

Enhancing Learning Through the Power of *Technology and Brain Science*

Michelle A. Blank, Ph.D.



A Collaborative RESEARCH PROJECT





Have you ever?



- Had no clue about what you just finished reading?
- Struggled taking notes during a lecture?
- Missed important points because you were zoning out?
- Stopped mid-sentence because you forgot your point?



$$E=MC^2$$



STEM Graduate



$$E=MC^2$$



STEM Graduate

College Education



LECTURES

BOOKS

PAPERS

Acquiring Knowledge



$$E=MC^2$$



STEM Graduate

College Education



LISTENING

READING

WRITING

Acquiring Knowledge



$$E=MC^2$$



STEM Graduate

College Education



LISTENING

READING

WRITING

Acquiring Knowledge

Language Skills

UNDERSTANDING



MEANING



WORDS



PHONEMES
LETTERS



$$E=MC^2$$



STEM Graduate

College Education



LISTENING

READING

WRITING

Acquiring Knowledge

Core Cognitive Skills



MEMORY

ATTENTION

PROCESSING SPEED

SEQUENCING

Language Skills

UNDERSTANDING

MEANING

WORDS

PHONEMES
LETTERS



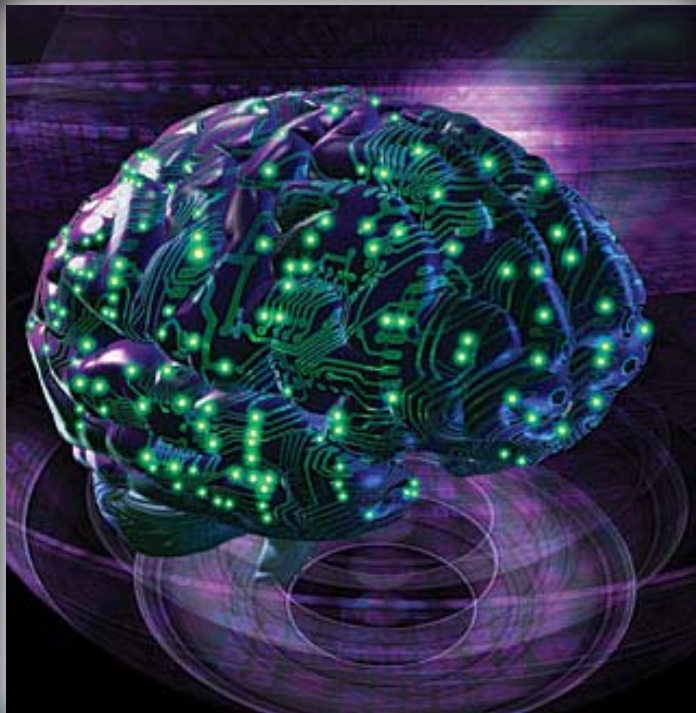
Empowering You To Optimize Your Brain For Academic Achievement



- You can reshape your body with the right physical exercise program.



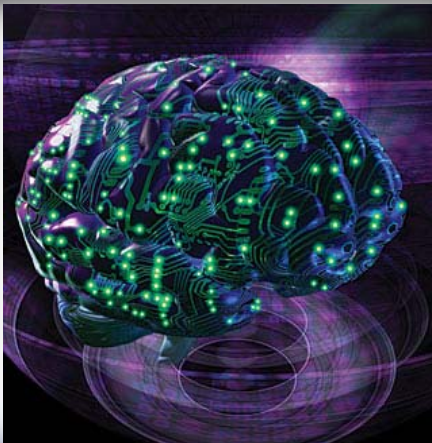
Empowering You To Optimize Your Brain For Academic Achievement



- You can rewire your brain with the right mental exercise program!



