Kennedy Center
PARTNERS IN EDUCATION
ANNUAL MEETING

Opening Keynote:
*The Arts with the Brain in Mind*

Eric Jensen

February 12, 2014
3:30 p.m. – 5:00 p.m.
The New Arts with the Brain in Mind

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Goal?
1) Connect the effects of arts on the brain & learning
2) Next step for leaders

A New View of the Human Brain
The human brain is dynamic, not fixed. The brain (depending on your age) is:
- making connections
- adding new neurons
- pruning excess neurons
- allowing neurons to die
- changing its chemistry
- re-organizing itself every single day!

Arts support the development of critical neurobiological systems which enhance improved social, emotional, physical, academic and cultural outcomes.

A: It’s in How Students Learn!
- We have two main types of learning: 1) implicit & unaware, and 2) explicit & aware.
- Schools test the most for explicit learning; that which is “intentional and attended to.”
- Implicit is what we “pick up” without being taught; it’s learning w/o conscious intention.
- Yet, implicit learning comprises over 95% of all of your lifetime learning.

Most of Our Learning is Implicit
Implicit: Picked Up from Casual Observation, Conversation or Everyday Experiences
95%+
Explicit: Taught & Learned with Focus, Intention and Attention
Reflection Qs

- What are the 2 broad types of learning: __________________ & _______________.
- Schools test the most for __________ learning; that which is “int_______ I and att_______ to.”
- __________ is what we “pick up” without being taught; it’s learning w/o conscious intention.
- Which type of learning comprises over 95% of all our lifetime learning? ________________.

Arts are Powerful Partly Because of these Implicit Qualities…

1. Robust: In face of factors which would compromise traditional explicit learning
2. Age Independent: Can be learned young or old and lasts for years without review
3. IQ Independent: Shows little correlations with traditional IQ measures
4. Cross-culture commonality: Underlying processes and learned results are similar across cultures

Across All of the Arts, We See That Arts Typically Foster…

1. Attention to detail
2. Tolerance for differences
3. Emotional regulation
4. Grit/Perseverance for the long haul

Why Will You Need to Be Much More Arts-Active?

- Arts goals may be too low.
- Kids & staff rarely make the daily links between arts and real world results.
- Staff rarely use the “brain-changing protocol”, meaning the real arts potential is often unrealized or lost.
**Visual Arts**

Include

- Drawing, Painting, Coloring, Visualizing, Digital Art, Creating

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**Did You Name All the Artists on the Previous Slide?**

a. Andy Warhol
b. Norman Rockwell
c. Pablo Picasso
d. Georgia O’Keeffe
e. van Gough

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**Visual Arts Develop…**

1. **Pattern Recognition:** seeing more and making new distinctions
2. **Cognitive Control:** reducing impulsivity and learning to see & process before judgment
3. **Creativity:** learning many ways to see the same thing, openness & less bias, PLUS MUCH MORE

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**Visual Processing is MUCH More Than Simply Seeing**

- Seeing
- Retrieving images
- Hallucinating
- Visualizing
- Altering images
- Dreaming
- Analyzing

“**What’s Different?”**


Visual Discrimination is a Core Skill for Expert-Level Competence

Computer Coding Drawing & Design

Visual Arts Develop Observational Skills and Pattern Recognition

Novel Visual Task Adds Gray Matter Mass

“Readiness to Learn” or Classroom Attentional Bias Shown
When Working in Visual Arts, Attention to Detail is Essential for Student Success

“When we do math or science, we only get to do what someone else wants us to see. When we do art, we get to create, make and do what we want to see!” Student, age 10

Visual Arts

Say the colors quickly—not the words

YELLOW BLUE ORANGE
BLACK RED GREEN
PURPLE YELLOW RED
ORANGE GREEN BLACK
BLUE RED PURPLE
GREEN BLUE ORANGE

Subjects with visual arts experience prior to age 4 show increased phonological awareness by preschool

Would You Want to Describe Your Life as a

a) Work of art?

b) A standardized test?

