

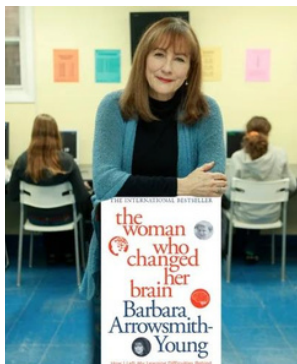
ARROWSMITH

WELCOME TO ARROWSMITH



www.arrowsmith.ca

Come Join Us



I am thrilled to introduce you to Arrowsmith, a program designed for schools and the students they serve.

Since 1978, I have been on a journey to transform the lives and learning of individuals through cognitive programming. Arrowsmith's vision is to Change Brains to Transform Lives.

Lifelong learning starts with a strong cognitive profile. That is why Arrowsmith was designed to strengthen what is at the heart of all learning and performance: our brains.

My team, along with the global network of schools and learning organizations who deliver Arrowsmith within their own communities, are dedicated to advancing neuroeducation through collaboration, continuous innovation, and integrity.

We know that by enhancing their brain, an individual can not only enhance their own lives, but the lives of others. Through an increased capacity to reason, an individual can change the world.

In the pages that follow, you'll discover how our programs have been proven to enhance cognitive development, foster critical thinking, and adapt to the diverse needs of students. I am proud to invite educators and professionals to explore how Arrowsmith can evolve their own practices and inspire a new generation of learners equipped for success in an ever-changing world.

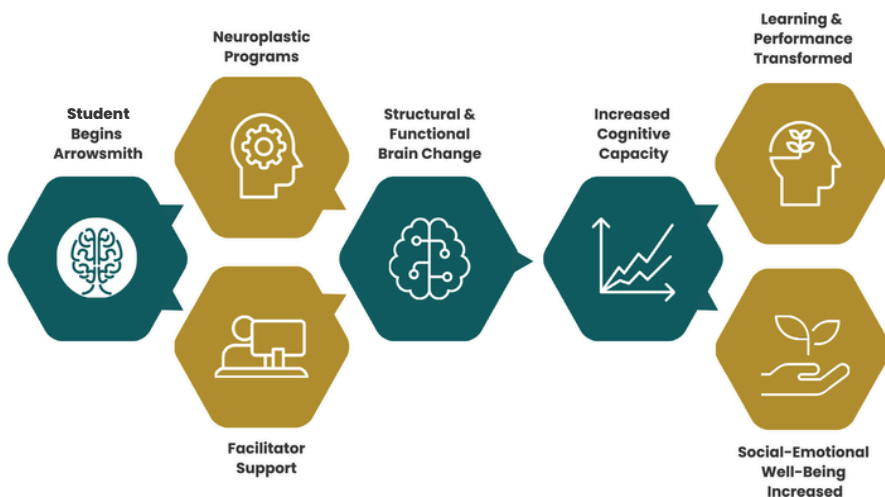
Join us on this exciting journey toward revolutionizing education and fostering the boundless potential within each student.

Barbara Arrowsmith-Young

Enhance the Brain, Transform Learning

The brain is at the heart of all learning, and a strong brain leads students to learn and perform optimally. Brain processes involved in critical thinking, creativity, adaptability, and emotional intelligence are crucial for all students.

Arrowsmith provides schools with the methods, technology and training to provide transformative cognitive programs to their students.



Key Features

Evidence-Based Techniques

Research-backed methodologies proven to promote brain connectivity and cognitive flexibility.

Interactive Exercises

Engaging and motivating brain exercises that enhance critical thinking, reflection and processing speed.

Flexible Programs

A range of scheduling options to seamlessly integrate into a school's framework.

Real-World Applications

Transferrable benefits that enable students' to learn and perform more efficiently and effectively – adapting to whatever challenge they face.

The Brain's Role in Learning

Can science actually inform educational practice? The short answer is yes.

Within **the brain** are cognitive functions including attention, memory, perception, reasoning which serve as the mental mechanisms for learning and navigating the world.

The Changeable Brain

This intricate organ is also capable of improvement. **Neuroplasticity** is the brain's capacity to form new neural connections. This means our students' brains, their unique profiles of strengths and weaknesses, can be improved.

Through neuroplasticity, educators can provide students with significant changes in students' learning experiences.

Practical Applications

Schools can use neuroplastic programs to improve, strengthen, and enhance student learning and performance.

Built from principles of neuroscience and proven through research, Arrowsmith has been called the first application of neuroplasticity within education.