Empowering You To Optimize Your Brain For Academic Achievement

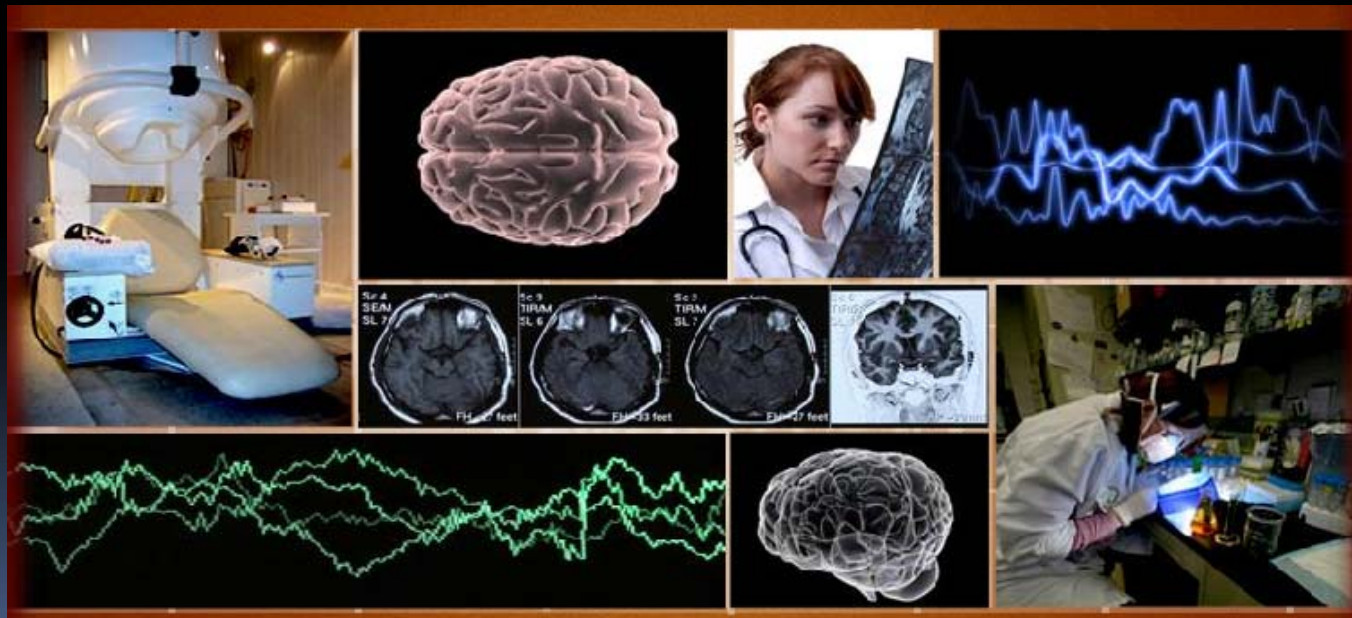


- In both cases, to get results you must:
 - Commit to work hard
 - Focus your attention on doing exercises correctly
 - Stick to your routine
 - Maintain your work-out schedule



Brain Science Basics **About** **Cognition, Language, Learning**

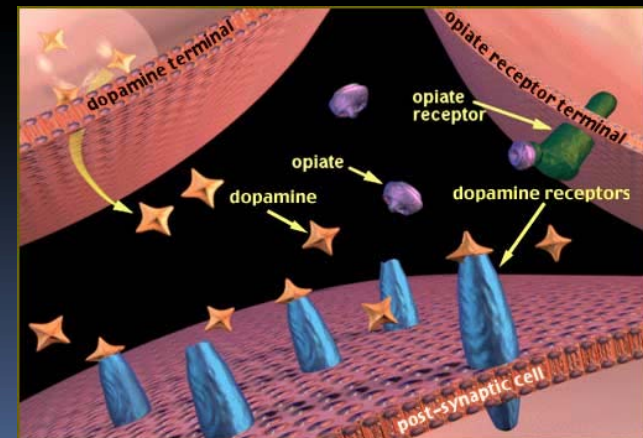
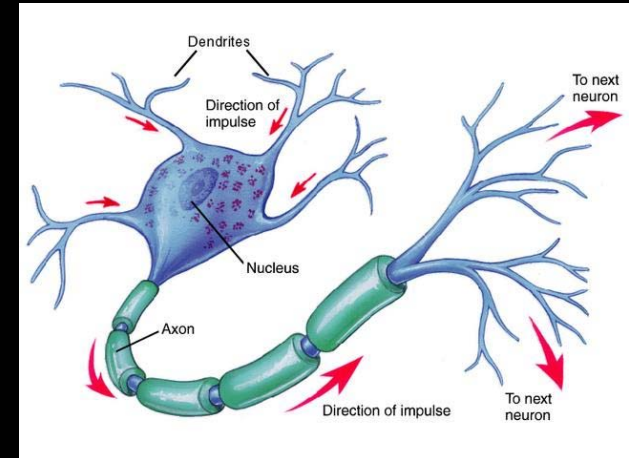
- Different areas of the brain are “turned on” for different functions.
- Brain activity patterns are complex.





