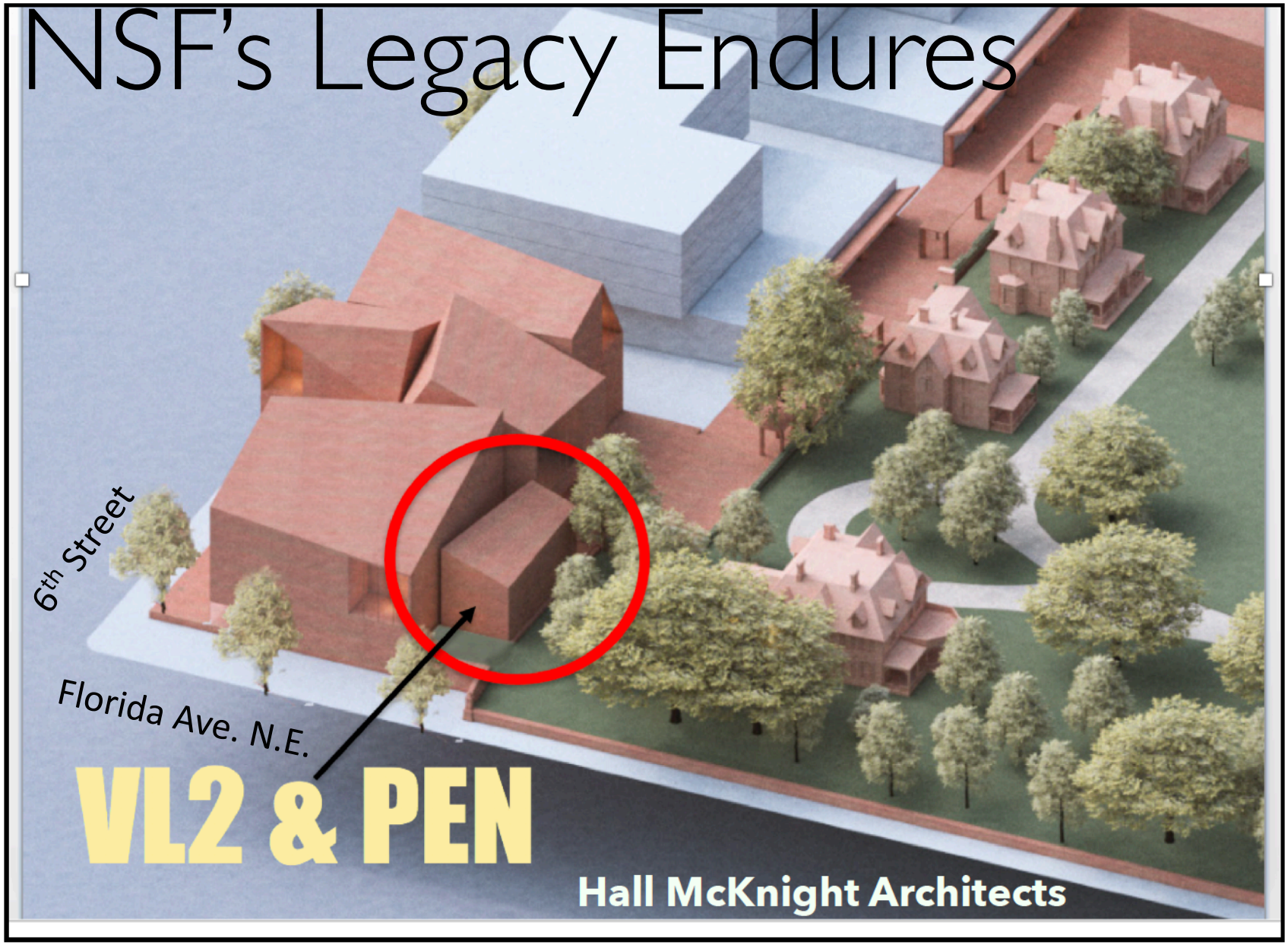
VL2 New Lens

NSF Science of Learning Center
Visual Language and Visual Learning, VL2
Gallaudet University

Dr. Laura-Ann Petitto, NSF SoL Center Co-PI and Science Director



PEN = NSF/VL2 & Gallaudet's new PhD in Educational Neuroscience degree program

What the Science Reveals

- Diversity is a Biological Imperative
- Differences can equal processing ***advantages*** that all individuals could have had, but were lost in development without specific experience

Neuroplasticity of Learning

Scientific Breakthroughs

Breakthrough Translation

First Interactive Bilingual English-ASL Literacy Apps

Timing, Visual Plasticity, & Beliefs

Controversies

Low-level visual processing / spatial processing as being relatively stable and not vulnerable to critical periods.. (Also relevance to impact of "screen time")

Science of Learning

Children with early exposure to a visual language show processing ***advantages***…

visual attention, eye-tracking, vocabulary, reading, spatial processing, and, social self regulation ***not seen in hearing children***

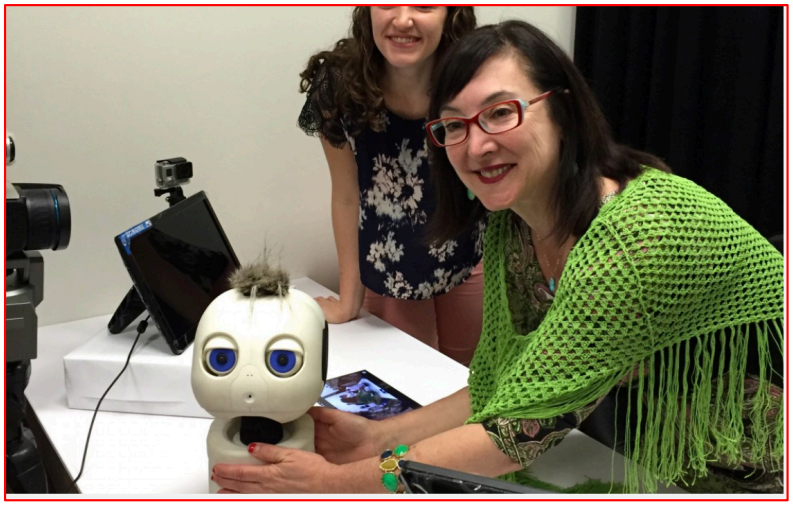
Parents & Grandparents
Foster hearing children's visual attention and visual learning

