Why iPads in Kindergarten?

Digital Early Literacy Research & Rationale

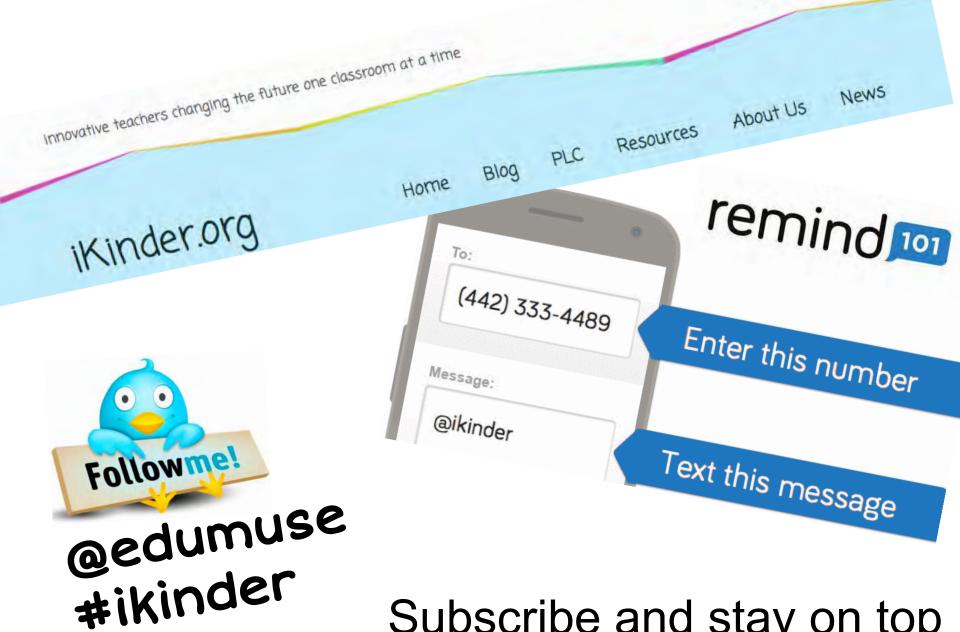
Pamela Redmond, Ed.D. Martha McCoy, M.Ed.





32nd Annual PK1 Conference Santa Clara, CA January 17-19, 2014





Subscribe and stay on top of our latest learnings

Where does this session fit in the technology strand of CKA

A7: Appily Ever After C7: 21st Century Learning, PBL & Cross-age Partnerships

with iPads!

D7: Just Dive In - iPads in the Primary Classroom

E7: Why iPads in Kindergarten? Digital Early Literacy Research and Rationale



GSOE STUDENT IS 2014 CALIFORNIA TEACHER OF THE YEAR



Touro University California - Located on Historic Mare Island in the North Bay Area. Innovative Learning Fellows Program is Blended Online - Virtual Face2Face Established by a \$1 Million funding sponsored by Congressman George Miller



Martha McCoy Pam Rubel Mary Burton Anne Garner



Factors that Influence Readiness

2011 <u>Center for Applied Research</u> at the National Association for the Education of Young Children (NAEYC) 2000 NCES Condition of Education - nces.ed.gov/pubs2001/2001035.pdf Entering Kindergarten: A portrait of American Children



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



image courtesy pregnancy.org

- Snow, Burns, & Griffin 1998

Importance of Language Development

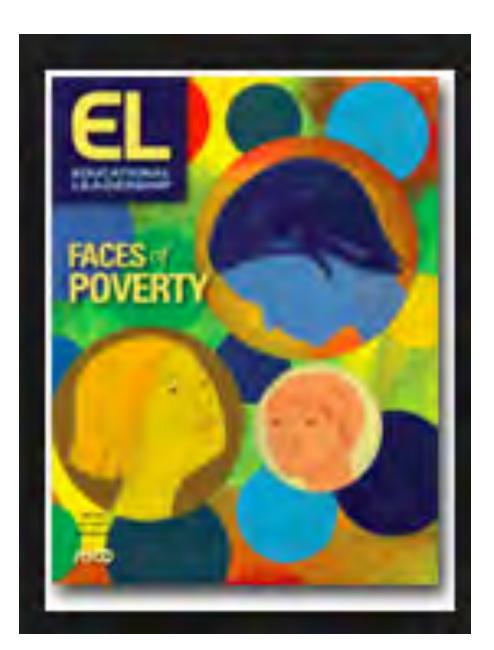


One of the best predictors of whether a child will function competently in school and go on to contribute actively in our increasingly literate society is the level to which the child progresses in reading and writing

- IRA & NAEYC, 1998, p. 30



Children who are skilled communicators are likely to demonstrate better social competence and school readiness.



The Widening Income Achievement Gap Sean F. Reardon

If we do not find ways to reduce the growing inequality in education outcomes, we are in danger of bequeathing our children a society in which the American Dream—the promise that one can rise, through education and hard work, to any position in society—is no longer a reality. Our schools cannot be expected to solve this problem on their own, but they must be part of the solution. (2013)

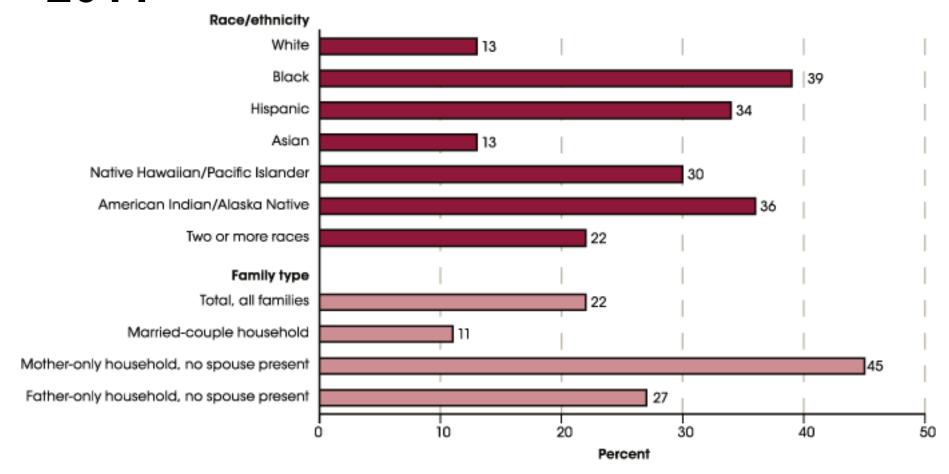
Persistent Achievement Gaps & Language

"Alex Rappaport argues that word acquisition may be the easiest way to close the achievement gap"

According to Teach for America, 8% of students growing up in poverty graduate from college by age 24, compared with 80% of students in more affluent areas. In other words, the effects of the gap extend beyond test scores and make a significant impact on achievement throughout a student's academic career.

Reardon, Sean F. "The widening academic achievement gap between the rich and the poor: New evidence and possible explanations" in R. Murnane & G. Duncan (Eds.), Whither Opportunity? Rising Inequality and the Uncertain Life Chances of Low-Income Children, New York: Russell Sage Foundation Press, 2011

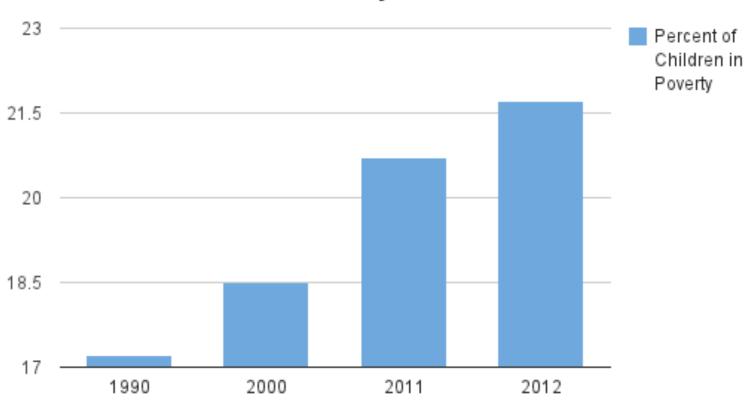
NCES - Children under 18 in Poverty 2011