Brain Science Basics **About** **Cognition, Language, Learning**

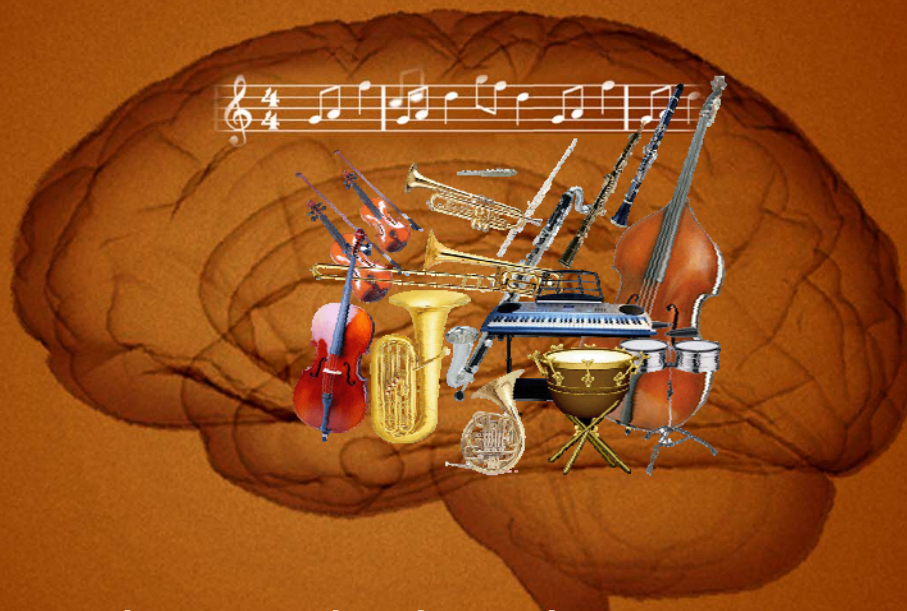
- Brain activity is caused by *neurons "firing"*
- Electrical impulses and brain chemicals control firing patterns.
- **Neurotransmitters** help electrical impulses pass through the small gap ("synapse") between neurons.





Rewire Your Brain To Be A Lean, Mean, Learning Machine

- An optimized brain is like a well tuned orchestra.
- Neurons and their connections are the “instruments” responsible for cognition and learning.



- Learning is enhanced when brain circuit activity is coordinated, synchronized and FAST!



Patented “Power Learning Formula”

F. A. S. T.

- Brain exercise program to strengthen **MAPS** cognitive building blocks and language skills.
- Disguised as a video game.

Fast ForWord®
Family of Products

F

A

S

T

Based on *neuroplastic research* showing how to improve learning by changing brain activity.



Patented “Power Learning Formula”

F. A. S. T.

- Brain exercise program to strengthen **MAPS** cognitive building blocks and language skills.
- Disguised as a video game.



