







COGx

*Optimize learning through science*

# IMPACT REPORT

# Contents


A Note From Our Academic Partners..... 3

About COGx, Our Mission & Our Vision..... 4

Our Approach..... 6

COGx Programs..... 14

Our Impact..... 16

Transforming Teaching & Learning..... 20

- Effectively Capturing Student Attention..... 24
- Addressing Processing Speed..... 26
- Leveraging Working Memory..... 28
- Supporting Students' Executive Function..... 30
- Encoding Information Efficiently..... 32
- Incorporating Retrieval Strategies..... 34
- Fostering Metacognition..... 36
- Feedback for Self-Esteem & Learning Success..... 38
- Emotions & Learning..... 40
- Foster Student Motivation and Engagement..... 42
- Personalizing Teaching for Cognitive Diversity..... 44
- Develop Successful, Lifelong Learners..... 46

In Gratitude..... 48

References..... 50



## World-renowned experts on human learning and ground-breaking research into cognition and learning underpin COGx programs!

UCLA

Decades of research have shown that much of what we think we know about learning stands opposite to how learning actually works. As a result, students are not learning effectively and efficiently, making them less prepared for college and less likely to graduate and be successful in life. Together with other prominent human learning and memory researchers/experts around the world, we have discovered proven techniques that make both teaching and learning markedly more effective. Yet these techniques are not widely deployed in our schools around the world.

COGx is changing that. They are committed to translating scientific research and evidence-based practice into accessible programs. They are rigorous in their approach and committed to applying research findings and evidence with fidelity. As a result, they are making great strides in changing the status quo in education to one that embraces scientific research on learning.



**Robert A. Bjork**
Distinguished Research Professor
UCLA



**Elizabeth Ligon Bjork**
Senior Chair, Psychology
UCLA

## *About COGx*

*COGx is a research and development firm in applied cognitive science dedicated to closing the gap between teaching and learning.*

*We partner with organizations who strive to make teaching and learning more effective, efficient, and accessible. Our programs help school systems attract and retain educators empowered to thrive and students who can flourish, while improving learning outcomes.*





## Our Mission

*We strive to make evidence-based approaches to teaching and learning equitably available to both educators and students, with an emphasis on democratizing access to high quality programs for all.*

## Our Vision

*An education wherein every student is taught how to learn efficiently, effectively and independently for life; while every educator is empowered to teach by mastering the science of learning.*

# OUR APPROACH TO OPTIMIZING TEACHING & LEARNING THROUGH SCIENCE





## TRANSLATE RESEARCH

We synthesize research on human learning. Thus far, we've meticulously translated ~1,300 scientific papers. Our world-renowned evidence base is accessible via our comprehensive solutions.

## IDENTIFY GAPS

We conduct global research on teaching and learning practices, identifying gaps and needs that hinder student success.

## DEVELOP SOLUTIONS

Using our investigative insights and synthesized research, we co-develop tailored programs, with the world's leading experts on human learning, to bridge gaps in teaching and learning.



**TRANSLATE RESEARCH**

## OUR EVIDENCE BASE

We do not lack evidence of how to engage and motivate students, how to attract and retain educators or even how to improve learning dramatically.

However, we need organizations that can translate the vast amount of scientific research into application-ready programs that distill evidence into action. This is what COGx does!

COGx has translated ~1,300 scientific papers into evidence-based programs co-created with the world's most distinguished cognitive scientists. These programs have been implemented with success globally and earned worldwide recognition.

We do this to partner with organizations who seek to empower their educators and students to thrive.

*“In **fact, not only can we put cognitive science discoveries into practice, but I believe we're ethically obligated to do so**... the benefits of cognitively friendly instruction are so profound that **inaction at this point would be tantamount to malpractice.** We have knowledge that can **help them realize a lifelong love of learning**. It's time to put that knowledge to work.”*



***Prof. Sanjay Sarma***

*Vice President for Open Learning, MIT*



# IDENTIFY GAPS

**Gap #1 - How We Teach**

Teaching is often disconnected from how students learn and too many students are forced to drop-out, struggle, and/or work too hard to do well (Hines, 2014).

**Gap #2 - How We Learn**

Learning is a scientific process, and for students to learn optimally they must be taught. This is true regardless of cognitive abilities and disposition towards learning (Bjork et al., 2013).

