

**The Very Busy Spider**

**Eric Carle**

**Crawling through the Apps**  
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<http://ww2.valdosta.edu/~jamiel/paint.html>

**Pedagogy in Practice**  
 Case Studies of Accomplished Math & Science Teaching

**iKinder.org**

**Innovative Learning**

**TU**

**tu.edu/gsoe**

6.17.5.40

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 of Education

NAPA VALLEY UNIFIED SCHOOL DISTRICT

**NapaLearns**  
 Partnering for Innovation and Success

St. Helena Unified School District  
 CALISTOGA JOINT UNIFIED SCHOOL DISTRICT



iKinder.org

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Share



Among the most important tasks of the first five years of life is the development of language.

Children's language ability affects learning and development in all areas.

Language strongly predicts later success in learning to read and write

- Snow, Burns, & Griffin 1998




image courtesy pregnancy.org



THE ANNIE E. CASEY FOUNDATION


**A Quiz**

How many unique words per hour does a toddler hear if they are from:

\_\_\_\_\_ Affluent Family

\_\_\_\_\_ Working Family

\_\_\_\_\_ Family on Assistance




**A Quiz**

How many unique words per hour does a toddler hear if they are from:

2176 Affluent Family

\_\_\_\_\_ Working Family

\_\_\_\_\_ Family on Assistance




**A Quiz**

How many unique words per hour does a toddler hear if they are from:

2176 Affluent Family

1498 Working Family

\_\_\_\_\_ Family on Assistance



**A Quiz**

How many unique words per hour does a toddler hear if they are from:

2176 Affluent Family

1498 Working Family

974 Family on Assistance





**Extrapolation**

At-risk children hear 30 million fewer words by age 4 than their more affluent peers. image: booksforkids.org

**25%** fewer vocabulary words needed to succeed. **88%** never catch up.

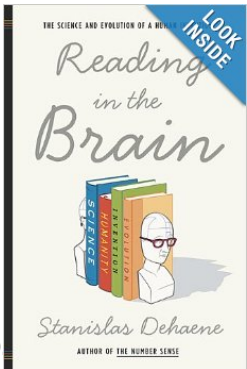
(Hart & Risely, 1995)

Gaps in reading performance between Anglo and Latino children are associated with gaps in vocabulary knowledge.

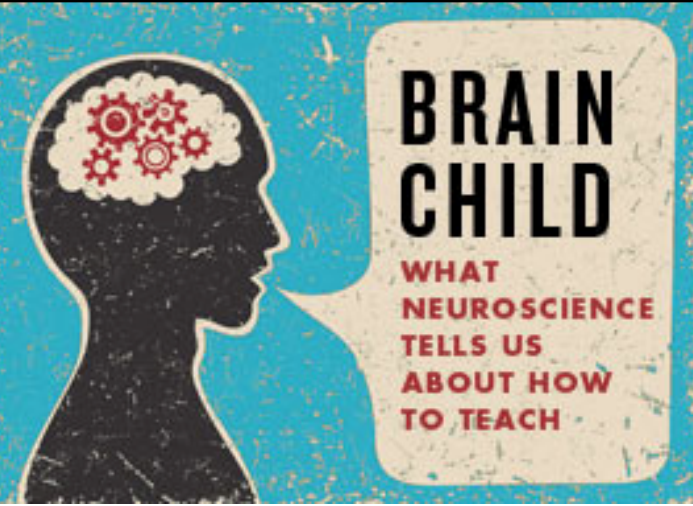
Carlo, M., et al. (2004). Closing the Gap: Addressing the Vocabulary Needs of English-Language Learners in Bilingual and Mainstream Classrooms. Reading Research Quarterly, 39(2), 188-215. Apr. Jun 2004.