Frequency and Intensity – *continuous, rigorous practice*

Adaptivity – *keeps “play” challenging & engaging*

Sustained Attention – *ensure engagement & focus*

Timely rewards – *stimulates release of chemicals in the brain to cement changes*





Rewiring Your Brain With

Fast ForWord®
Family of Products

- Exercises multiple **MAPS** brain regions

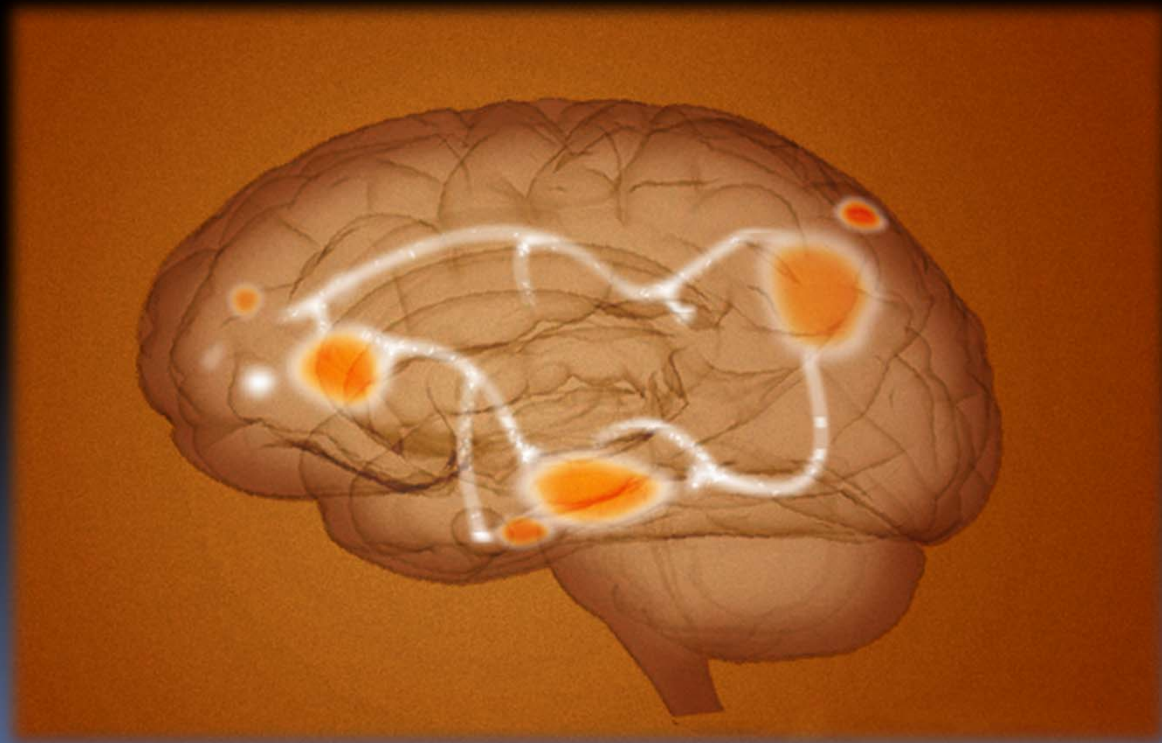




Rewiring Your Brain With

Fast ForWord®
Family of Products

- Creates efficient pathways to synchronize brain activity.