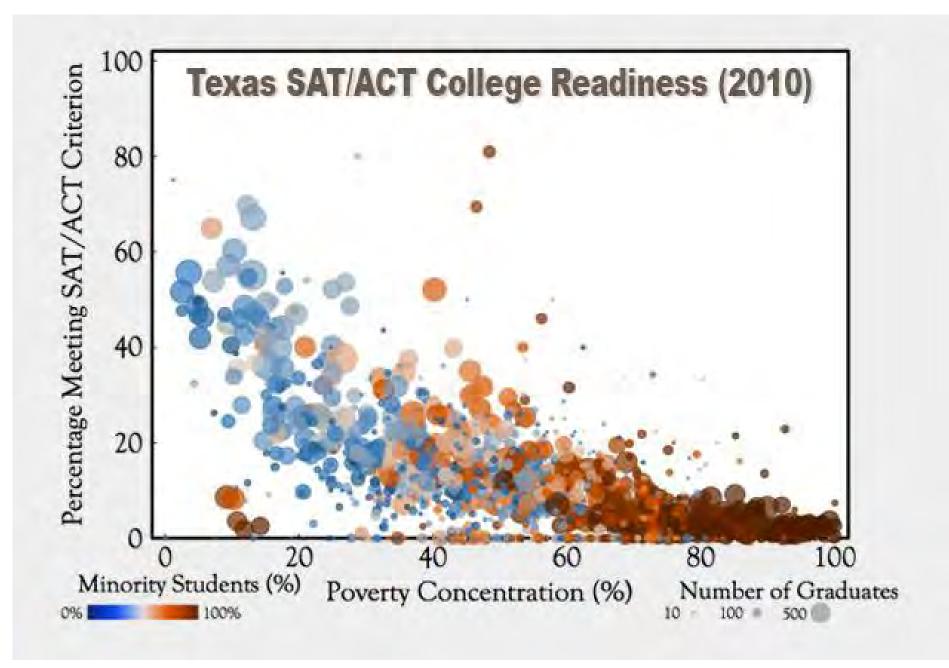


SOURCE: U.S. Department of Commerce, Census Bureau, American Community Survey (ACS), 2011. See *Digest of Education Statistics* 2012, table 27.

California's Children of Poverty

California Children in Poverty





Landmark Poverty Study on Language

Families' Language and Use Differ Across Income Groups

Measures & Scores	Families					
	13 Professional		23 Working-class		6 Welfare	
	Parent	Child	Parent	Child	Parent	Child
Protest score ¹	41		31		14	
Recorded vocabulary size	2,176	1,116	1,498	749	974	525
Average² utterances per hour	487	310	301	223	176	168
Average² different words per hour	382	297	251	216	167	149



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.

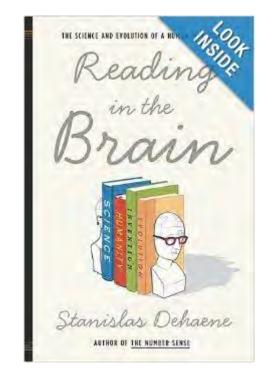
(Hart & Risely, 1995)

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, v39 n2 p188-215 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.

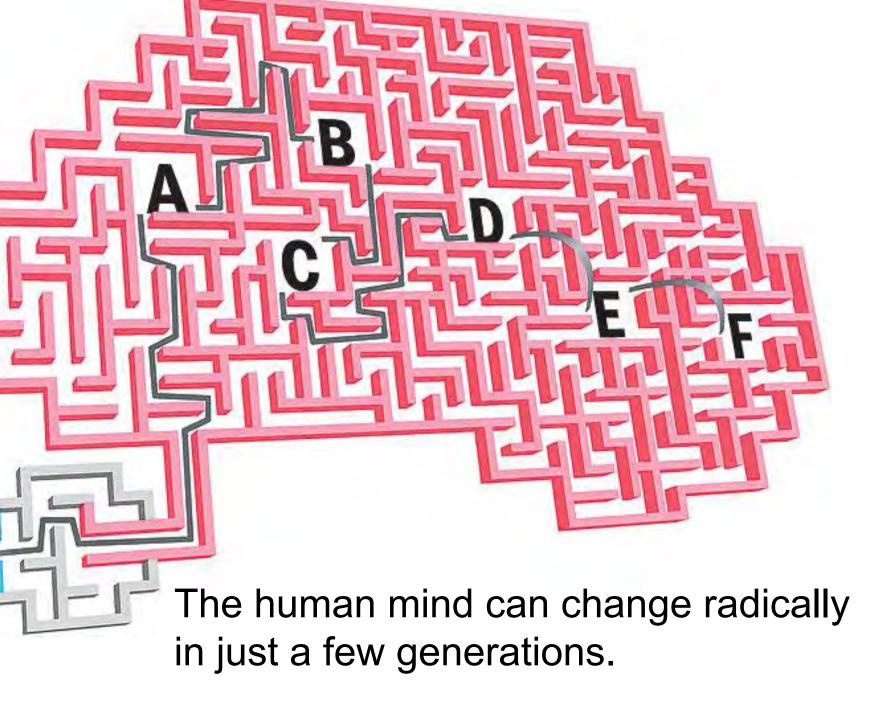
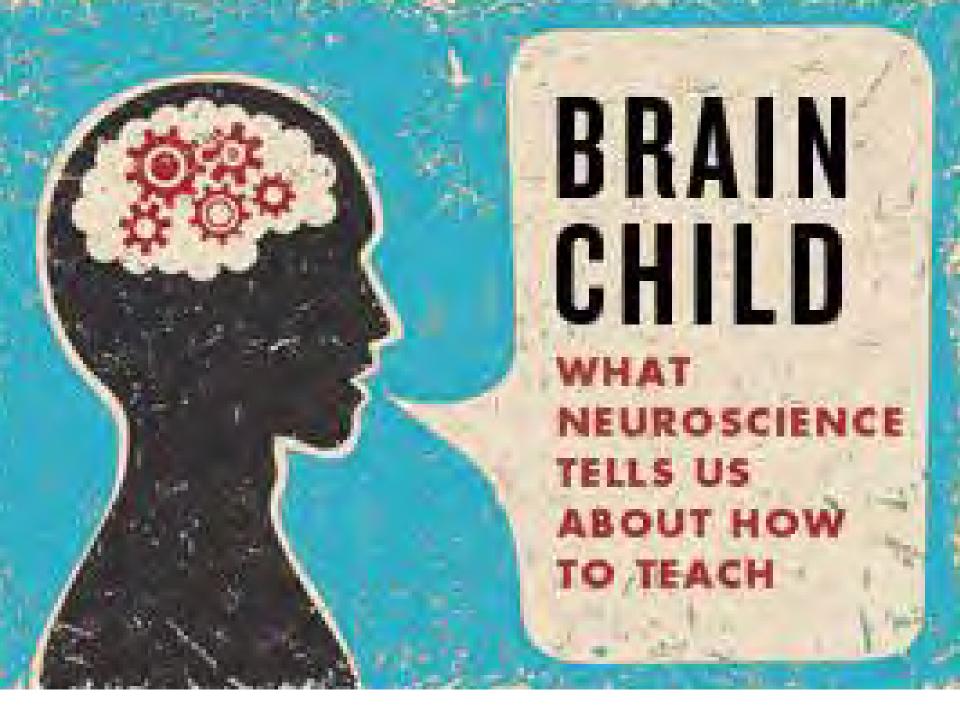


Image source: New York Times Post Typography. http://www.nytimes.com/2010/01/03/books/review/Gopnik-t.html?pagewanted=all&_r=0

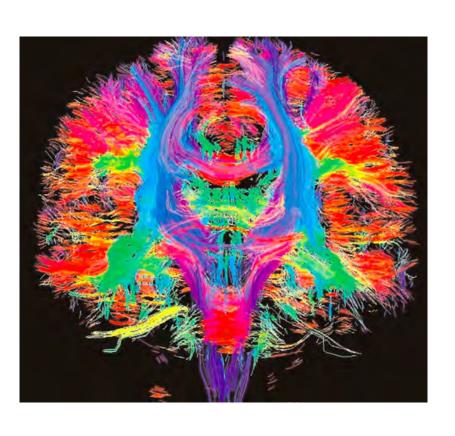


"Learning is about making and strengthening synapses

Which, in turn, create awesome learning lines, networks, and systems within the brain."