**Reading has a massive impact on brain function and affects understanding in nearly all domains.**

**Highly structured brains @ birth ... Are transformed by experiences. SO**



**Each generation has differing stimuli - thus brains become wired in a different way.**

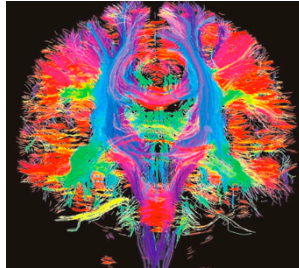


**BRAIN CHILD**

**WHAT NEUROSCIENCE TELLS US ABOUT HOW TO TEACH**



Learning sparks synapses and builds connections between nerve cells

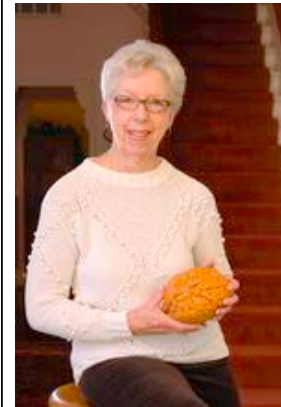


More sparks = more brain growth

Stimulation is key!

- Content
- Skills
- Experiences/Context
- Repetition

Laura Master's inspiration again...<https://www.facebook.com/MastersLearning>  
Image from: <http://sciencedefined.wordpress.com/2012/01/22/the-brain-in-technicolour/>



**Patricia Wolfe**  
**Author of *Brain Matters***

Every experience either creates a new connection or strengthens an existing one. We call this learning and memory.

Connections that are used over and over are kept but those that are not used are pruned away. Example - second language

Neurons that have fired together are wired together.



Wendy Pillars - [http://www.edweek.org/tn/articles/2012/03/27/tn\\_pillars\\_neuroscience.html](http://www.edweek.org/tn/articles/2012/03/27/tn_pillars_neuroscience.html)

Closing the Gap for ELs



### Why DIGITAL Early Literacy

## Re-activating Synapses=Memory

But...due to neuroplasticity (aka adaptation)

- Existing synapses adapt to new circumstances
- new connections are constantly formed and reorganized.
- new stimulation can allow “regeneration” but through different pathways

Markus Butz, Arjen van Ooyen. A Simple Rule for Dendritic Spine and Axonal Bouton Formation Can Account for Cortical Reorganization after Focal Retinal Lesions. *PLoS Computational Biology*, 2013; 9 (10): e1003259 DOI: [10.1371/journal.pcbi.1003259](https://doi.org/10.1371/journal.pcbi.1003259)

Forschungszentrum Juelich (2013, October 10). New theory of synapse formation in the brain.

Mastery learning (aka gaming)

### Engagement

- Achievable Challenges
- Rewards = Pleasure
- Physical = Dopamine
- Emotional = OK to Fail
- Cognitive = ever increasing challenges

### Higher-Order Thinking Skills

Social Learning  
Managing/Planning  
(analyze-synthesize)  
Strategize  
Create

## The Role of Prior Knowledge in Gaming

☑ “Can support or hinder learning new materials” -

David Gibson

☑ A good game will

- Include a sequence to ensure learners connect with new concepts
- Identify misconceptions then slows down to help learners “rewire” the synapses properly