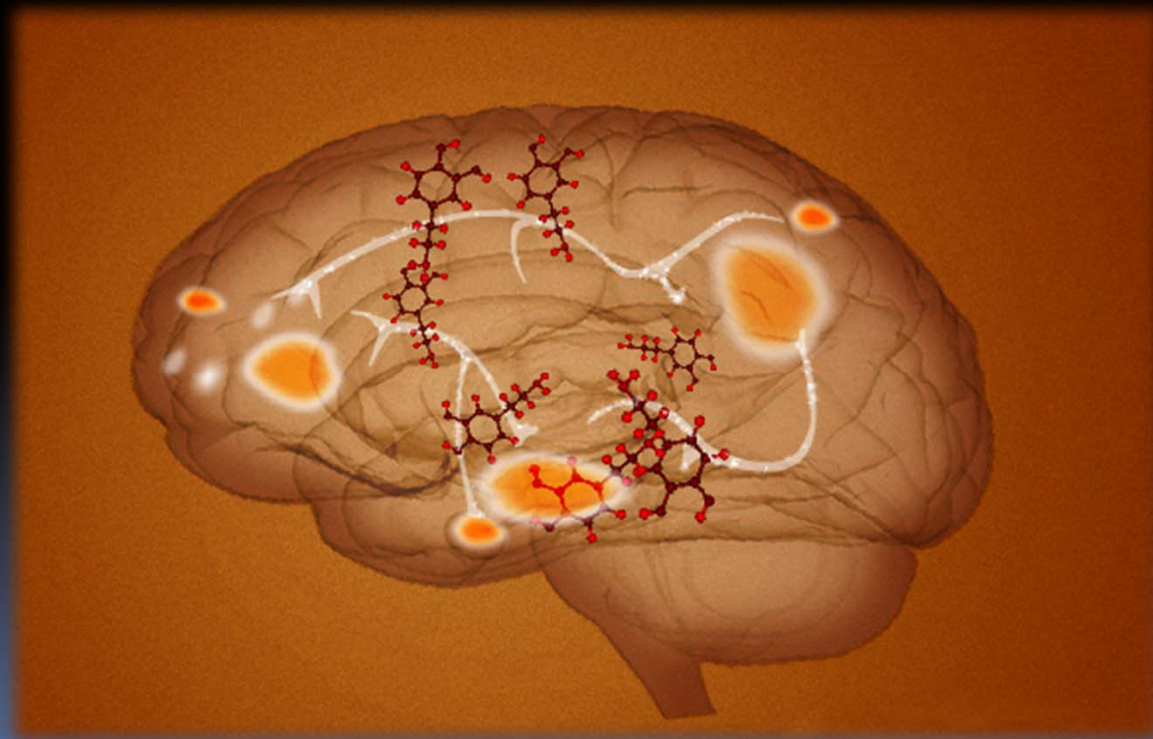




Rewiring Your Brain With

Fast ForWord®
Family of Products

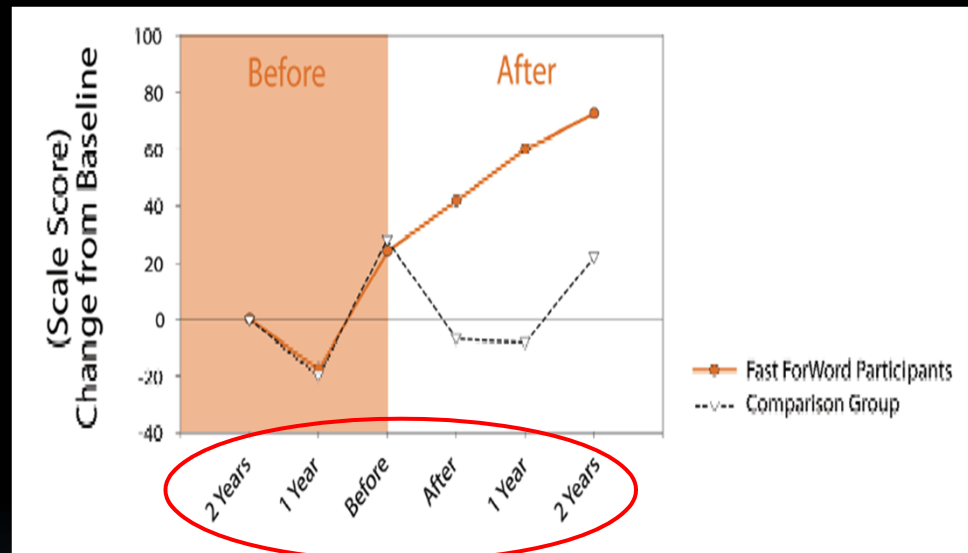
- Neurotransmitters (Dopamine and Acetylcholine) sharpens attention and solidifies new circuitry.





Fast ForWord **Improves Academic Performance for K-12 Students**

■ Dallas Longitudinal Study



- Closing the Achievement Gap

After Fast ForWord, the gap between struggling students and other students statewide was reduced to 25%.

■ Fast ForWord intervention also improved standardized scores for math and science.



PROPOSED STUDY: Investigate The Benefits of Fast ForWord For College Students

- Collaborative study aimed at increasing number of LSAMP STEM graduates.
- Study rationale:
Help you succeed by improving your cognitive learning building blocks and language skills.
- Neuroplastic training improves **MAPS** for children and seniors* ...

We expect it will work for you too!