**Gap #3 - How We Personalize**

The human brain can change itself...The scientific challenge is to find the most efficient way to train the brain...With help, the brain [can] often develop and change throughout life (Doidge, 2007).



## Only 4%

of educators have received some training on the Science of Learning while the rest expressed a desire to learn more.

## Only 11%

of educators say their students know how to learn optimally.

## Only 7%

of educators have evidence-based tools to personalize teaching for their students based on their cognitive profiles.



**DEVELOP SOLUTIONS**

## SCIENCE OF LEARNING FOR ALL

Processing information effectively benefits everyone, but the way in which each person can benefit varies.

For example,  an educator must master the science of learning to inform how they design their lesson plans. Meanwhile, a 10 year old student must learn to study optimally at an age appropriate level while a more mature student is offered an advanced version with different expectations.

To this end, COGx carefully develops programs that address the needs of students of various ages, educators, parents and school leaders. We also contextualize our programs to not only ensure we adopt the local language but also embrace the values and culture of each country we serve.



*Educators are constantly exposed to new concepts and fads in education. Unfortunately, many if not most lack any basis in research or come with evidence of success. Such is not the case with COGx's Science of Learning programs. Backed by extensive research, and presented with both extraordinarily useful information and strategies, the Science of Learning finally represents the "game changing" approach that others have promised but failed to provide.*

***Shawn Smalley,***

*Educator, Northern Cass School District, United States*

## ONLINE PROGRAMS

### Developing Sophisticated Learners

*for Educators*

Provides compelling research and insightful application to bolster teaching efficacy and students' ability to learn effectively. The instructional design incorporates the scientific principles of human learning. Learning is active, engaging, collaborative, and application based.

Learn More

### *Distilling the Science of Learning*

*for School Leaders*

Equips school leaders with the tools to align instruction with learning science. School leaders gain a high-level understanding of how students learn and a toolbox of methods to support faculty.

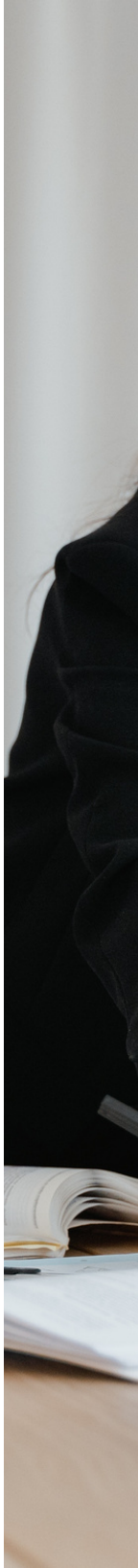
Learn More

### *Becoming a Sophisticated Learner*

*for Students*

Teaches students how the brain processes information and what behaviors promote optimal learning. For a blended implementation, educators receive a facilitator's guide that includes lesson plans and activities.

Learn More





## IN-PERSON PROGRAM

**Individualized**
**Learning Enhancement Program**
*for Students*

We train partner organizations in our proprietary methodology, which targets cognition, develops metacognitive awareness and teaches students to learn effectively.

Learn More

## COMPLIMENTARY RESOURCES

**COGx Insights Subscription**
*for Individuals*

COGx Insights is a complimentary resource for anyone who'd like to explore the Science of Learning.

Learn More

# OUR IMPACT



**In 2023,**

**COGx initiated new partnerships**

**12 NEW COUNTRIES**

**adopting to local language and culture.**



*COGx is the finest example I've encountered of cutting edge research applied to educational methodology. All educators should be required to learn effective strategies to develop the foundational cognitive skills students need to engage in the critical thinking and creative problem solving that 21st century education demands.*

***Sara Edward EdD.***

*Educator, United States*

## GLOBAL AWARDS & RECOGNITION




In December 2023, COGx was named the world's top Science of Learning solution at the 2023 Reimagine Education Awards, sponsored by Wharton and QS. COGx emerged as a standout choice, among 1200+ entries, impressing a panel of 600 judges.




In June 2023, COGx was selected as leading EdTech innovator (USA) to advance learning success at the LatinX Conference.

*The rich and thoughtfully developed curriculum is powerful. The translation of the Science of Learning is essential so that we can make "Monday morning" sense of the work. COGx delivers in every way to this end.*



***Richard Boerner***

*Superintendent, Graded - The American School of São Paulo, Brazil* 🇧🇷

## TRANSFORMING TEACHING & LEARNING PRACTICES

We rigorously measure and report on our impact across all solutions and provide partners with full access to data we collect. This report consolidates the outcomes we achieved with our partners globally.