Student Artwork Creatively Captures Thoughts and Feelings in a Strong Visual
REMINDER:
Visual Arts Develop…

1. Pattern Recognition
2. Creativity

Your Two Leadership Steps Are:

1. Help staff make the **daily links** between everyday arts activities and real world connections.

2. Ensure the “brain-changing protocol” is being followed by following the rules for change!

How to Make the Link:

“I love the focus and attention you give to your project. That **same focus** will help you **get ahead and get great jobs** when you finish your schooling.”

Byrnes, B., Jennings, L., 2011. **Seeing the destination but not the path:** 3x/wk. for 30+’ a day for 3+ mos.

How Do You Build This Skill?

1. Make it a Priority (3-36 mos.)
2. Buy-in & Relevance
3. Perfect Practice Over Time
4. Increase Challenge & Complexity

“Overall, the results of this experiment support the hypothesis that …

**Training in the arts changes the brain.**

Q: Why have Arts Struggled to Gain Academic Respect?

Most of the effects are impl__________ or underd__________! unless you know... 1) where to look and 2) how to make them more visible)

6 Implicit Ways We Learn
1. Conditioned, reflexive... a learned response from stimulus conditioning. Example ?
2. Generalizations... the learning derived from an experience and applied to others.
3. Imitation learning... the learning based on observation/behaviors of others.
4. Associative learning... the binding of two elements: word, object, event or feeling.
5. Extinction... when no response occurs; yet there used to be a response from that stimuli.
6. Temporal... a predictable timing sequence is learned based on time and order.

How to Maximize the Potential for Using Visual Arts
• 3 – 30 – 3 Rule
• Visual arts integrated across the curriculum, for all students
• Teach students how to use visual arts; never assume they either have an “arts gift” (or not).

Musical Arts Develop...
1. Working Memory: hold and process symbols in your brain
2. Focus & Auditory Distinctions: lock in and make discriminations
3. Pattern Recognition: hear and see order, harmony & sequences

HOW do musical arts enrich the brains of students for the better?

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3-5 = Beginner
6-8 = Proficient
9-14 = Expert

Music Lessons Build Functional Auditory Discrimination Skills


Plasticity in the Auditory Cortex

“Our findings show for the first time that musical training over only 15 months in early childhood leads to structural brain changes that diverge from typical brain development.”
Music training builds neural support for language-related skills, such as reading and hearing speech in background noise.


Purposeful Music Training Adds Gray Matter and Re-Maps the Brain via Neuroplasticity

Voxel-based morphometry (FMus>Mus>MUs)

5 Core Reading Sub-skills

- sound patterns
- rhythm perception
- auditory working memory
- phonological awareness
- speech-in-noise perception

are enhanced by music experience!


Music Exposure Enhances Science and Math Scores


Students with musical training showed significantly stronger neural enhancement and suppression effects, indicating better cognitive control.


Music Training Can Enhance Important Numerical Estimation


Music Training for the development of reading skills.
Building Math Skills
1. Estimation and Counting
   Daily Activities
2. Connecting to Real World Using
   Daily Activities
3. Working Memory
   Daily Activities

Spatial Reasoning Test Scores
for 3-4 year olds over 9 mos.

Music training enhances
mental sequencing and organizing
which is a highly transferable skill.

“If the Research Shows that Arts are So Good for Student Achievement, Why Don’t ALL Kids Getting Arts Succeed?”

The Secret to Getting Better?
Perfect Practice!
The “Brain-Changing Protocol”

• Use the “3-30-3” rule
  (3x or more/wk., 30-90 min./day and 3 mos. to 3 years)

• Penalty? Without the 3-30-3, results will be sub-optimal (but better than nothing)

How to Make the Link:

“I love the grit and effort you give to your work. That same persistence will help you get and keep jobs when you finish your schooling.”

Oyserman D, Johnson E, James L. (2011) Seeing the destination but not the path:

How to Maximize the Potential for Using Musical Arts

• 3 – 30 – 3 Rule
• Musical arts integrated across the curriculum for all students
• Teach students how to play music; never assume they either have “an arts gift” or not.

I ALWAYS follow The RULES

Follow the “Big 3” Numbers:
___ - ___ - ___

How do movement arts enrich the brains of students for the better?