*Posit Science creates brain exercise games for seniors.



FALL STUDY: **Investigate The Benefits of Fast ForWord** **For College Students**

- Builds on a pilot study conducted with LSAMP scholars.
- You'll be exercising your brains in our lab with **FastForWord** software.





What is **Fast ForWord**?

- Brain exercises disguised as video games.





FastForWord Study Design

- PRE-TESTS *(starting the week of Sept 20)*
 - Language skills
 - Accuplacer *(already given)* GMRT Reading Test *(1 hour)*
 - **MAPS** cognitive skills
 - NeuroTrax Mindstreams *(1 hour)*

- BRAIN EXERCISE PROGRAM *(ends Nov 30th)*
 - FastForWord “Literacy”
 - FastForWord “Literacy-to-Reading”

- POST-TESTS *(to be scheduled between Dec 1 - 10)*
 - Language skills
 - Accuplacer *(2 ½ hours)* GMRT Reading Test *(1 hour)*
 - **MAPS** cognitive skills
 - NeuroTrax Mindstreams *(1 hour)*



Why Participate?

- Pursuing a STEM majors is hard for everyone...
Fast ForWord can make it easier to learn.
- Neuroplastic brain changes are enduring...
Enhancing lifelong learning.
- Study participants can help SLC design a new version of Fast ForWord for your generation...
 - More engaging!
 - More fun!
 - More sophisticated graphics!



Participant Compensation

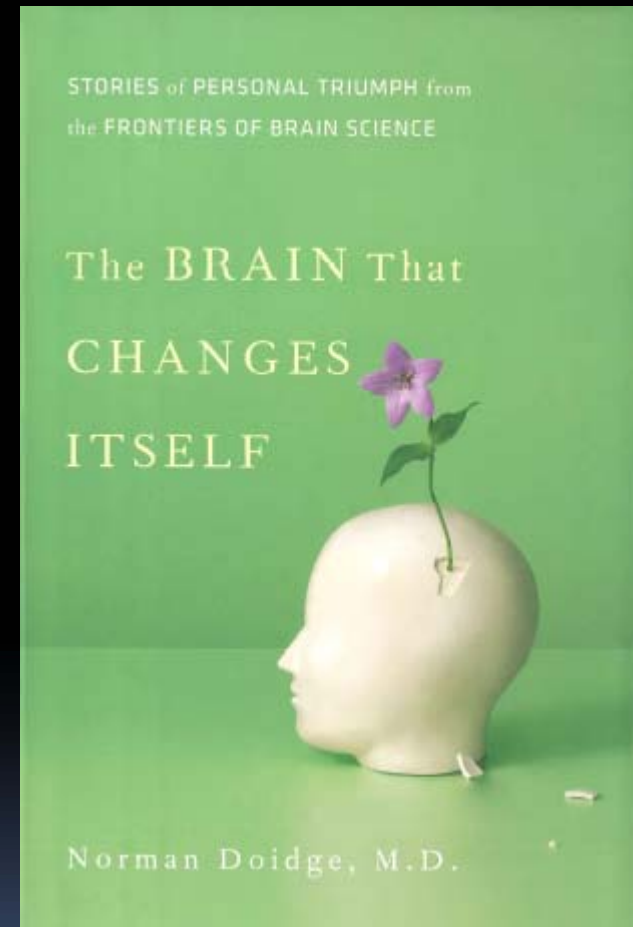
- **\$20** for participating in four (4) Training sessions M-Th (\$5/training session)
- **\$15** if you participate in a 5th Training session.
- **\$25** for each (PRE/POST) Testing session

**YOU MUST PARTICIPATE IN ALL TESTING SESSIONS AND
AT LEAST 4 TRAINING SESSIONS EACH WEEK**



Next Steps

- Sign up to become a:
 - Participant
 - Trainer
- Read more about Dr. Paula Tallal's research, and the brain science behind Fast ForWord.



Chapter 3: Redesigning the Brain

Enhancing Learning Through the Power of *Technology and Brain Science*



Thank You...Please Sign Up!

Michelle A. Blank, Ph.D

m.blank.phd@gmail.com