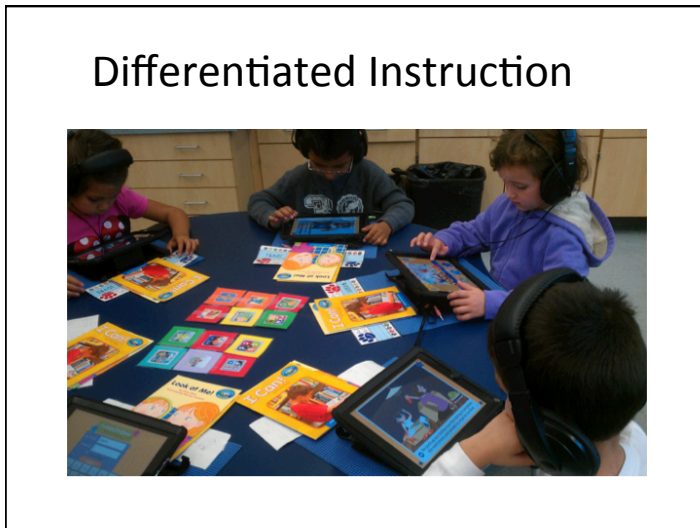
Whole-class instruction



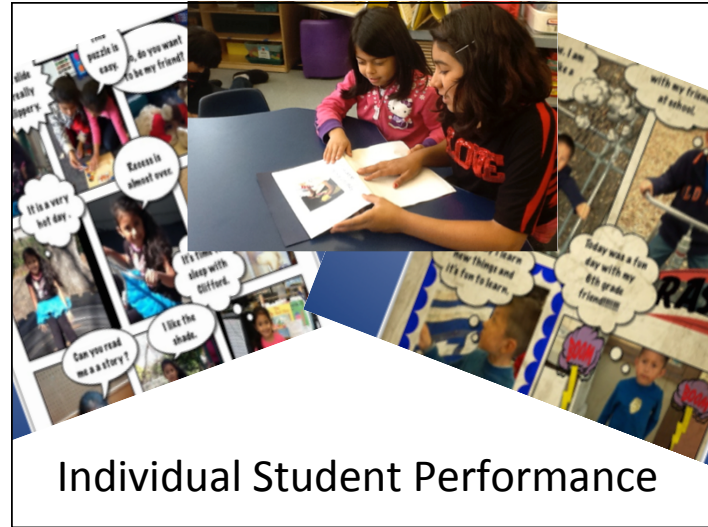
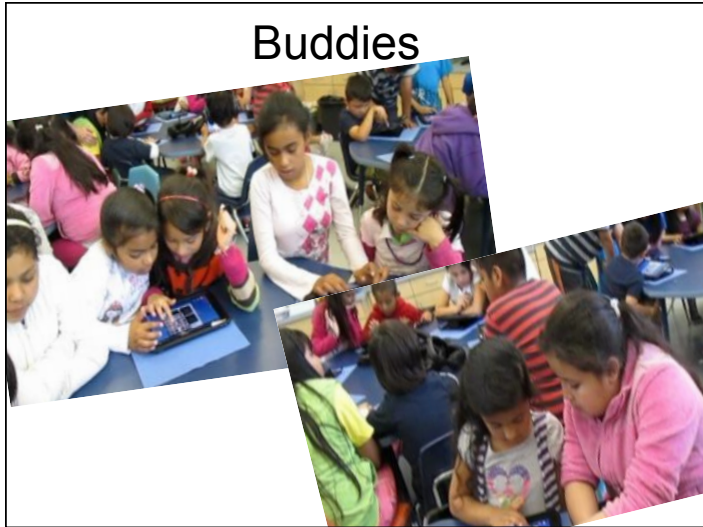
## Communication











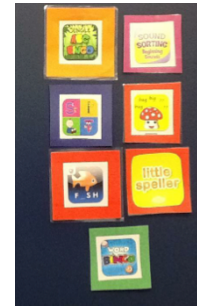
### iPogo



<https://youtu.be/EhxxDir0y2U>

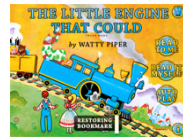
## Focus on Literacy

- Books
- and Skills
- and more skills



Pam Rubel Calistoga USD

### Literature & Reading Practice



## Footsteps 2 Brilliance



### Footsteps2Brilliance Free Trial

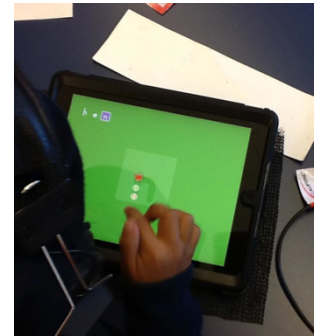
• <http://www.footsteps2brilliance.com/trial/>



### iWriteWord



S

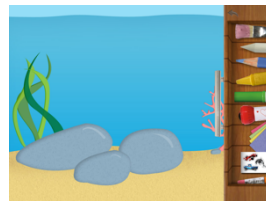


- Upper and lower case letter, number, and word writing practice.
- Directionality enforced

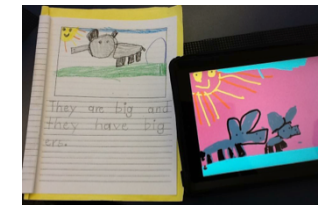
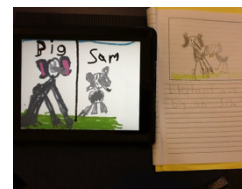
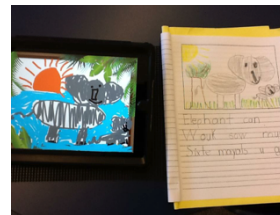