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/

NEUROPLASTICITY: The Growth of Connections

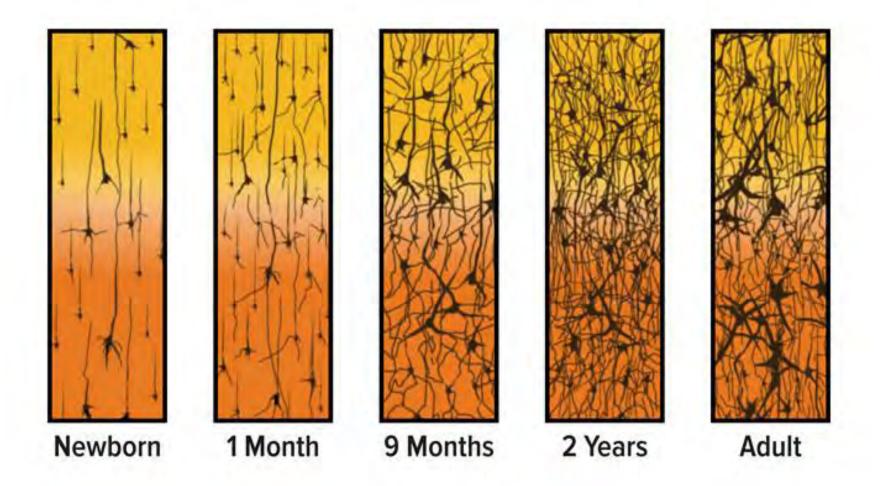


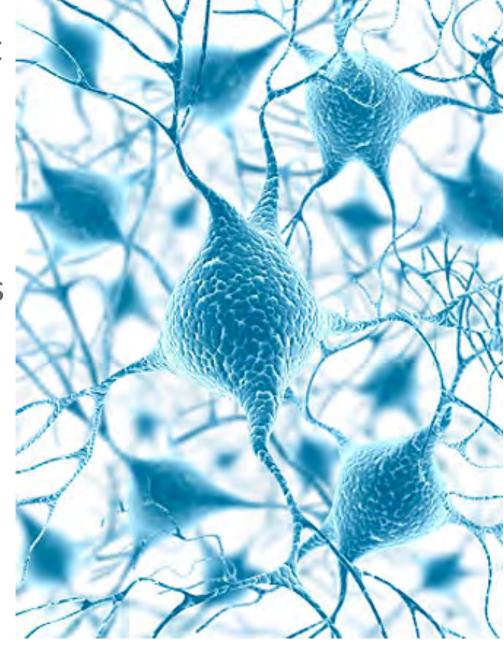
Image: www.urbanchildinstitute.org



Patricia Wolfe Author of *Brain Matters*

- Every experience either creates a new connection or strengthens and 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

"The strongest—and most easily accessible memories are created through dense, interwoven neural networks. Information has a much better chance at being recalled more quickly when it has been retrieved repeatedly and connected to as many other pieces of information as possible."



Wendy Pillars - http://www.edweek.org/tm/articles/2012/03/27/tln_pillars_neuroscience.html

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: <u>10.1371/journal.pcbi.1003259</u>





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

Stimulating Digital Early Literacy



Napalearns Partnering for Innovation and Success



Mary

Pam Rubel

Peg Maddocks Chuck McMinn Barb Nemko Martha McCoy Pam Redmond

CJUSD

CJUSD & Touro

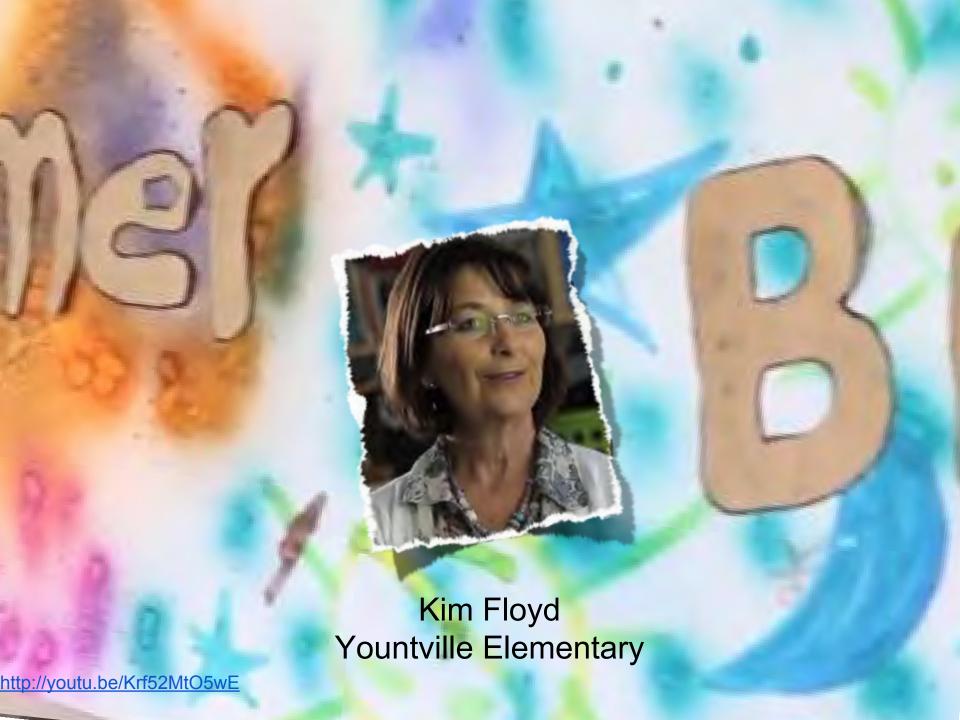
NapaLearns

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NCOE & NapaLearns

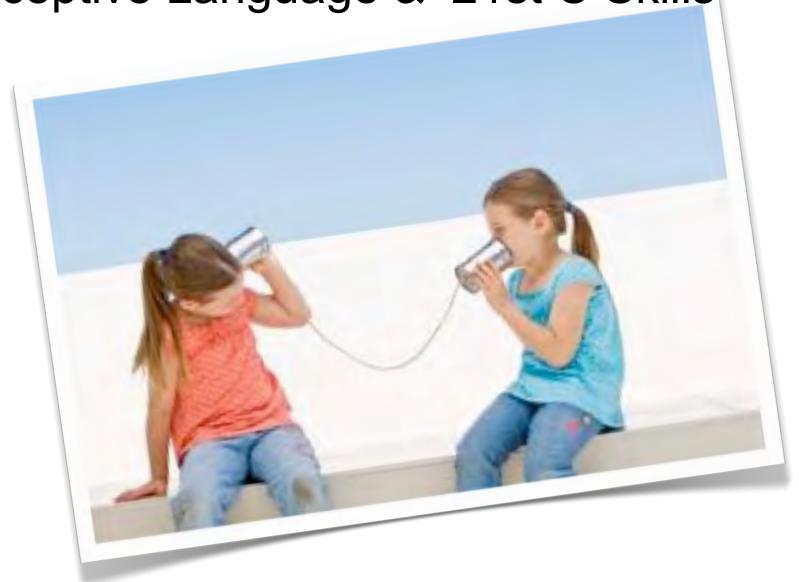
CJUSD & Touro Touro & NapaLearns





California State Superintendent of Public Instruction, Tom Torlakson visited the Summer Bridges Project 2011 and called it, "Magical...it's a great way to have students begin to learn languages in a rich way, but it also teaches them 21st-century skills and to use technology to improve themselves."

DEL Focus Year 1 Receptive Language & 21st C Skills







From this ...



Thank you Punya Mishra for this



Thanks, again, Punya!

About the DEL Pilot

Number of kinder students analyzed

• Treatment: 161

Control: 71

Number of classrooms: 9

	N	Gender		Ethnicity		English Learners		Free/Reduced Meals			
		Male	Female	Latino	White	EL	Non-EL		Eligible	Not Eligible	
Treatment	161	54%	46%	57%	37%	51%	49%		38%	62%	
Control	71	42%	58%	59%	30%	55%	45%		52%	48%	

Footsteps2Brilliance



Footsteps2Brilliance

- 1,000 most important words
- Auditory support & rhyming to support fluency
- English/Spanish toggle
- Games with interactive animations and music
- Apply the learning in create-a-book
 - Over 200 games to follow up the learning activity



Then, App Crazy...