**Program Endorsement**

97%

of participants recommend COGx Science of Learning Programs to others.

**Mastery**

88%

of participants achieved mastery. The COGx approach ensured over 90% completed our programs.





*The program is excellent, I consider that the highlight of it is how it applies the content it teaches with the students who take the course. This helps us not only to learn the theoretical content, but also teaches us in practice how to use them, in addition to providing us with the tools.*

*Liam Borges,*
*Educator, Uruguay*

## Content Rigor

92%

of educators reported that the COGx PD program provided them with research-based instructional strategies that were both effective and easy to implement.

## Addressing Educator PD Needs

93%

of educators, upon completing the COGx PD program, felt motivated to continue expanding their knowledge of the Science of Learning.





## Effective Learning Resources

90%

of participant found the learning materials provided during the COGx programs to be adequate and useful.

## Application Ready

93%

of educators reported acquiring practical knowledge and skills from the COGx PD program, which they could implement effectively in their classrooms.

## EFFECTIVELY CAPTURING STUDENT ATTENTION

### The Need

- Sustained attention has decreased dramatically in recent years, paralleling the increase in ADHD.
- Our brains process 200x more information than we did one generation ago.
- Educators must capture their student's attention to be able to teach. Yet,...

2% of educators reported that they have tools to capture and improve student attention.

**COGx programs teach educators how to capture, keep, and gauge their students' attention.**



## COGx Outcomes




Content Knowledge

of educators reported to have gained a deeper understanding on the role of processing skills in learning.

+




Pedagogical Insight

of educators said they learned strategies to capture student attention.

=




Classroom Application

of educators felt confident in implementing tools that target & accommodate differences in attention.

> *I learned a lot about processing, attention, and brain science and how these affect students' capacity to learn.*
>
> ***Edward Lucas,***
>
> *Educator, St. Luke's School, United States*

## ADDRESSING DIFFERENCES IN PROCESSING SPEED

### The Need

- If students have fast processing speed, they may become inattentive because they no longer have anything to attend to.
- Processing speed affects emotional wellbeing, impulsivity, encoding and retrieval as well as communication.
- Differences in processing speed are guaranteed in every classroom, yet few educators have training on how to effectively identify and personalize accordingly.

4% of educators are confident that they can differentiate teaching based on the differences in their students' processing speed

**COGx programs teaches educators how to discern and tailor their teaching to accommodate variations in processing speeds within their classroom.**



## COGx Outcomes




Content Knowledge

of educators reported they learned why processing speed is a critical component of learning.

+




Pedagogical Insight

of educators say they now understand how processing speed varies and how to accommodate these differences.

=




Classroom Application

of educators said they have valuable insights to improve learning outcomes for their students.

> *Biggest take away for me is that slow processing speed can come out in different ways. I think this is so important for teachers to know and consider when a student is demonstrating challenges.*
>
> ***Lucas Dennis***
>
> *Educator, Regina Public School, Canada*

## LEVERAGING WORKING MEMORY

### The Need

- Working memory connects what we know to what we are trying to learn, serving as bridge to learning.
- Few educators know how to leverage working memory in order to foster learning.
- Traditional teaching tends to overload auditory working memory which hinders learning.

2% of educators were aware of working memory's influence on student learning, while the rest expressed interest in learning more.

**COGx programs enable educators to become well versed on the ins and outs of working memory and provide classroom strategies that support and strengthen it.**



## COGx Outcomes




Content Knowledge

of educators said they gained new knowledge on how the working memory subsystems process information.

+




Pedagogical Insight

of educators said they learned why working memory overload hinders academic performance.

=




Classroom Application

of educators said they learned classroom strategies to reduce working memory overload.

> *I will adjust the way that learning happens in my classroom. Using the working memory strategies, I will differentiate tasks more, giving more time for the slower processing learner and chunking lessons to allow for students not to be overloaded with information.*

***Melissa Anez***

*Educator, Ahliyyah & Mutran, Jordan*

## SUPPORTING STUDENTS' EXECUTIVE FUNCTION

### The Need

- Executive Function skills predict academic and career success.
- Further, Executive Function skills also mediate a person's tendency toward risky behaviors including crime and addiction, our ability to make and save money, our social skills, and our mental and physical health.