Schools integrate Arrowsmith into their own goals and vision for students including:

- providing Arrowsmith to **all learners** to prepare them with a brain ready to cope with the complexities of the 21st century
- transforming the trajectory of **struggling and underachieving students** through customized and individualized cognitive programs

Implications and Outcomes

Studies on Arrowsmith have shown significant increases in:

- cognition
- academic performance
- independence and self-directed learning
- social and emotional well-being
- rate of learning
- growth mindset
- internal locus of control
- attention, listening and focus

The brain is our students' most precious asset. It shapes their lives and their ability to contribute to their community in meaningful ways. It determines the ease with which they learn and grow and adapt. And - it can be enhanced.

Neuroplasticity allows for schools to empower students with the core strength to thrive in learning. Bring the brain into every conversation about innovation in education and maximizing student potential.

"The fact that Arrowsmith trains the brain processors that make possible reasoning and rationality, is arguably one of the most important positive developments one could imagine for our world, with its complex problems."

**Dr. Norman Doidge,
The Brain That Changes
Itself**



The Science Behind Arrowsmith: Core Principles

Researchers understand how the brain responds to stimuli for change to occur. Arrowsmith has been called a pioneer in the field of neuroplasticity, having decades of experience in applying and developing the conditions known to be involved in positive brain change.

Arrowsmith's core principles come from neuroscience, and have been proven to target and strengthen the processes involved in learning and social and emotional well-being. Every element of Arrowsmith's design supports the following principles:

Differentiated Stimulation

Through specific tasks that target and exercise cognitive functions, functions are strengthened over time.

Sustained Engagement

Neuroplasticity is a process. Individuals engage in cognitive programming across sufficient time and through key stages of progress in order for significant changes to take shape.

Effortful Processing

To ensure neuroplastic change, cognitive tasks must be challenging. Tasks require effort to accomplish, but not be so difficult that failure will occur.

Attention

For neuroplastic change to occur, the brain must be focused. Individuals are fully and actively engaged so the task itself promotes this attention through feedback and motivation.

Novelty and Complexity

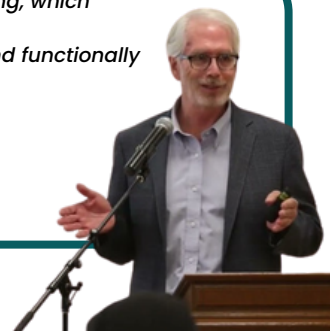
To continuously strengthen a given cognitive function, the task continuously evolves and changes, enabling the brain to be constantly being stimulated and strengthened over time.

"There is neuroplasticity as a function of Arrowsmith training, which improves performance.

So - do precise Arrowsmith cognitive exercises activate and functionally change particular areas or networks of the brain?

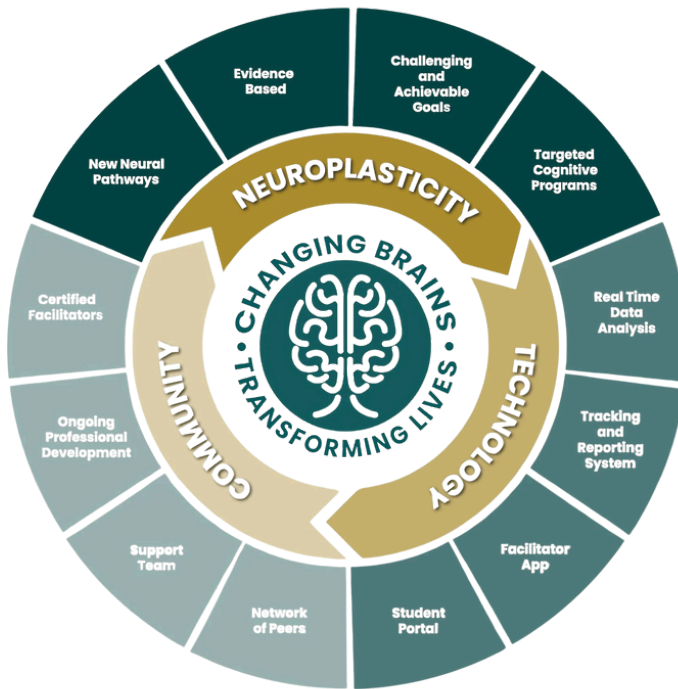
The answer, is yes."

Dr. Greg Rose,
Professor Emeritus, Cognitive and Neural Sciences,
Southern Illinois University School of Medicine



Arrowsmith Innovative Ecosystem: Neuroplasticity, Technology, Community

All learning begins with the brain. With decades of research and development behind it, Arrowsmith provides schools with a solution to ready their students' brains for a lifetime of learning.