iPogo





Whole-class instruction

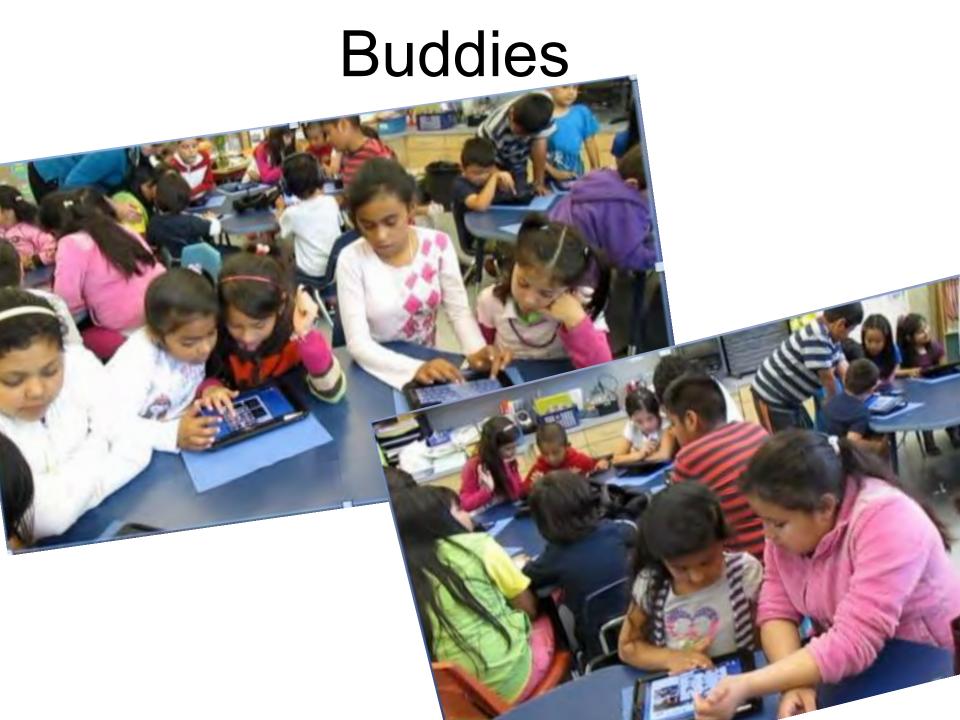




Differentiated Instruction









Individual Student Performance

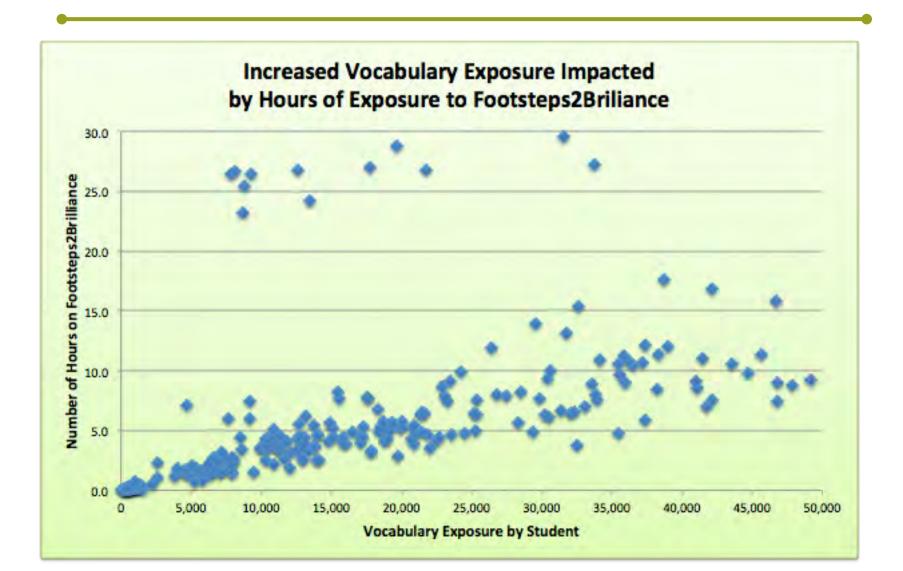
Teachers: Identify Apps & Value to Reading Curriculum





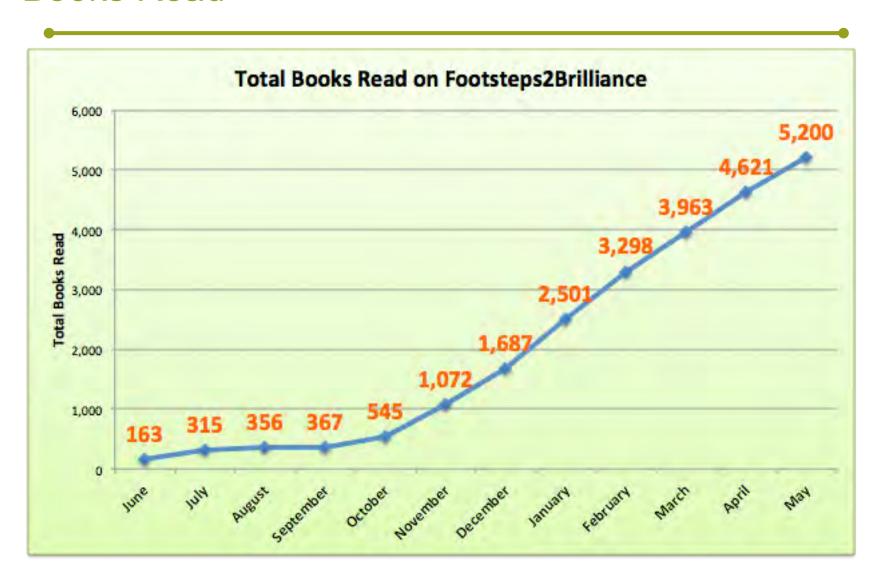


F2B Word Exposure



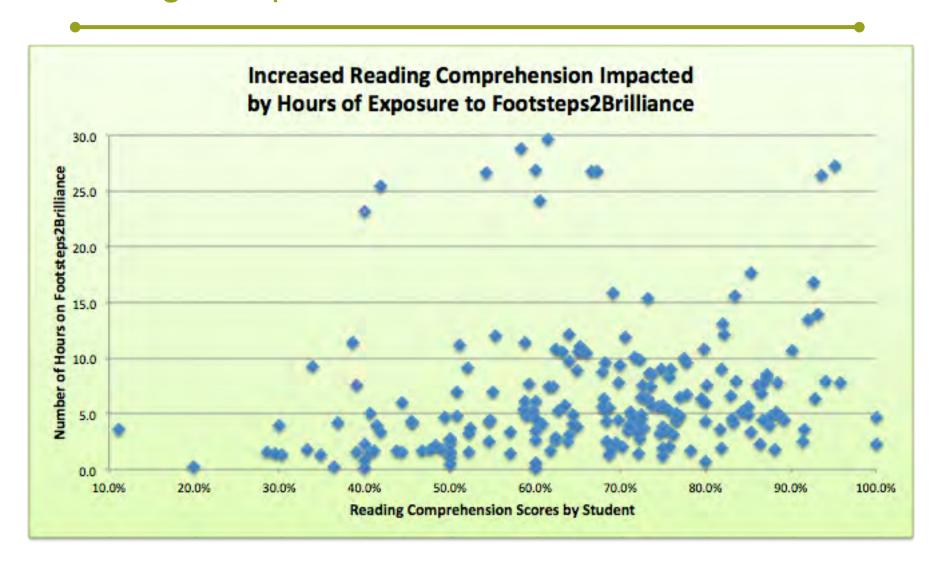


Books Read





Reading Comprehension



F2B Word exposure & Comprehension

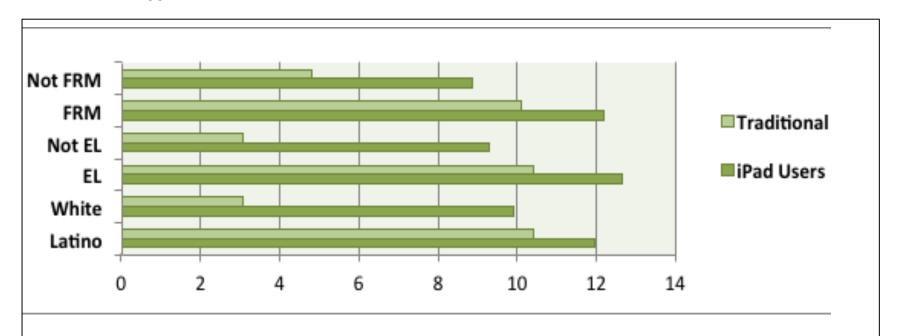
	N	Mean	Min	Max
Word Exposure	161	23, 479	643	77,445
Books Completed	161	10.08	1	29
Comprehension 1 st Try	144	67.97%		
Total Comprehension	144	96.49%		

Paired t-Test of 1 st Try Comprehension with Final Comprehension
Significant
t (143)=24.67, p<.001
· / //

Pre-Post GSV Difference with V	Vord Exposure & Books Completed
F2B Word Exposure	t (159)= 6.73 p=< .01
F2B Books Completed	t(159) = 7.85 p = < .01
	Roth Significant