Kinesthetc Arts Include

Dramatic (drama, theater, role-play, musicals)
Recreational (sports, recess, games, etc.)
Material (sculpting, design, repair, building)
Kinesthetic Arts Develop…

1. **Creativity**: ability to change, adapt and find new ways to express
2. **Awareness**: of yourself, your location and your surroundings plus order, sequencing and rhythm to life experiences
3. **Connectivity**: to physical world

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Dramatic Arts Increase Awareness Activations

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Dance Raises Perceptual Awareness

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Dance Training Enhances Visual Discrimination Skills

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Arts increase brain connectivity in task specific areas. Child’s corpus callosum is imaged to show axonal fiber connectivity
Give Your Staff an Arts Experience to Help with Buy-in and Creativity

ELL Theater is Elementary!

Rafe Esquith, a 5th grade teacher in LA, CA. He's been honored by the Dalai Lama, Oprah, Queen Elizabeth and is the only teacher to ever receive the National Medal of Arts. While his kids are ELL immigrants, his kids score far above the school and district mean. He uses theater to teach English. Google his kids at "Hobart Elementary, Shakespeare."

Incremental contrasts from baseline: continual, increasing task challenges

Number of task trials over time

Your Staff Can Either: 1) Waste Time Being Busy, but Ineffective or 2) Build Skills Fast & Right. This is a great “book study” selection.

6 MORE Implicit Ways We Learn

1. Sensitization... an increased response to stimulus over baseline. Example?

2. Emotional... increased or decreased affect from an experience, thought or person.

3. Procedural... learning that is contained within physical movements (skills, habits, etc.).

4. Habituation... a reduced response to same stimuli through repeated exposure.

5. Sub-perceptual... acquired learning below conscious awareness (from senses).

6. Episodic... spatial knowledge based on the “where” question in the environment.
How to Maximize the Potential for Using Kinesthetic Arts

- 3 – 30 – 3 Rule
- Movement integrated across the curriculum for all students
- Teach students how be involved in movement arts; never assume they either have “an arts gift” or not.

How to Make the Link:

“I love the dedication and effort you give to your project. That same effort will help you get and keep good jobs when you finish your schooling.”

Kinesthetic Arts Develop…

1. Creativity
2. Awareness
3. Connectivity

I ALWAYS follow The RULES

“Follow the 3-30-3 Rule”
3x/wk. for 30+’ a day for 3+ mos.

Goal?

Deepen our understanding!
1) Effects of arts on the brain & learning
2) Next step for Leaders

Why Will You Need to Be Much More Arts-Active?

- Arts goals are too low.
- Kids & staff rarely make the daily links between arts and real world results.
- Staff rarely use the “brain-changing protocol” meaning the real arts potential is often unrealized or lost.
Where and How Do Arts Fit Into Goals of Better Student Achievement?

Strong Arts Leadership: GTP

1. “Gaudy Arts Goals”
2. Give Staff **Tools to Connect** Arts with Student Success
3. **Support a Better Practice** to Reach the “Gaudy Goals”

"Set your goals ridiculously high and you will fail above everyone else's success."

James Cameron (director of two of the highest grossing movies of all time; Avatar and Titanic)

Example of Strong Leadership

1. **Set a “Gaudy Goal”** such as: “Every student, every day, will have a purposeful arts experience, helping our school to become high-performing with 100% graduation.”

Example of Strong Leadership

2. Give staff **tools to connect** arts with student success. Role model **what to say** to students. Let them **practice** until they are comfortable with the connections. Staff makes **2 connections/day**.

Make the Links!

Link the arts to the benefit! If you don’t do this (or you fail to show your staff how to do it), it won’t happen.
Example of Strong Leadership


However… without exception, follow the rules

Transfer Time!

“Follow the 3-30-3 Rule”
3x/wk. for 30-90’ a day for 3+ mos.

Which area of your work, in particular, can you apply this to and how would you do it?

“My Next Step is GTP…”

(HINT)

1. Gaudy Arts Goals
2. Tools that Link
3. Follow Practice Rules

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