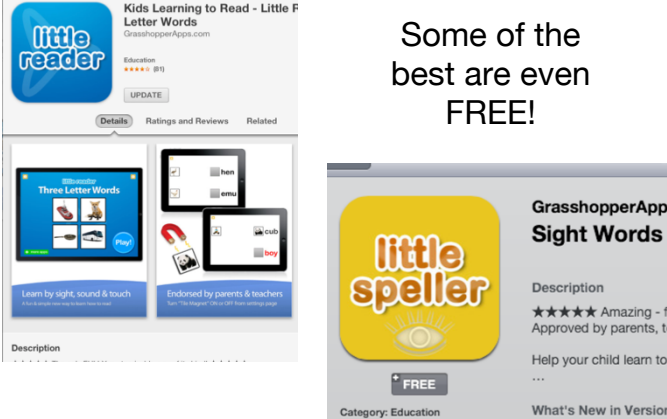
### Drawing

Responding to Literature



### More drawing





Kids Learning to Read - Little F Letter Words  
GrasshopperApps.com

Education  
★★★★☆ (81)

UPDATE

Details Ratings and Reviews Related

Three Letter Words  
Learn by sight, sound & touch

Endorsed by parents & teachers

Description

little speller

GrasshopperApp  
Sight Words

Description  
★★★★★ Amazing - f  
Approved by parents, t  
Help your child learn to  
...  
What's New in Version

FREE

Category: Education

Some of the best are even FREE!

## Teacher Apps

- Dropbox



- Drive

### File storage & sharing

## Our Favorite Storytelling Tools



StoryBuddy

Photos

Drawing Pad

Strip Design



Fun with digital storytelling!!

<http://youtu.be/yihq8BlhL9c>



### Science book of Matter

MATTER

Wood

Plastic

Metal  
And  
Plastic

StoryBuddy 2  
Education  
4.5 stars (21)

Made in Story Buddy 2

### To Make a Comic Strip

iPad Camera: take a picture

Drawing Pad: Draw a Picture

Create a Comic

Camera

Drawing Pad

Strip Design

### Comic strip App

- STRIP DESIGN
- Used for more than comic creations
- Visual storytelling
- Theme projects
- Pages for compilations

POW!

My Owl Talks

I want to fly!

Are you as smart as me?

I can hear my owl talking.

### Using Strip Design App

Free App!  
NEVER MISS DEALS!  
NOW AVAILABLE  
IN THE APP STORE

APPADVICE PRESENTS  
**Apps**  
EST. **Gone Free** 2011  
YOUR DAILY FREE APP SOURCE

The image is a promotional graphic for 'Apps Gone Free 2011'. It features a central circular logo with a blue arrow pointing to the right. To the left of the logo, there is text that reads 'Free App!', 'NEVER MISS DEALS!', and 'NOW AVAILABLE IN THE APP STORE'. The logo itself contains the text 'APPADVICE PRESENTS', 'Apps', 'EST. Gone Free 2011', and 'YOUR DAILY FREE APP SOURCE'.

DEL RESEARCH Focus Year 1  
Receptive Language & 21st C Skills

The image shows two young girls sitting on a ledge, each holding a mobile phone to their ear. They appear to be in conversation. The background is a simple, light-colored wall.

Focus Year 2  
Expressive Language

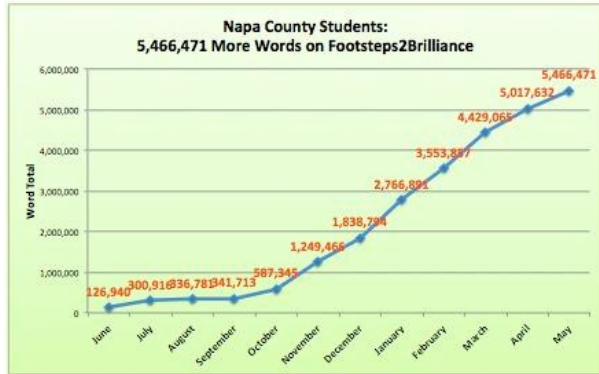
I have SO much I'd like to say....