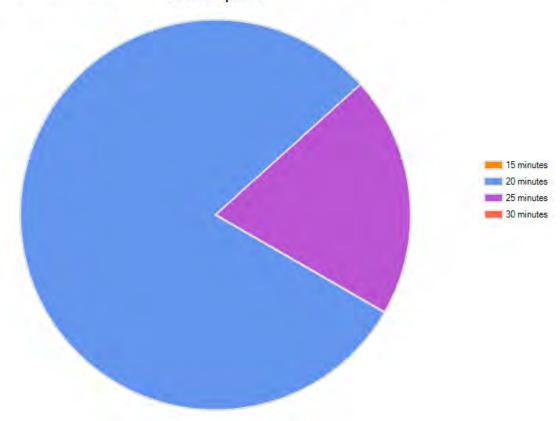
Demographic Variable Effect

• Difference in mean values

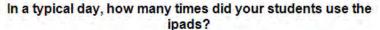


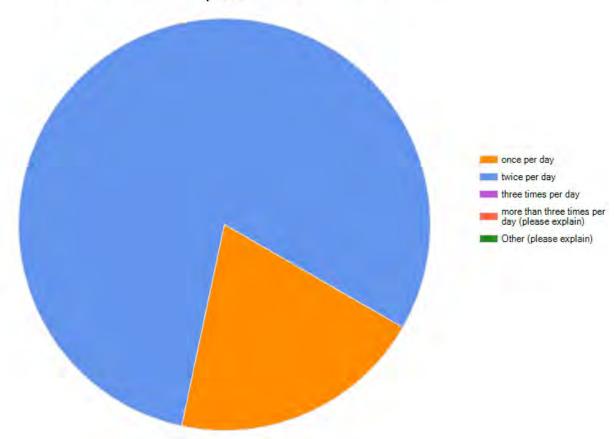


What was the typical amount of time per session that students used the ipads?

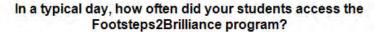


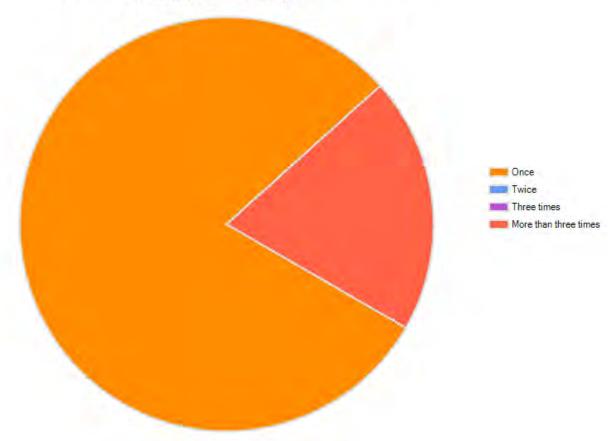






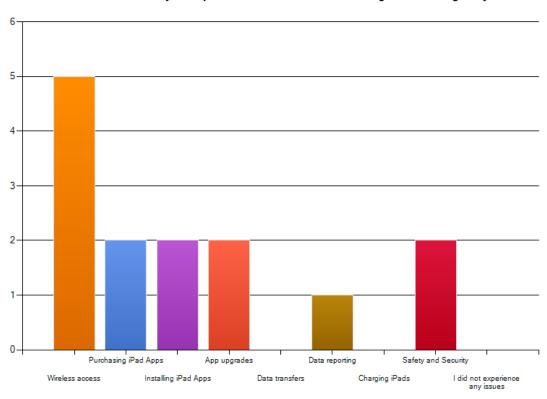








Please indicate whether you experienced issues in the following areas during the year:





Focus Group Feedback

- Student Benefits:
 - learning went beyond "skills and drills" to creating great products.
 - felt powerful and valued.
- Student-centered instruction:
 - Calistoga teacher reported that she could read with each student at least one time per day because of the iPads.
 - Differentiated instruction: students could work on different applications at the same time depending on need, especially when used during Intervention.
- Teacher Benefits: A high degree of collaboration among teachers that helped the teachers become familiar with the iPads and Footsteps2Brilliance.
- Alternative applications to F2B collection of apps with description and assessment in progress



Key Findings

- Key Findings:
- The iPad treatment had a significant effect on students' receptive language
- Word exposure and Books Completed had a positive effect on receptive language
- Students' comprehension improved 29% from the beginning of the treatment to the end using the F2B program.
- Both Latino and White students benefited with Latinos and EL showing significant growth
- There was a significant correlation between FRM (poverty) status and the positive effect of the treatment.
- There was no significant difference between males and females in their performance.

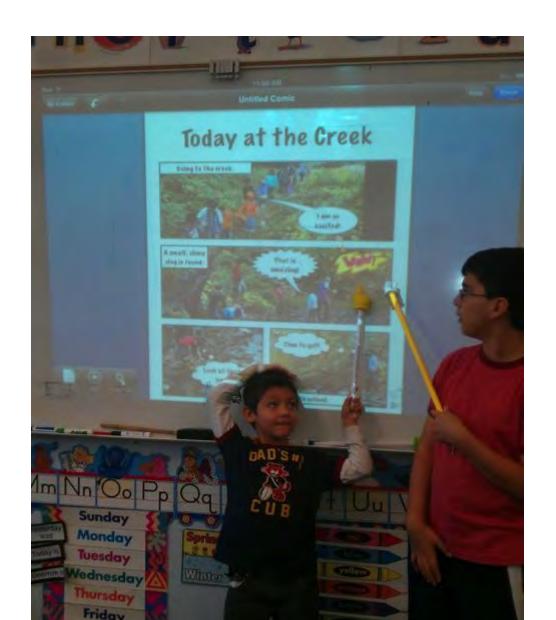
Expressive Language - Year 2



Without F2B... How do we know they are learning?



Communication





Fun with digital storytelling!!