4% of educators were trained on executive functions and how they relate to teaching and learning process in students.

**COGx programs present ways to support all students in the classroom before, during, and after learning. Educators crack the code of executive function and unlock their students' full potential.**



## COGx Outcomes




Content Knowledge

of educators gained new insights on the role of executive function skills in managing the learning process as well as their developmental process.

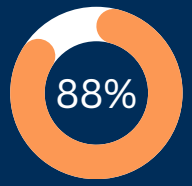
+




Pedagogical Insight

of educators said they felt enabled to identify & connect the role of specific cognitive skills required for executive function behaviors.

=




Classroom Application

of educators felt confident in using COGx classroom guides to design strategies to improve executive functioning.

> *To enhance student learning in the classroom, after what I have learned in this module, I will provide students with opportunities to organize and structure information in a hierarchical manner through content organization activities such as concept maps or flow charts.*
>
> ***Lara Diaz***
> *Educator, Uruguay*

## ENCODING INFORMATION EFFICIENTLY

### The Need

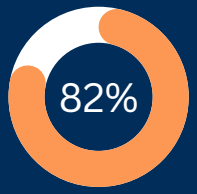
- Students rely on ineffective strategies to learn resulting in superficial learning (Bjork, ).
- Learning requires effective encoding and retrieval of information, which are foundational to knowledge and prerequisites for 21st century skills.

20% of educators believe that their students know ANY technique to encode or strategy to retrieve information they learn.

**COGx programs teach educators how to foster their student's ability to acquire knowledge using proven techniques that facilitate the encoding of new information.**



## COGx Outcomes




Content Knowledge

of educators understand the architecture of long-term memory, it's connections to learning and, ways to enhance encoding.

+




Pedagogical Insight

of educators feel confident in teaching techniques to effectively encode information in long-term memory.

=




Classroom Application

of educators felt empowered to integrate classroom-based encoding tactics into their lessons.

> *Throughout my entire curriculum, there are opportunities to model encoding techniques. I learned how to be more conscious about identifying those opportunities and calling students attention to them.*
>
> ***Zac Stevens***
>
> *Educator, Culver Academy, United States*

## INCORPORATING RETRIEVAL STRATEGIES

### The Need

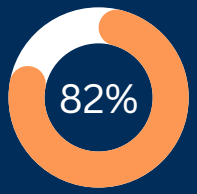
- Traditional instruction often leads to surface level learning which is fleeting, prevents mastery and jeopardizes future learning.
- According to the forgetting curve, approximately 50% of new information is forgotten within 24 hours, and a significant 90% is lost within 7 days of the learning process (Cloke 2018; Ebbinhaus, 1885).
- Retrieval strategies promote deeper learning and mastery while facilitating intrinsic motivation.

<15% of educators have been trained on how to incorporate retrieval strategies to their teaching

**COGx programs teach educators how to incorporate retrieval practice into their teaching.**



## COGx Outcomes




Content Knowledge

educators gained deeper understanding of the long-term memory architecture, how it is connected to learning and how retrieval can be enhanced.

+




Pedagogical Insight

educators gained ability to teach students strategies to effectively retrieve information from long-term memory.

=




Classroom Application

educators learned how to integrate classroom-based retrieval tactics into lessons to improve students' learning and test-taking performance.

Upon completion of COGx Student Programs, **80% of students** reported that they understood the **importance of spaced practice.**

Further, **81% of students** understood the **importance of using elaboration when studying.**

> *The memory retrieval strategies improved my teaching practice so my students were learning durably, efficiently, and reliably.*
>
> ***Mira Ahmed,***
> *Educator, Ahliyyah & Mutran, Jordan*

## FOSTERING METACOGNITION

### The Need

- Among research conducted globally on what contributes the most to learning success, few things match the effect size metacognition produces.
- John Hattie's meta-analysis conducted across 95,000 studies involving 300 million students, internationally, found that metacognitive strategies were the most impactful strategy to maximize learning (Hattie, 2015).
- When educators and students learn to develop metacognitive awareness, students become sophisticated learners.

22% of educators have been trained on incorporating strategies to strengthen student metacognition.

**COGx programs teach educators strategies to foster metacognition and in turn create the foundation for learning independently, effectively, and efficiently.**



## COGx Outcomes




Content Knowledge

of educators enhanced their grasp on the role of metacognition in learning success and lifelong learning.