Schools committed to their students use Arrowsmith, a comprehensive ecosystem that includes:

- **Neuroplastic Programs**– dynamic and individualized activities that target and strengthen core capacities for learning and performance.
- **Technology**– innovative systems that track and report on cognitive progress in real time, from the viewpoint of students, teachers, and administrators.
- **Community**– ongoing professional development and a global learning community together changing how education shapes learners.

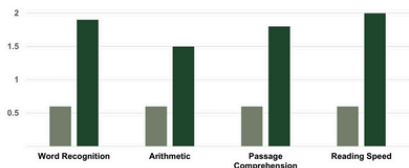
Research and Outcomes

For over 4 decades researchers have evaluated the impact of Arrowsmith using brain imaging technology, academic and cognitive ability measures, and social, emotional well-being assessments. To date:

- 🌐 40+ independent studies
- 🌐 1000+ participants
- 🌐 5 countries
- 🌐 8 universities
- 🌐 16 presented at conferences
- 🌐 20 peer reviewed studies
- 🌐 3 published studies
- 🌐 7 studies with a control group
- 🌐 30+ different educational institutions

Selected Highlights

Academics/Rate of Learning



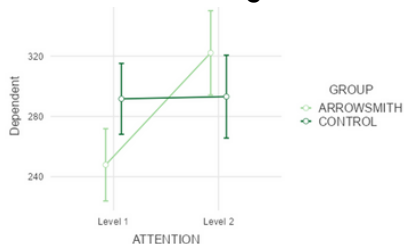
Rate of learning doubled or tripled across standardized academic measures

Social + Emotional Well-being



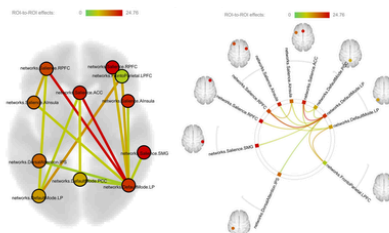
Widespread improvements in social and emotional behaviour and independence

Attention + Cognition



Significant changes to working memory, flexibility, attention, concentration, processing, endurance

Brain Activation + Connectivity



Improved efficiency and functioning in networks essential in learning and attention

Measurable, significant, positive impact.
Read more at: arrowsmith.ca/research

Studies have shown participation in Arrowsmith leads to:



Improved cognitive and academic performance



Increased independent and self-directed learning



Increased emotional and social well-being



Increased rate of learning



A shift to a growth mindset



Increased sense of locus of control



Increase in attention, listening well, staying focused



"I think for me, one of the most interesting things is not only the improvement, but that both groups, regardless of their initial cognitive abilities, improved in the same cognitive processes. They were different in their abilities at the beginning, they did the same training, and they both improved in their cognitive abilities. I think that is very important."