21st Century Learning with iPads











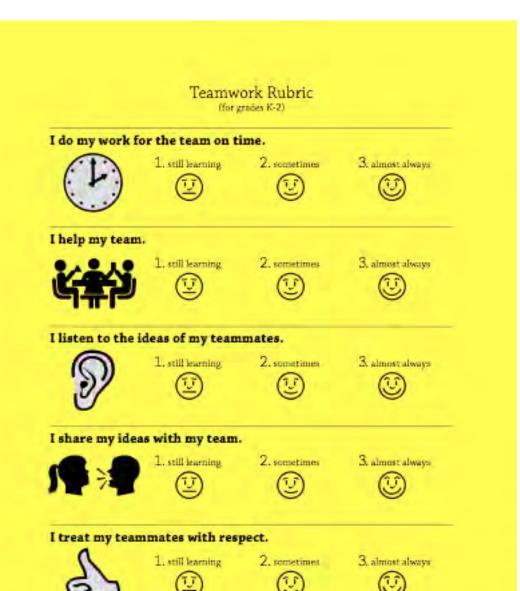
ASSESSMENT TOOLS

★ Online: ESGI

* RUBRICS: Buck Institute FreeBie

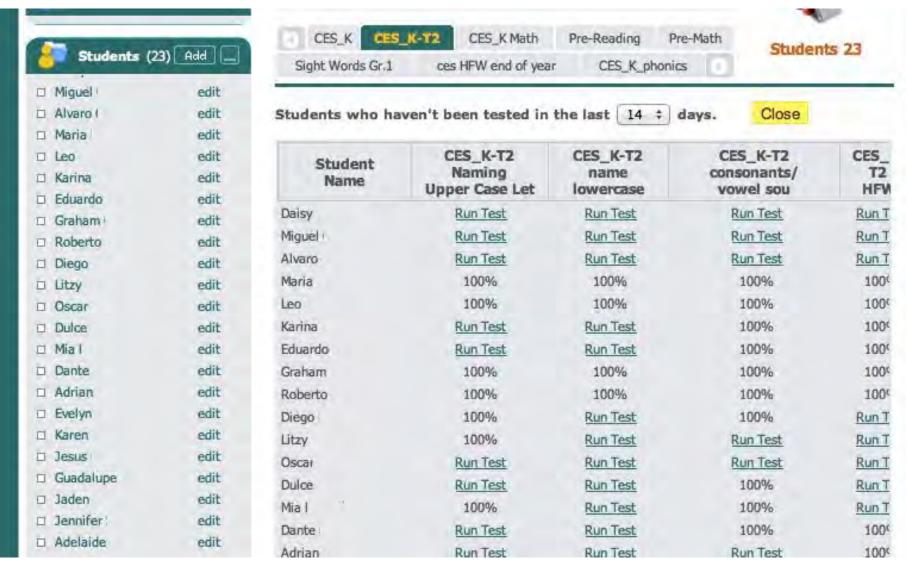


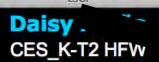
K-6 iTeam Buddies Using a Rubric





ESGI Managing Students





like

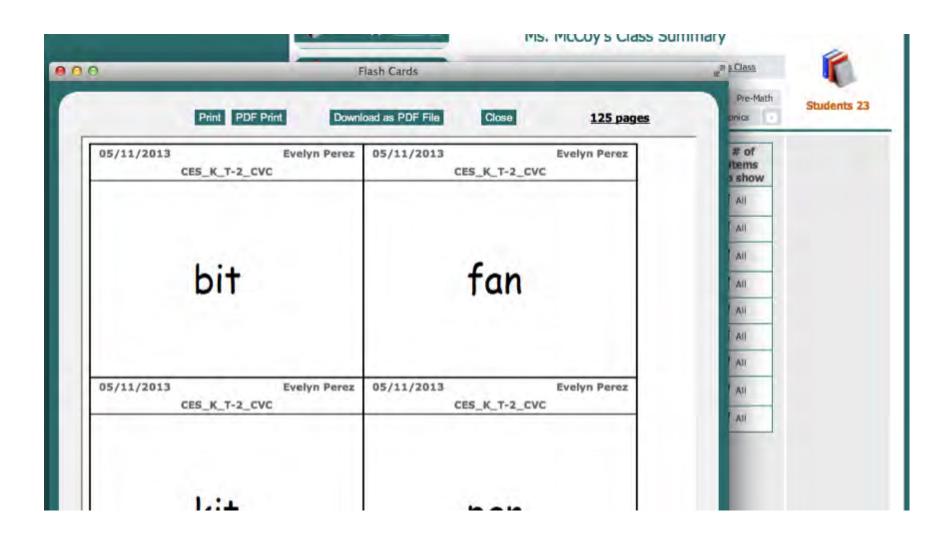
Directions: read the word. Student segments the sounds.

Y

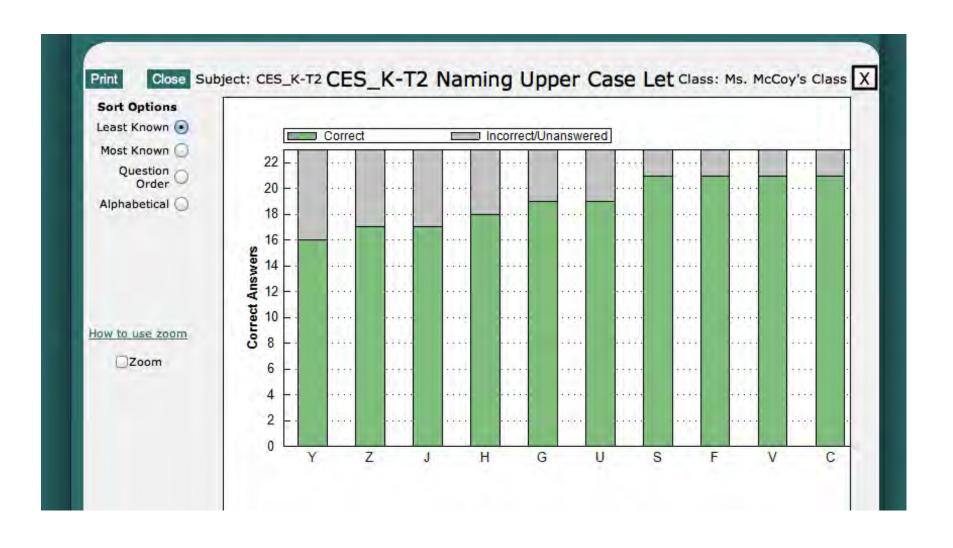
1/3

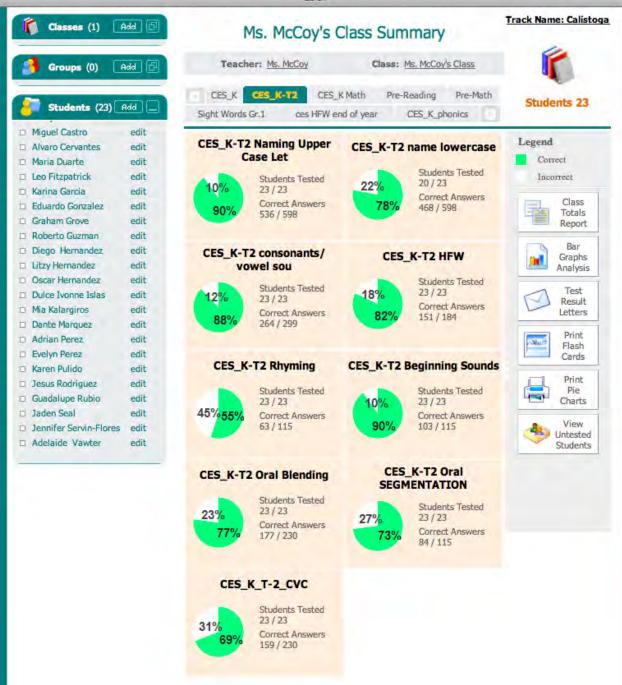
N

Flash cards & Parent Letter



DATA REVIEW





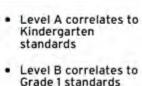
THE PARTY NO. II



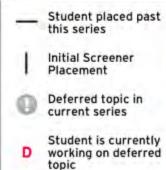
Garner iREADS grade K

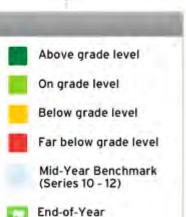






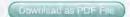
 Level C correlates to Grade 2 standards





Benchmark







Display zero values if Not Tested

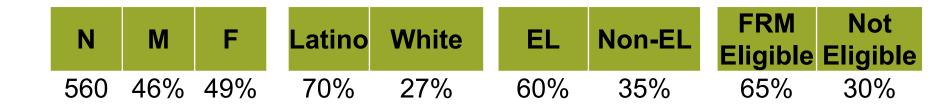
Report Date:	Group Totals Report											Subject: Report Cards						
Teacher Mrs. Garner	Group Mrs. Garner's Class Last Name		bers (0- 20)	Uppercase Letters (out of Z0)			Lowercase Letters (mit of 28)			Uppercase Sounds (out of 31)			Lowercase Sounds (ma) of 31)			>Total Weighted Score		
First Name		В	1 2	В	1	2	В	1	2	В	1	2	В	1	2	В	1	†2
Katherine		21	21 21	26	26	26	28	28	28	24	31	31	23	31	31	90	100	100
Kaelyn		21	21 21	26	26	26	27	28	28	31	31	31	30	31	31	99	100	100
Kassandra		21	21 21	26	26	26	27	27	28	26	26	31	29	29	31	95	95	100
Evelyn		21	21 21	26	26	26	27	28	28	31	31	31	31	31	31	99	100	100
Gaby		1	21 21	25	26	26	25	28	28	26	31	31	31	31	31	75	100	100
Lily		21	21 21	26	26	26	25	28	28	22	22	31	17	17	31	83	85	100
Ain		21	21 21	26	26	26	28	27	28	26	26	31	29	29	31	95	95	100
Kylee		21	21 21	26	26	26	25	28	28	16	30	31	31	31	31	88	99	100
Rachel		20	20 21	26	26	26	27	27	28	26	30	31	30	30	31	94	97	100
Maren		20	20 21	23	26	26	20	27	27	17	28	31	13	27	31	70	94	99
Xochilt		21	21 21	26	26	26	28	28	28	30	30	31	28	28	30	97	97	99
Brandon		21	21 21	24	25	26	24	26	28	24	24	30	25	25	31	87	89	99
Beyonce		17	17 21	13	13	26	9	9	26	11	11	31	11	11	30	47	47	98
Gianfranco		10	10 20	11	11	26	6	6	27	7	7	28	3	3	30	29	29	96
Brandon		18	18 21	23	23	26	18	18	28	16	16	28	6	6	28	62	62	96
Samantha		14	14 18	12	12	26	7	7	26	8	8	27	4	4	30	35	35	92
Caleb		21	21 21	22	22	26	15	15	26	0	0	25	0	0	25	48	48	91
Malik		21	21 21	12	12	25	11	11	22	6	6	20	4	4	25	44	44	84
Hunter		14	14 16	18	18	26	15	15	27	0	0	22	0	0	20	38	38	82
Ethan		16	16 19	15	19	26	17	17	25	11	11	20	10	10	21	52	56	82
Kevin		13	13 13	9	9	25	7	7	19	0	0	23	0	0	21	24	24	74
Alexander		8	8 8	5	5	19	4	4	20	3	3	22	0	0	25	16	16	67
Webster		16	16 20	4	4	15	6	6	17	0	0	14	0	0	18	23	23	63
Reileen		18	0 18	2	2	16	1	1	13	0	0	15	0	0	17	19	2	59
Daniel		13	13 13	1	1	13	0	0	12	1	1	14	0	0	17	14	14	51
Joshua		5	5 5	3	3	8	1	1	6	1	1	9	0	0	12	8	8	29
Junior		0	0 0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Teacher Mrs. Garner	Group Mrs. Garner's Class		bers (0- 20)	CATALOG CONTRACTOR CON			Lowercase Letters			Uppercase Sounds			Lowercase Sounds			Total Weighted Score		