+




Pedagogical Insight

of educators said they can identify ways to develop students' ability to monitor and manage their own learning behaviors.

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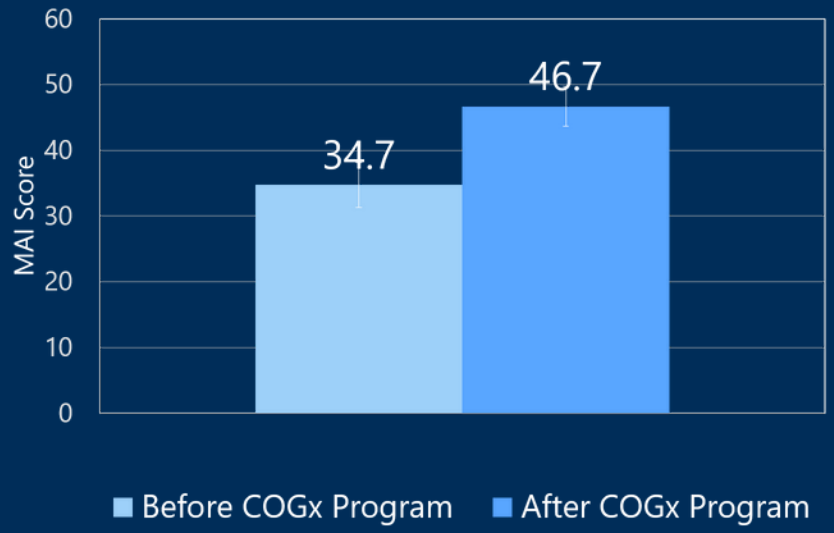

Classroom Application

of educators became more confident in planning and implementing strategies that enhance students' metacognitive awareness.

### Metacognitive Awareness Inventory (MAI)

MAI is an assessment tool used to measure an individual's metacognitive abilities and the effectiveness of interventions. It provides insight into how metacognitive strategies are improving learning outcomes.

**Students who participated in our Student Program, *Becoming A Sophisticated Learner*, experienced an improvement greater than 1 standard deviation on the MAI. This substantial gain is comparable to progressing over one year of schooling.**



## FEEDBACK: SELF-ESTEEM & LEARNING SUCCESS

### The Need

- Effective feedback, formative assessments and peer-based learning are among the most effective ways a student can learn information.

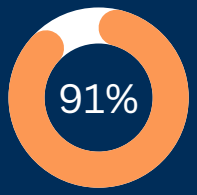
- In the majority of classrooms, learning is assessed using tests and exams. As a result, students are indirectly trained to avoid feedback because it is painful and comes to them at a cost - through a low grade.

43% of educators have ventured beyond only using tests or homework (grades) as the only methods to provide feedback to students.

**COGx programs teaches educators how to provide effective feedback, create formative assessments, design successful peer learning opportunities in their classroom.**



## COGx Outcomes




Content Knowledge

of educators improved their understanding on the various components of effective feedback.

+




Pedagogical Insight

of educators can educators can pinpoint opportunities to incorporate metacognitive practices into instruction through feedback, formative assessments, and peer-based learning.

=




Classroom Application

of educators said they can effectively apply feedback, formative assessments, and peer-based learning to enhance student learning outcomes.

> *I've learned that incorporating formative assessments into my lesson plan will help me gain a more complete picture of student progress and adjust my teaching accordingly to ensure effective learning.*

***Victoria José***

*Educator, Uruguay*

## EMOTIONS & LEARNING

### The Need

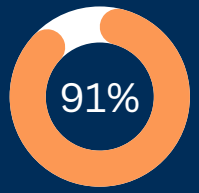
- 1 out of 2 children suffer from trauma every year, caused by physical, emotional or sexual abuse; while emotional violence affects 1/3 of all children.
- Studies have shown that the climate we create has implications for children and young people. While a negative climate can hinder learning and performance, a positive climate can foster learning.
- Similar to cognitive skills, social and emotional skills can be taught and with practice can positively impact an individual's academic journey.

23% of educators understand the effect trauma & negative emotions have on learning and fewer have had training to support student emotional wellbeing.