The image shows a young child with red hair and blue eyes, looking sad and crying. A thought bubble above the child's head contains the text 'I have SO much I'd like to say....'.

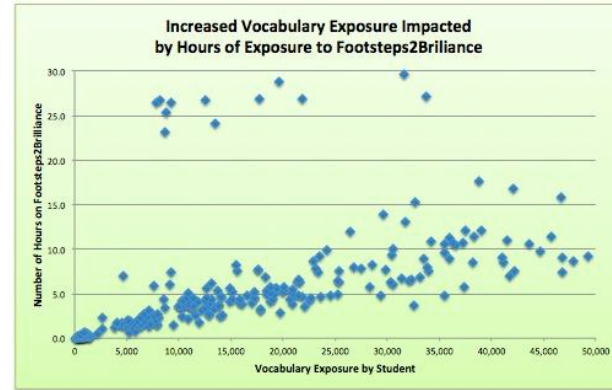
Years 3 & 4  
Did the intervention help close the gap?

The image shows two young girls smiling and looking towards the camera. They are wearing colorful halter-neck tops.

### F2B 5.4+ Million More Words

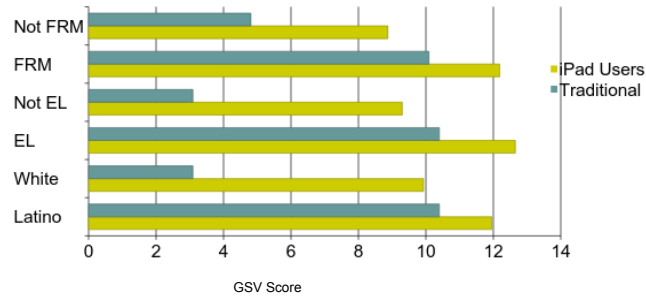


### F2B Increased Vocabulary



### Year 1: Growth in Scores by Demographics

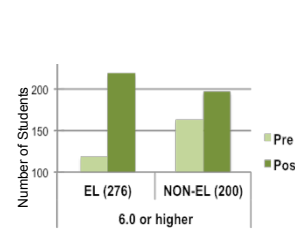
- Student Growth in Mean GSV Scores by Ethnicity, Language and Eligibility for Free and Reduced Meals



### Year 2: End of Kinder Increase in Vocabulary

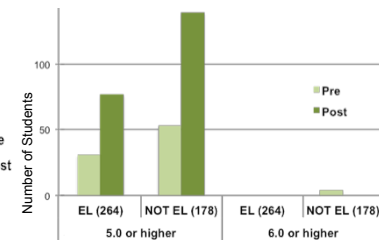
#### Receptive - PPVT

- Age Equivalency of 6 years or higher
  - 79% of EL Students
  - 98% of Non-EL students
  - # of ELs at this level nearly doubled; # of EOs grew ~16%



#### Expressive - EVT

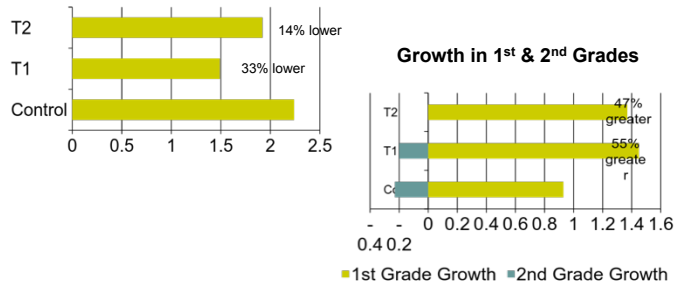
- Age Equivalency of 6 years or higher <1%
- Age Equivalency of 5 grew by 250% from the pre-test



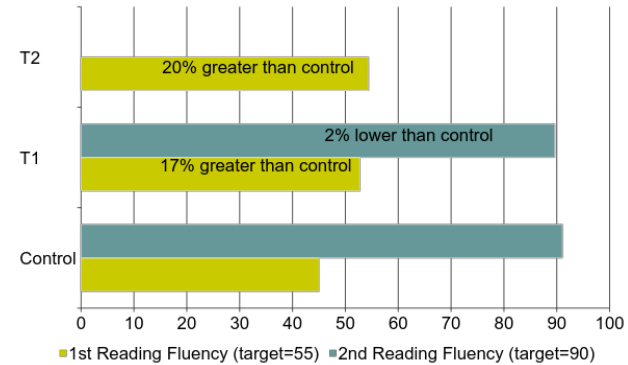
### Years 3-4: CELDT Analysis

- California English Language Development Test
  - Given at the BEGINNING of each year