Digital Early Literacy Report 2012-13

- NVUSD 5 Schools, 14 (+1) teachers
- St. Helena 4 Classrooms
- Calistoga 3 Classrooms

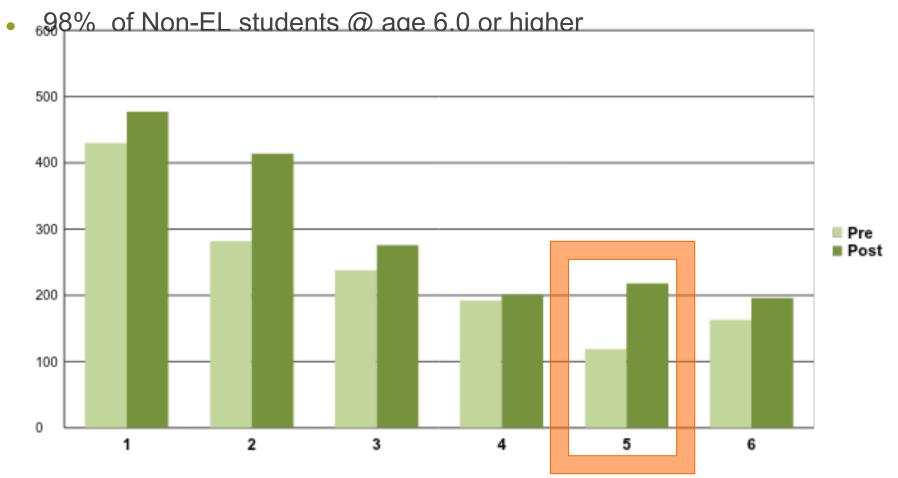
Goals for Students

- Goals for Students:
 - Increase receptive vocabulary.
 - Increase expressive vocabulary
 - Develop 21st century skills
- Demographics



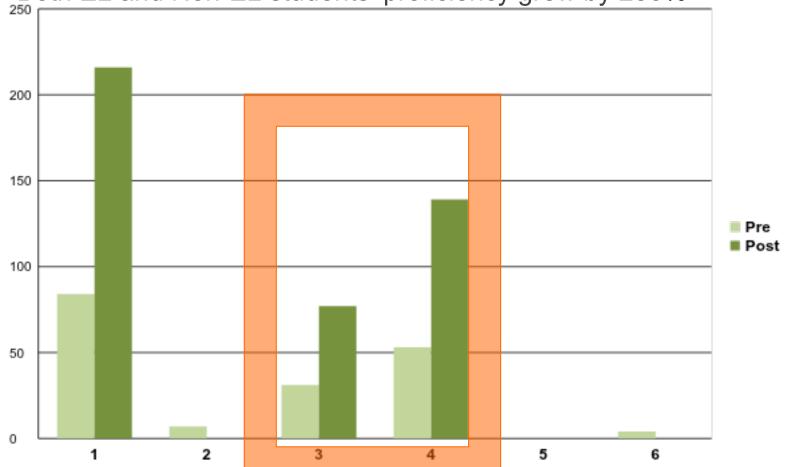
Increase Receptive Language: PPVT Pre-Post

79% of EL Students at age 6.0+



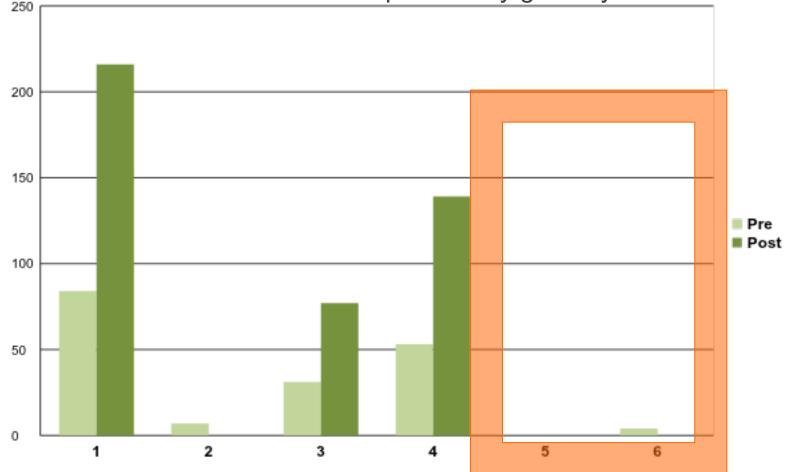
Increase Expressive Language: EVT Pre-Post

• Post: 78% of Non-EL at 5.0+ level; 29% of EL; 0% of any at 6.0 Level Both EL and Non-EL students' proficiency grew by 250%



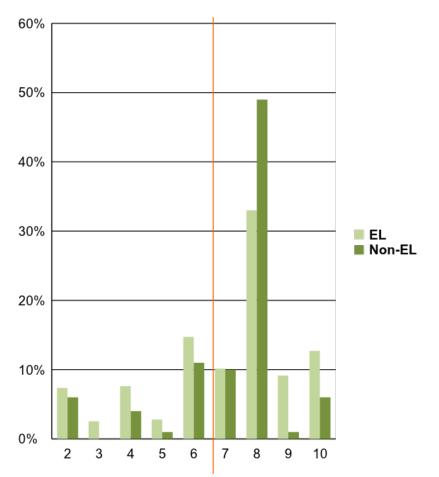
Increase Expressive Language: EVT Pre-Post

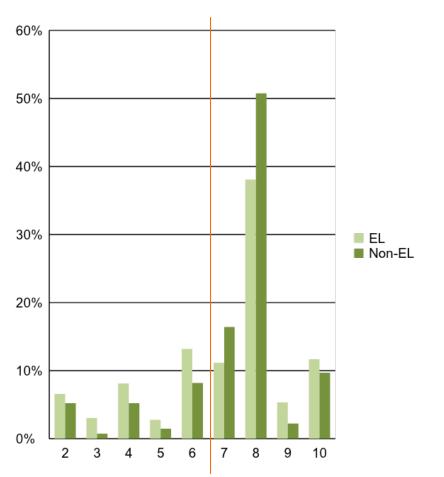
• Post: 78% of Non-EL at 5.0+ level; 29% of EL; 0% of any at 6.0 Level. Both EL and Non-EL students' proficiency grew by 250%



District Writing Assessment Pass Rates

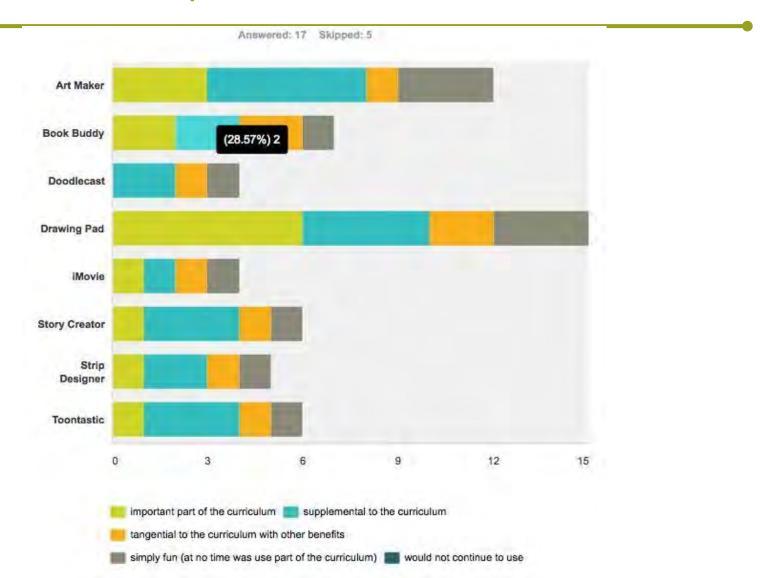
Content 66% EL & 65% Non
 Conventions 66% EL & 65% Non







Apps: Written Expression



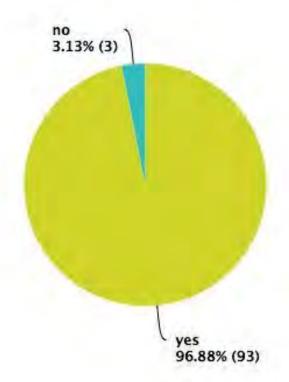


Goals for Parents

Determine parent interaction with iPads – themselves & child

Did you know that your child was using an iPad this year in the classroom?