**COGx programs teach the interdependencies between cognition, emotion, and behaviors which enables educators to better support their students.**



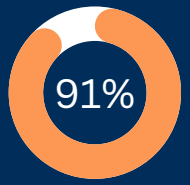
## COGx Outcomes




Content Knowledge

of educators reported gaining an in-depth understanding of how emotions impact cognition and learning.

+




Pedagogical Insight

of educators felt enabled to analyze the adverse effects of emotions and misbehaviors on cognition and learning.

=




Classroom Application

of educators learned ways to foster positive emotions and behaviors in the classroom to increase student engagement and learning outcomes.

Within two months of engaging in the COGx Student program, "Becoming a Sophisticated Learner," our surveys revealed a **14% increase in students' confidence in themselves as learners.**

> *I will be mindful that many students have experienced a trauma that affects their emotions, which will have an effect on their learning process.*
>
> ***Linda Dawson***
>
> *Educator, Florida Virtual School, United States*

## FOSTER STUDENT MOTIVATION & ENGAGEMENT

### The Need

- Engagement often decreases as students progress in their schooling (Gallup, 2016), adversely impacting their desire to learn.

- Students' motivation can influence judgment of their own ability to complete a task. Studies show that if students feel more confident and in control of their own behavior, they are more likely to be motivated, persist, and ultimately achieve (Hulleman & Barron, 2015).

34% students (US) remain engaged in high school, which is drop from 74% in 5th grade.

**COGx programs teach the most effective ways for teachers to foster student motivation and engagement in the classroom.**



## COGx Outcomes




Content Knowledge

of educators reported gaining an understanding of the science behind engagement and motivation.

+




Pedagogical Insight

of educators reported the capability to to summarize most effective ways to foster student motivation and engagement in the classroom.

=




Classroom Application

of educators learned ways to design instructional activity to promote student engagement based on their conclusions.

> *To improve learning outcomes, I will monitor students who are off task to determine if there are issues around motivation, planning, or regulation.*
>
> ***Erica Bennedict***
> *Educator, Regina Public School, Canada*

## PERSONALIZING FOR COGNITIVE DIVERSITY

### The Need

- Cognitive diversity is guaranteed in every classroom. It affects learning. Therefore, it requires effective personalization.
- Approximately, 10% students are twice-exceptional (2e) while 20% students have a language processing disorder.
- Few educators know how to identify these and personalize accordingly.

<10% of educators possess the expertise to identify and provide personalized instruction for dyslexic students.

**COGx programs teach how to connect learning difficulties to cognitive skills and enhance teaching to support students with a wide range of difficulty**



## COGx Outcomes




Content Knowledge

of educators reported to have gained a thorough understanding of cognitive diversity and the most common learning differences in classrooms.

+




Pedagogical Insight

of educators reported that they have gained the ability to identify common traits of cognitive diversity and their impact on learning.

=




Classroom Application

of educators felt enabled to support cognitively diverse learners through embedding relevant instructional aids and strategies for their learning needs.

> *The educational strategies described in this program reflect a sample of the most exciting and determined efforts to change the way we teach. Their activities, technologies and goals are interactive, interdisciplinary, pragmatic and not esoteric. Perhaps most importantly, it enables students to actively participate in their own learning processes, rather than being set apart from their community.*
>
> ***Samar Ali***
>
> *Educator, Ahliyyah & Mutran, Jordan*

## INDIVIDUALIZED PROGRAMS TO ENHANCE LEARNING ABILITY

### The Need

- Learning is a cognitive process. Every learner has a unique cognitive profile.
- Few educators or learning centers are equipped to identify and target differences in cognition.
- Cognition is malleable. When properly targeted; along with teaching students how to learn optimally and transfer (apply to real life), the outcome can be transformational for the learner.

**<5%** of educators can explain what cognitive skills their students depend on for learning and how to personalize and enhance accordingly.

