



# EFFECTIVE PRACTICE IN K-2 LITERACY INSTRUCTION

Marc W. Hernandez, PhD

Susan True



Kenneth  
Rainin  
FOUNDATION

NORC

at the UNIVERSITY of CHICAGO

The Rainin Foundation asked NORC at the University of Chicago to conduct thorough literature reviews:

1. Defining the key predictors of kindergarten readiness.

### **What skills matter the most?**

2. Identifying rigorously evaluated effective programs and practices for 0-5 year old children and K-2 students in language arts, social-emotional development, approaches to learning, math and science.

### **What programs have a big impact?**

**What are the “active ingredients” that lead to big impacts among effective programs?**





TAIL EAH

## Today's Professional Learning Community

1. What are the key skills that predict kindergarten readiness?
2. What best practices prepare children for elementary school success?
3. What K-2 programs and best-practices have a big impact on students' language arts outcomes?



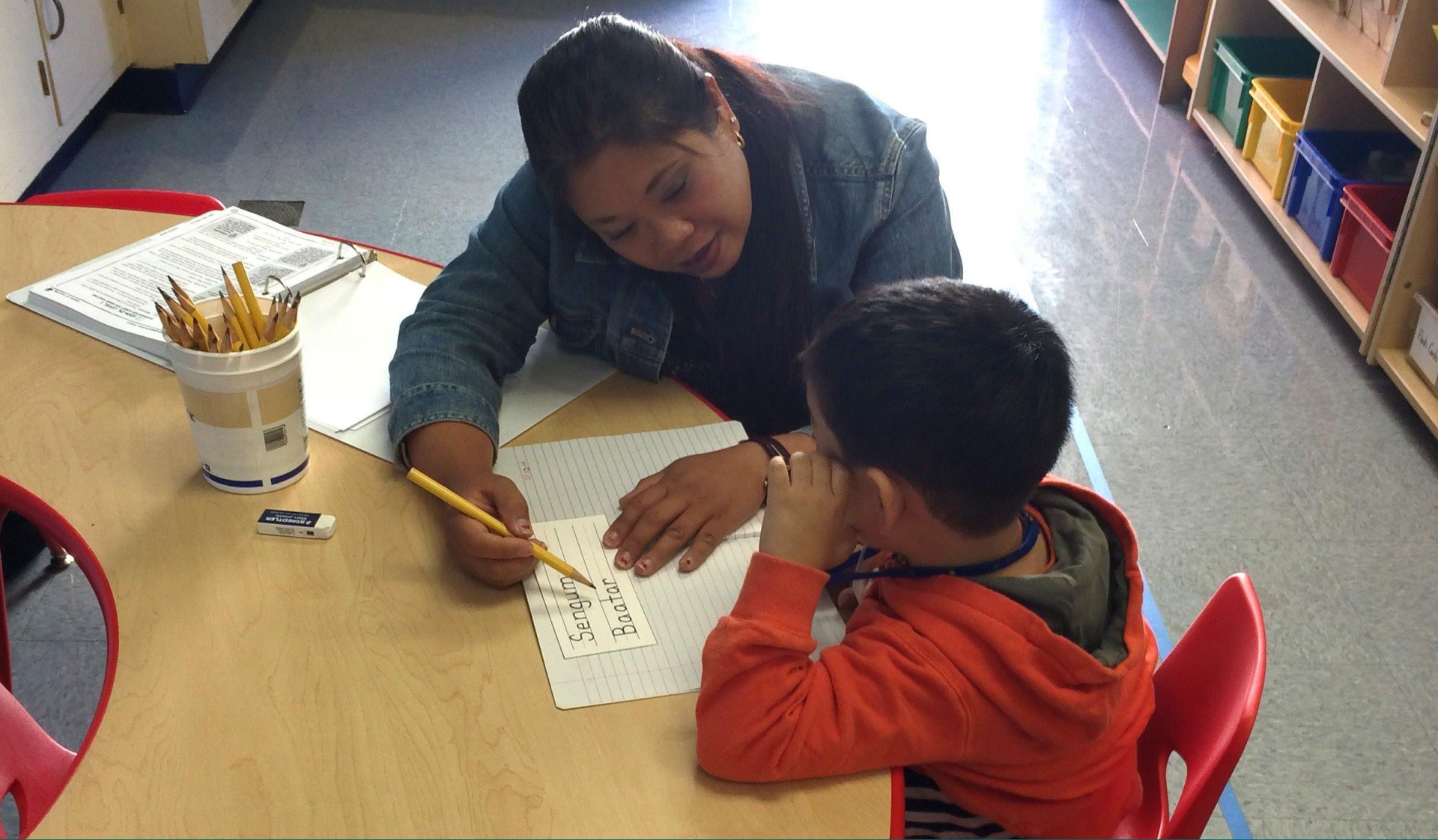
## Key Predictors of Kindergarten Readiness