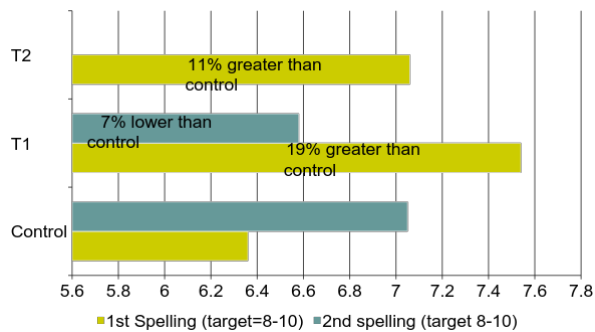
#### Kindergarten Baseline Data



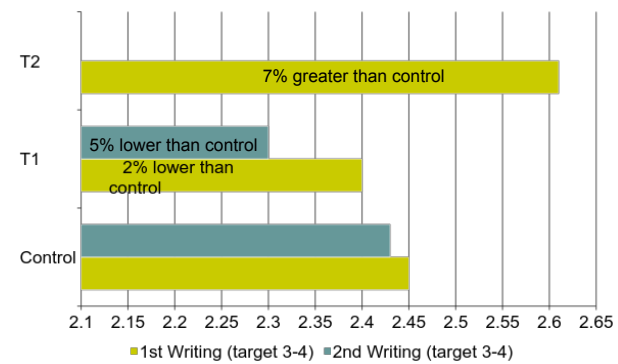
### Years 3-4 Literacy Test Results – Reading



### Years 3-4 Literacy Test Results - Spelling



### Years 3-4 Literacy Test Results - Writing





**Overall Conclusions**

- Sustained use of iPads with appropriate literacy apps and teacher focus have a significant effect on student learning
- EL Students demonstrate accelerated growth in language and literacy skills
- It may be extrapolated that with longitudinal use, ELs and students with impoverished vocabulary may be able to “catch up”
- Shared iPads (1:2) have the same or greater impact on student performance
- Technology infusion accelerates competency in 4Cs and Common Core standards and assessments

**NCOE Footsteps2Brilliance Literacy App**

- NL, NCOE co-funded \$50,000 perpetual license for all Napa County preschoolers
- Used in all 23 NCOE preschool classes
- Parent workshops provided in schools and other venues (low-cost housing, library, and family centers)
- Since February 2014:
  - Total unique users: 1,374
  - Number of books opened: 53,096
  - Number of vocabulary words experienced: 15,178,549
  - Number of hours using the app: 4447
- Looking for funding for longitudinal study to follow preschool students through 2nd grade

**Key Statistical Findings Years 1 & 2**

- The iPad treatment had a significant effect on students’ receptive language as measured by the PPVT  
 $F(1, 207)=7.83, p<.05$
- There was a significant correlation between FRM (poverty) status and the positive effect of the treatment.  
 $F(1,191) =8.12, p< .05$
- The control group mean was higher on the Peabody Picture Vocabulary Test (PPVT) pre GSV, but the treatment group mean was higher on the post GSV.
- On a test of between subject effects, only the EL factor was found to have significant effect size relative to the change in PPVT GSV  
 $F(1,208)=4.251 p<.<.05$

The screenshot shows the iKinder.org website. At the top, it says "innovative teachers changing the future one classroom at a time". The navigation menu includes Home, Blog, PLC, Resources, and About Us. A search bar is visible. The main content area features a large image of children in a classroom using iPads. To the right of the image is a text box with the title "Exploring iPads & 21st Century Learning for Young Learners" and sub-points: EQUITY • ACCESS • RESEARCH • LIFELONG LEARNING • TEACHER DEVELOPMENT. Below this is a blue button that says "Learn More About Us".

Find all resources from this presentation here.