**Our clinical approach ensures that individuals master scientific learning principles while strengthening the core cognitive and metacognitive skills responsible for learning.**



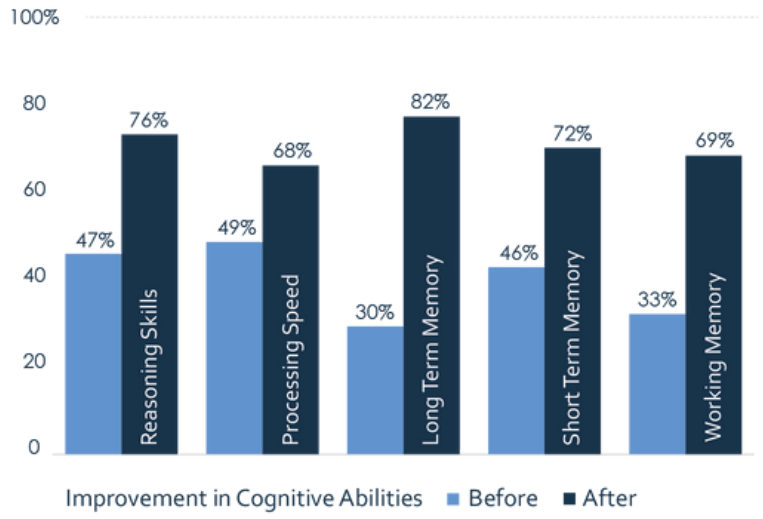
## Skills Developed in COGx Individualized Programs

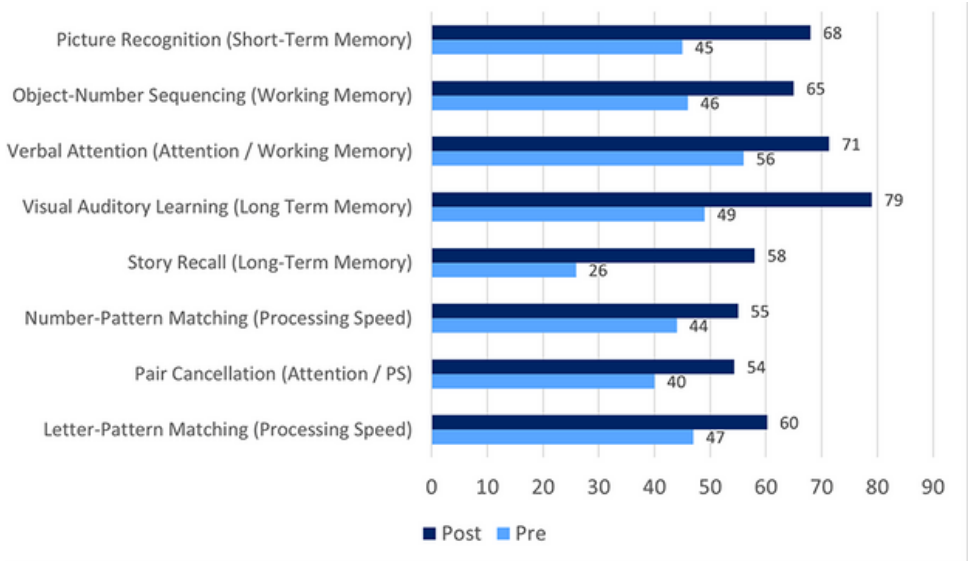
Programs are customized for each learner's unique cognitive profile and goals.

- Working Memory
- Self-Regulation
- Long-Term Memory
- Metacognition
- Creative Thinking
- Processing Speed
- Attention
- Motivation
- Executive Function
- Cognitive Flexibility
- Impulsivity
- Math Fluency
- Effective Study Skills
- Initiation
- Problem Solving

## COGx Outcomes

Pre & Post Clinical Evaluations to measure gains in Cognitive Abilities using WJIV and MindPrint Assessments



## With Gratitude

In 2023, COGx expanded its horizons, connecting with education communities worldwide. It has been a year filled with inspiration, collaboration, and transformative moments. Together, we've witnessed educators who have amazed us with their unwavering commitment to empowering learners, school leaders who boldly reshaped paradigms, and learners who, through our programs transformed their educational experiences. The year concluded with national and global recognitions, affirming our impactful strides in education.

I am grateful to my colleagues for their commitment to our partners and grateful for our partners for adopting COGx programs. Without both, we would not have the global recognitions and outcomes earned in 2023.



**Javier Arguello**
Founder & Executive Director, COGx



*COGx offers a truly revolutionary learning process, grounded in science, that all humans should have access to. COGx offers both direct instruction to students, and professional development for educators, that have the potential to meaningfully expand students' capacity for learning and educators' understanding of the learning process and capacity to teach all kinds of students effectively. I encourage anyone invested in learning and teaching to become familiar with COGx and the many gifts this organization has to offer.*

***Grace Losada***

*Vice-President of Education, Fusion Education Group, United States*

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