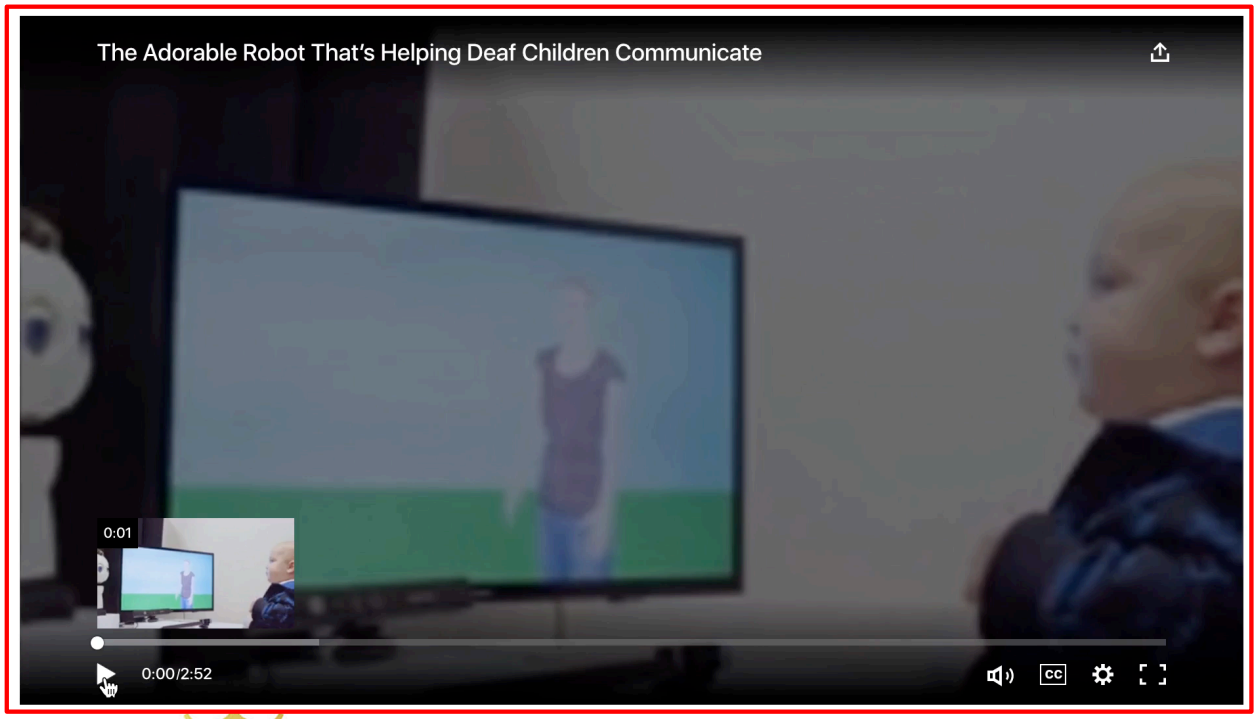
Policymakers
Create policy that makes visual language available to deaf visual learners in early life

A Biological Imperative: Changes in the visual system are developmentally time sensitive

Back to Research The creation of NEW Learning Tools based on the research…

Robot-Avatar Language Learning Tools





Newsweek

COULD A ROBOT HELP YOUR CHILD LEARN A LANGUAGE?

BY KATE SHERIDAN ON 10/15/17 AT 8:10 AM

WIRED

Dec 5, 2017

Problem: Babies with Minimal Language input

6-12 months: Rhythmic contrasts – Phonetic

(6-12 months Sensitive Period

Innovative Solutions: Robot Avatar+Thermal

(i) "Ready to Learn" (Language interactions only when child is emotionally engaged and attentive)

(ii) Socially interactive & **Socially Contingent conversations with Babies**

NSF

W.M. KECK FOUNDATION

Timing, Bilingualism, & Beliefs

Bilingualism harms
Language Delay
Language Confusion

Hold back

Don't expose a child to 2 languages too early

Parents must be perfect language users

Let one language get established first, then introduce the other

Science of Learning

Early bilingual language exposure affords Language & Reading advantages to each language, over age-matched monolingual children

Language advantages are life enduring

Advantages are to All Bilinguals
ASL+ Spoken

Parents, Grandparents
Foster EARLY bilingual education

Policy Create policy that makes visual language available to deaf visual learners in early life, *in addition to* spoken language

Multiple Pathways to Learning to Read Timing, Reading, & Beliefs

Belief: All Reading requires Sound

Science of Learning

All human brains create an abstract level of language organization, "Phonology." Even in Visual Languages without sound

Hearing - Early exposure to language patterns
Deaf - Early exposure to language patterns

Parents, Grandparents

Rhyming, Read, Segment,
Sign, Language Play, Laugh & Love!

Policymakers

- foster creation of innovative learning tools
- create policy that educates public, medical profession

For published research articles see Laura-Ann Petitto's Website at *Petitto.net*

Brain & Language Laboratory for Neuroimaging

Click on "Publications" to download