**Laura Herrero, PhD. Professor and Researcher
Psychology Department, Universidad Camilo José Cela**



**Universidad
Camilo José Cela**
SEK EDUCATION GROUP



**HARVARD
MEDICAL SCHOOL**



**UNIVERSITY OF
CALGARY**



**BRIGHAM AND
WOMEN'S HOSPITAL**

The Federated Schools of



Holy TRINITY PARISH



Curtin University

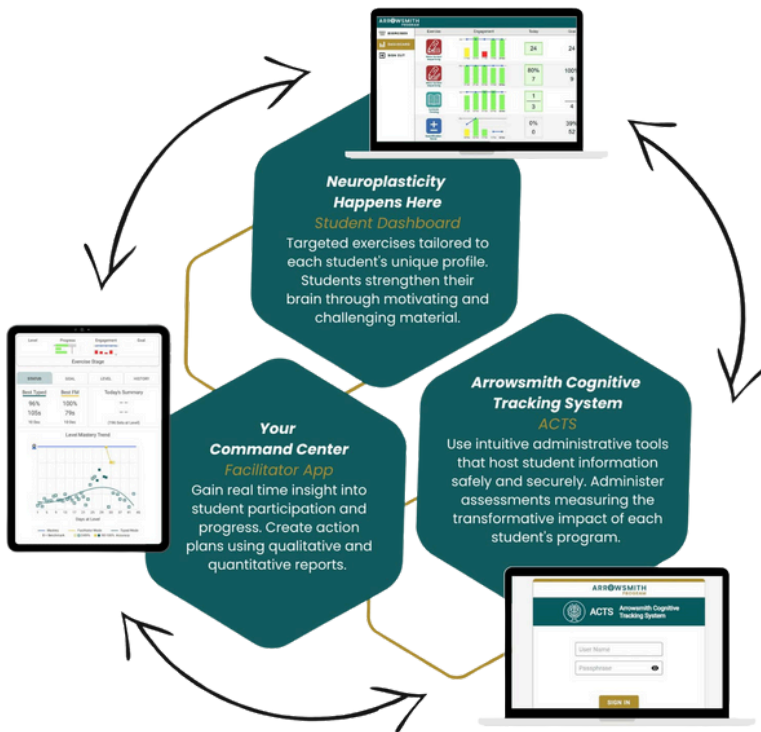


"There seems to be a story here [with Arrowsmith outcomes] about cognitive efficiency which includes working memory and attention and learning, the capacity to learn new things. These are really important cognitive skills for success at school and life in general."

**Dr. Rachel Weber,
University of British Columbia, Canada**

Brainex: Neuroplasticity in Action

The driver behind these innovative programs is Arrowsmith's Brainex: cutting-edge technology unparalleled in education today. Many researchers and educators recognize this to be the critical element in Arrowsmith's effectiveness– the ability to track and respond to students' activities in real time.



-  Data-Driven
-  Dynamic
-  Personalized
-  Evidence-Based
-  Brain-Changing
-  Real-Time Feedback

This is Neuroplasticity in Action

Overcoming Learning Struggles Through Neuroplasticity

Studies have shown that through participation in Arrowsmith, struggles for students with learning difficulties are lessened or even eliminated.

A target and customized cognitive approach is ideal for students who:

- struggle to keep up
- require considerable support at school and home
- are falling behind their peers
- rely on assistive technology, extra time, and resources
- have diagnosed learning difficulties and disabilities

**A benefit to all,
essential for some.**

Traditionally, strategies for struggling or underachieving learners assume the brain is fixed, and that difficulties are lifelong.

There is another solution.

Rather than accommodating struggling learners through extra time or resources, a cognitive intervention can strengthen the root cause of learning issues, fundamentally changing a student's ability to learn with greater ease and efficiency.

Arrowsmith provides teacher training, cognitive assessments and customized programming to overcome issues such as:

- underachievement in numeracy or literacy
- diagnoses including dyslexia, dysgraphia, dyscalculia, ADHD
- struggles with executive function, attention, memory or communication

"Arrowsmith has changed the lives of so many of our students in such amazing ways. Students who were not excelling academically and went through Arrowsmith ended up in the National Honor Society, and have gone on to having productive college careers. Others who lacked confidence in social settings can understand others and better relate."



DeShuan Mills,
Lower School Principal
Providence School, USA

"Arrowsmith has filled a void in our educational program by reaching out, giving students hope, and providing an opportunity to taste success. The changes I have witnessed in ability and personality in our Arrowsmith students in the 3 years that we have offered the program is miraculous. It offers hope and a chance to succeed to the overwhelmed and overwrought."













Dr. Carol Midkiff,
Principal, USA

Understanding Students Through a Cognitive Lens

The brain is made up of specialized regions (**cognitive functions**) that each play a vital and specific role.

Any any moment of a student's day, some combination of these functions are active. These functions operate on a continuum of capacity from weak to strong; each student's individualized combination of strengths and weaknesses - what's called their unique **cognitive profile** - shapes how they engage in school, the playground, at home, in the world. Listed below are 10 of the most critical functions for academic and social learning.

Top 10 Essential Cognitive Functions

	Attention, critical thinking		Non-verbal thinking + communication
	Mental Calculation		Flexibility, reasoning, logic
	Visual Memory for details		Motor plans for reading + writing
	Encoding Language		Auditory memory
	Phonemic Awareness		Visual memory for letters + numbers

Each task, academic subject, or situation can be understood as a combination of these cognitive functions, and a student's achievement is primarily determined by the degree to which they are effectively operating.

Some of the most critical domains in education and learning are simply a combination of cognitive functions interacting. This includes:

Executive Function: a set of 4 functions involved in problem-solving, understanding, attention, and organization.

Memory: to some degree, every function has a memory component - memory for sounds, for number, for words, for meaning, for faces and details, and so on.

Emotional Intelligence: awareness of social cues, "reading between the lines", effectively acting and reacting in a given situation - all cognitive in nature.

Language Processing: different functions encompass listening, understanding, receptive and expressive communication, working memory.

