, as was neurology, as was psychology," explains Bernadette Gilmore, director of academic innovation. "Then there was an 'aha!' moment when the silos started to come down. As educators, we are now capitalizing in a whole new way on what science shows us about the brain."

When Gilmore uses the term "shows," she means it quite literally. Breakthroughs have come with the use of functional MRI studies, which reveal images of what happens within people's brains as they study and learn. "You literally see that learning is a process of laying down and reinforcing new neural pathways."

Head of School Vicky Yatzus explains that the potential impact of the research is far-reaching. "We actually have data now that we can use to inform our approaches. Sometimes that data may confirm the value of things we have already been doing—validating insights we've developed through experience. Sometimes it may show us we need to change. In either case, there are profound implications for the way we do school."

Questions and Answers

The field of mind, brain, and education science is not new, but in many ways, its impact is just now being felt. In any area of study, it takes time for discoveries to make their way from the lab into practice. Yatzus says that's exactly what's happening now in education. "This is not the dawn of something entirely new, but it is a historic point of inflection."

What insights have emerged? One of the most exciting may be a realization of just how highly adaptive human brains are. "They have remarkable neuroplasticity," says Vita Biddle, learning specialist, citing studies that show physical transformations within the brain as people acquire new skills, from playing the violin to speaking Spanish. "One implication is that even if you are not good at something right now, you have the opportunity to become good at it. That's a point that is very valuable for our students to understand."

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Research has also shown that learning is more social than we had realized, a fact revealed by the areas of the brain that light up in the process of taking in new information. This finding affirms the value of collaborative work—and is leading to new thinking on everything from the way classroom spaces are arranged to the way class time is apportioned.

A third interesting area of insight concerns the value of experiencing struggle in learning. "It might seem that learning things quickly and easily would be ideal," says Gilmore, "but that's not necessarily true. It turns out that the time you spend 'in the pit'—trying and failing as you work through something challenging—makes the new skill or content really stay with you."

As mind, brain, and education science moves forward, it promises answers to other important questions: Which interventions work best in reading instruction? Can and should these be customized based on individual neural differences? What is the appropriate age to introduce each new cognitive skill? What are the optimal uses of instructional technology?

Clearly, the answers have the potential to transform the student experience.

"THE SCHOOL'S CENTER FOR WELLNESS, INNOVATION AND LEARNING (CWIL™) PROVIDES THE PERFECT FRAMEWORK FOR MAKING THE MOST OF THE NEW SCIENCE."

Especially Well Positioned

In the decades to come, it seems inevitable that mind, brain, and education science will make its influence felt across the world of education. Independence, however, is moving faster than most schools to put the science to work—and in some distinctive ways.

For one thing, it's including students in the process. At Independence, it's not just faculty who are busy talking about neural pathways and fMRIs.

"Since the early '90s, we've had a study skills class," explains Biddle. "That morphed into Learning Applications (LeApps™)—a hallmark course that teaches students to understand their own learning processes and develop effective strategies. Now, that course is drawing heavily on brain science." Students learn about the function and development of different parts of the brain and also research-based learning strategies—for instance, interval study. It turns out that short study sessions, distributed over time, yield much better results than longer concentrated periods of work.

Independence fifth graders have also had the rare opportunity to witness brain research in action, visiting labs at the University of Delaware's Department of Linguistics and Cognitive Science. "It's one thing to read about this kind of work," says Yatzus, "but quite something else to sit down, put on the little cap with the wires on it, and see your brain light up onscreen."

In many ways, Independence is well prepared to make the most of the emerging science. LeApps provides a well-established channel for sharing new insights with students. A new "classroom of the future" (see page 5) offers the chance to explore the best physical settings for busy brains. And the school's mindfulness program helps students reduce stress and achieve an optimal mindset for learning.

More broadly, the school's Center for Wellness, Innovation and Learning (CWIL™) provides the perfect framework for making the most of the new science—focused as the center is on promoting best practices for supporting the whole child, including aspects related to learning and the brain.

As Yatzus points out, the school's relatively small size and its independence are helpful as well. "When it comes to innovating in thoughtful and effective ways," she says. "I believe we are especially well positioned."