Answered: 96 Skipped: 0

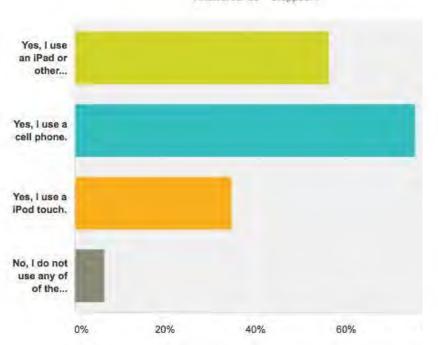




Parents: Personal Use

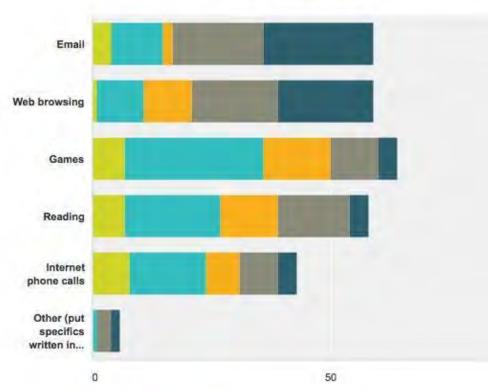
Do you use an iPad, other tablet, iPod Touch, cell phone or other digital device Choose as many aswers as apply.

Answered: 89 Skipped: 7



If you own a tablet or have access to one, how do you use it and how often? Check all that apply.

Answered: 76 Skipped: 20

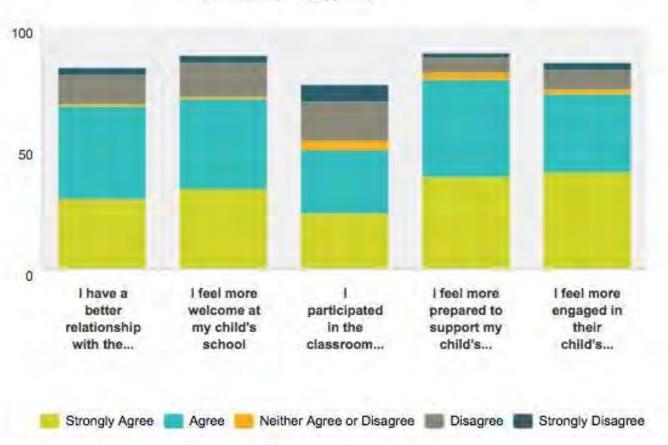




Parents: Perceptions of Child Use

Please rate the following statements: Because of the ipad program...

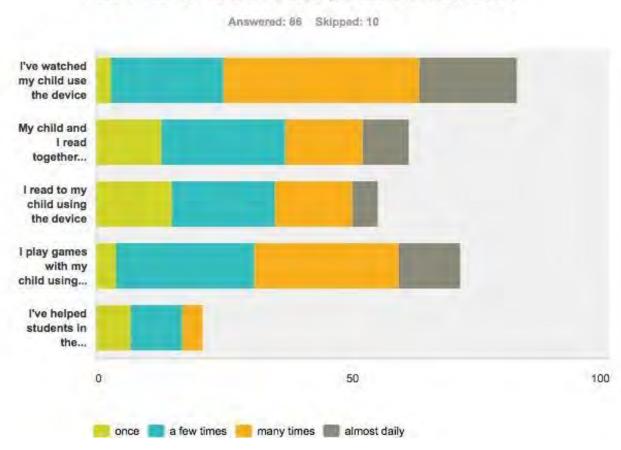






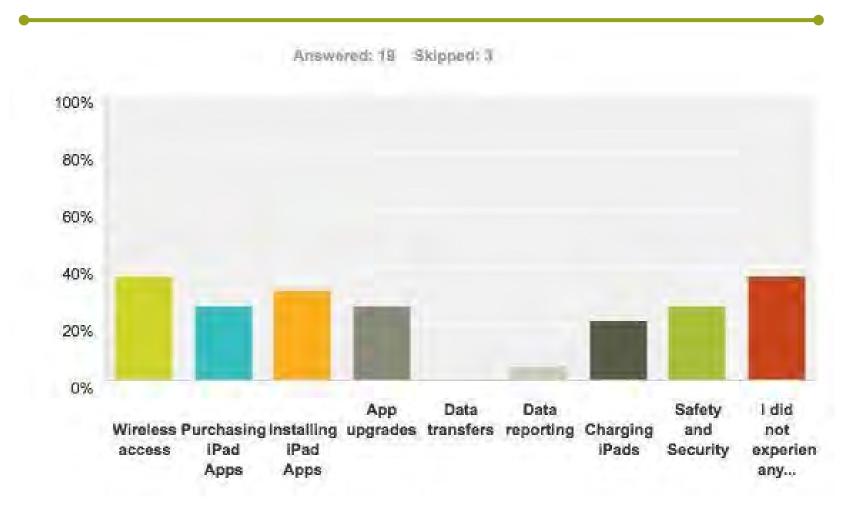
Parents: Increase Reading to Child

Please tell us how you and your child use the iPad or other device you have available.





Impact: Support Needs





Impact: Support Needs

- Teachers:
 - Time to Explore
 - Modeling/Observing
 - Specific Training
 - Trouble-shooting
 - iPad specifics
 - App specific
 - Content specific
 - Collaboration (leverage tech)



Recommendations

- Early and Often Teacher Development
 - Need a teacher workshop early in the school year
 - Simplify objectives and go deeply into them
 - Develop a PLC (see online below)
- Reflection
 - Teachers must embrace reflection as part of the learning process
 - We need to create a way to easily collect data:
 - Who "gets" it and who doesn't
 - Examples of using "it" well
 - Sample lessons (tied to common core)
 - Model teaching blogs, student work examples
 - Develop online resources
 - Lesson plans
 - App reviews
 - Curriculum matrices by time
 - iKinder stipends for teachers who are advances to build out the site

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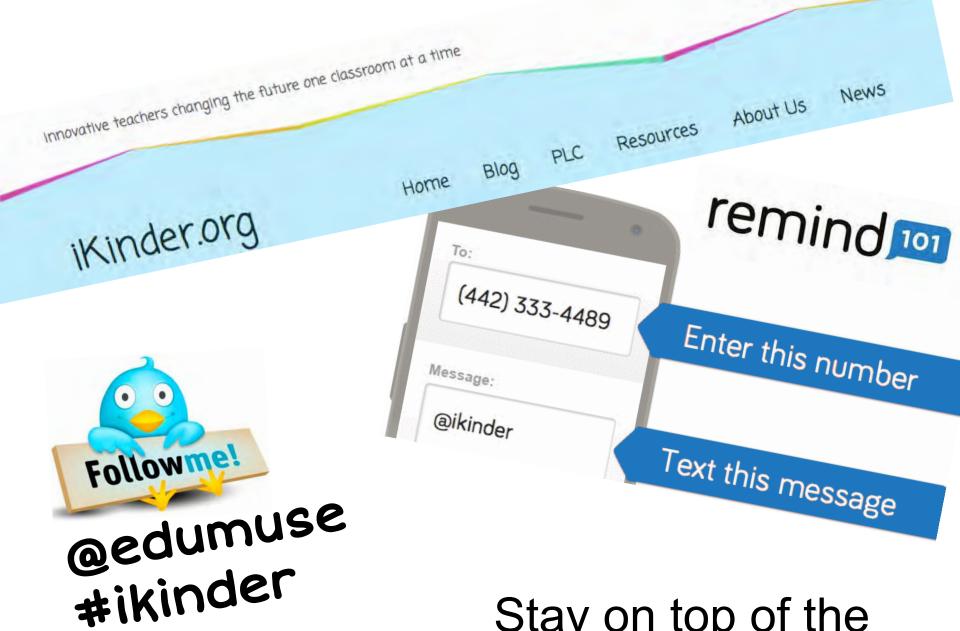
Exploring iPads & 21st Century Learning for Young Learners

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