Neurodiversity: learning difficulties and disabilities, attention disorders, and non-verbal issues can be understood through a cognitive lens.

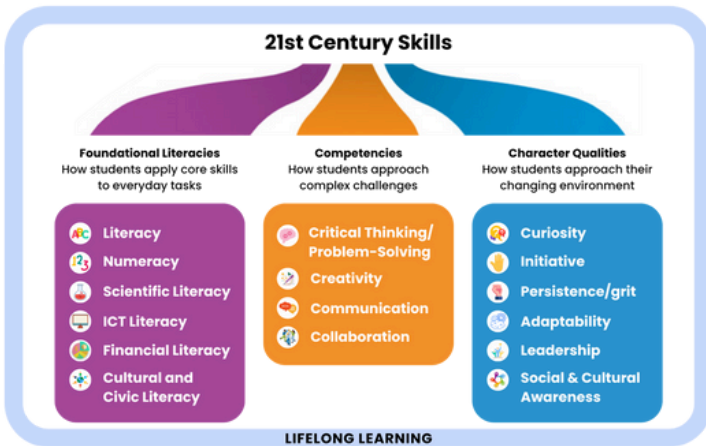
Building the 21st Century Brain

“We should not focus so much on academic content but on developing skills to adapt to the world.”
– Robert J. Sternberg, *Psychologist, Professor of Human Development, Cornell University*

According to the World Economic Forum – and others – the time to evolve education as we know it is **now**. Soon if not already the ability to think critically and adapt will be more important than reading or math scores. Many researchers are forecasting foundational literacies may soon be ‘replaced’ by Artificial Intelligence. This puts even greater urgency on students’ higher order capacities to navigate their world aptly. Other agencies, like the Organization for Economic Co-operation and Development (OCED), cite student wellness as a significant determinant on achievement. All of these qualities, begin in the brain.



WEF’s “New Vision For Education”, 2015



Building a 21st Century Brain

Competencies like problem-solving, qualities like persistence, and one’s social and emotional well-being: none of these are teachable skills. They can however, be built. Cognitive functions can be enhanced to enable effective communication, understanding, discernment, empathy for others, resilience in the face of uncertainty.

The 21st century brain can be built through neuroplasticity.

Perhaps more than any other period in history, today’s students need different skills than the generations before. A strong brain is vital, and possible, for all students. A capable cognitive profile enables students to thrive in whatever future lies ahead.

School Highlight: SEK International Schools

"Arrowsmith has been transformative for students at SEK International Schools. By improving fundamental learning processes, it has not only boosted academic performance but also enhanced students' confidence and engagement."

**Iván Martínez Pastor, General Director,
SEK International Schools**

 www.sek.es/en/



"As director of SEK International school El Castillo, I discovered the Arrowsmith Program as the great opportunity for development of many of our students, by attending to the neuroplastic potential of the brain of different student profiles. For all of them, including talented young people and students with a different way of learning, it was a breakthrough for their learning, knowledge and self-esteem".

Eloisa Lopez, Principal of SEK EL Castillo



With over 130 years' experience and history, the SEK Educational Group oversees schools around the world, and thousands of students within them. Their mission is to nurture students' ability to access relevant, meaningful and global learning. As part of this vision, several SEK schools around the globe offer Arrowsmith to reach their vision of producing effective, lifelong learners.

Voices Across the Globe



"I also wanted to say that the change I experienced from Arrowsmith is profound; a quantifiable measure of this was my ACT (a college entrance exam we take in the US). I recently received my results and scored in the 98th+ percentile on every single category. I even scored perfectly on the reading comprehension. I never could have accomplished this two years ago without Arrowsmith."

Carlie, Student, USA

"Our child, prior to starting Arrowsmith was not doing very well in school. Today in our child's Grade 6 class, our child is the top student. The teachers refer to him as "self-motivated, over achiever, polite, and organized." This was not the case 3 years ago. This program has given him the skills to achieve high goals in his future education, that possibly he would have never known."

Hailey, Parent, Canada

"Arrowsmith has proven to be a vital and integral program at our school. One of our core values is that every student matters and having the Arrowsmith program available is one way of fulfilling that core value."

Marianne Vangoor, Elementary School Principal, Canada

"The psychometric assessments conducted post Arrowsmith Program show notable increases in Verbal Comprehension, Perceptual Reasoning and especially in Working Memory and Processing Speed. My students and their parents regularly see and value the constant positive changes in their child's social and emotional development."

Maria Commiso, Educator, Australia

ARROWSMITH

**Strengthening Brains.
Transforming Lives.**



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