## K-2 Literature Reviews

# Methods for K-2 Literature Review

- ❖ What did we search for?
  - ❖ Effective CURRICULA (Programs, Interventions, Best Practices)
  - ❖ Five Content Areas:
    - ❖ Language Arts
    - ❖ Science
    - ❖ Math
    - ❖ Social-emotional development
    - ❖ Approaches to learning
  - ❖ Kindergarten through 2<sup>nd</sup> Grade
  - ❖ Students and teachers
  
- ❖ How did we define 'Effective'?
  - ❖ Rigorous evaluation design
  - ❖ Statistical significance
  - ❖ Size of difference between treatment and control (effect size)
    - ❖ Small (.01 to .30)
    - ❖ Medium (.31 to .79)
    - ❖ Large (over .80)



## K-2 Language Arts

# K-2 Language Arts: Effective Curricula and Programs

- ❖ Search Results
  - ❖ Identified 53 curricula and programs
    - ❖ 621 individual studies
  - ❖ 26 curricula and programs met all review criteria
- ❖ Effects on average were:
  - ❖ Larger in 1<sup>st</sup> grade than K, and 2<sup>nd</sup> grade\*
  - ❖ Larger with African-American students





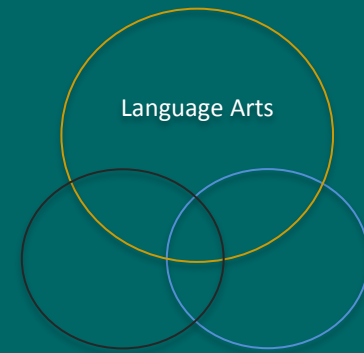
# K-2 Language Arts: Effective Curricula and Programs

- ❖ **LARGE Effects:**
  - ❖ **Lexia+**
  - ❖ **Reading Recovery**
  - ❖ **Sound Partners**
  - ❖ **SpellRead**
  
- ❖ **Common Content/Active Ingredients:**
  - ❖ **Phonological awareness (100%)**
  - ❖ **Phonics and decoding (100%)**
  - ❖ **Oral language (75%)**



# **K-2 Language Arts: Effective Curricula and Programs**

- ❖ **MEDIUM Effects:**
  - ❖ **Accelerated Reader**
  - ❖ **Early Reading Research**
  - ❖ **Lindamood Phoneme Sequencing (LiPS)**
  - ❖ **Leveled Literacy Intervention (Fountas & Pinnell)\***
  - ❖ **Open Court Reading+**
  - ❖ **Orton Gillinham (Alphabet Phonics)**
  - ❖ **Peer-Assisted Learning/Literacy Strategies (PALS)+**
  - ❖ **Read, Write and Type**
  - ❖ **SMART**
  - ❖ **Superkids**
  - ❖ **Waterford Early Reading Program**
  
- ❖ **Common Content/Active Ingredients :**
  - ❖ **Phonological awareness (64%)**
  - ❖ **Phonics and decoding (64%)**
  - ❖ **Oral language (55%)**
  - ❖ **Fluency (73%)**
  - ❖ **Book reading (73%)**
  - ❖ **Reading Comprehension (82%)**



# K-2 Language Arts: Effective Curricula and Programs

- ❖ **SMALL Effects:**
  - ❖ **RAILS**
  - ❖ **Reading Reels**
  - ❖ **Success for All+**
  
- ❖ **Common Content/Active Ingredients :**
  - ❖ **Phonics and decoding (100%)**
  - ❖ **Oral language (100%)**
  - ❖ **Reading Comprehension (100%)**



# K-2 Language Arts: Ineffective Curricula and Programs

- ❖ No Effects:
  - ❖ Destination Reading
  - ❖ Fast ForWord
  - ❖ Fluency Formula
  - ❖ Headsprout
  - ❖ Ladders to Literacy
  - ❖ Plato Focus
  - ❖ Reading Street
  - ❖ Voyager Universal Literacy
  
- ❖ 27 curricula or programs did not have rigorous evaluations\*



# K-2 Language Arts: Summary of “Active Ingredients”

## Content Focus

- 1) Phonological awareness
- 2) Phonics and decoding
- 3) Oral language
- 4) Writing
- 5) Fluency
- 6) Reading comprehension
- 7) Book reading



Large Effect  
Programs

Small Effect  
Programs



Kenneth  
Rainin  
FOUNDATION

# K-2 Language Arts: Summary of “Active Ingredients”

## Pedagogy

- 1) Explaining (explicit instruction)
- 2) Continuous assessments of child’s progress
- 3) Differentiated instruction

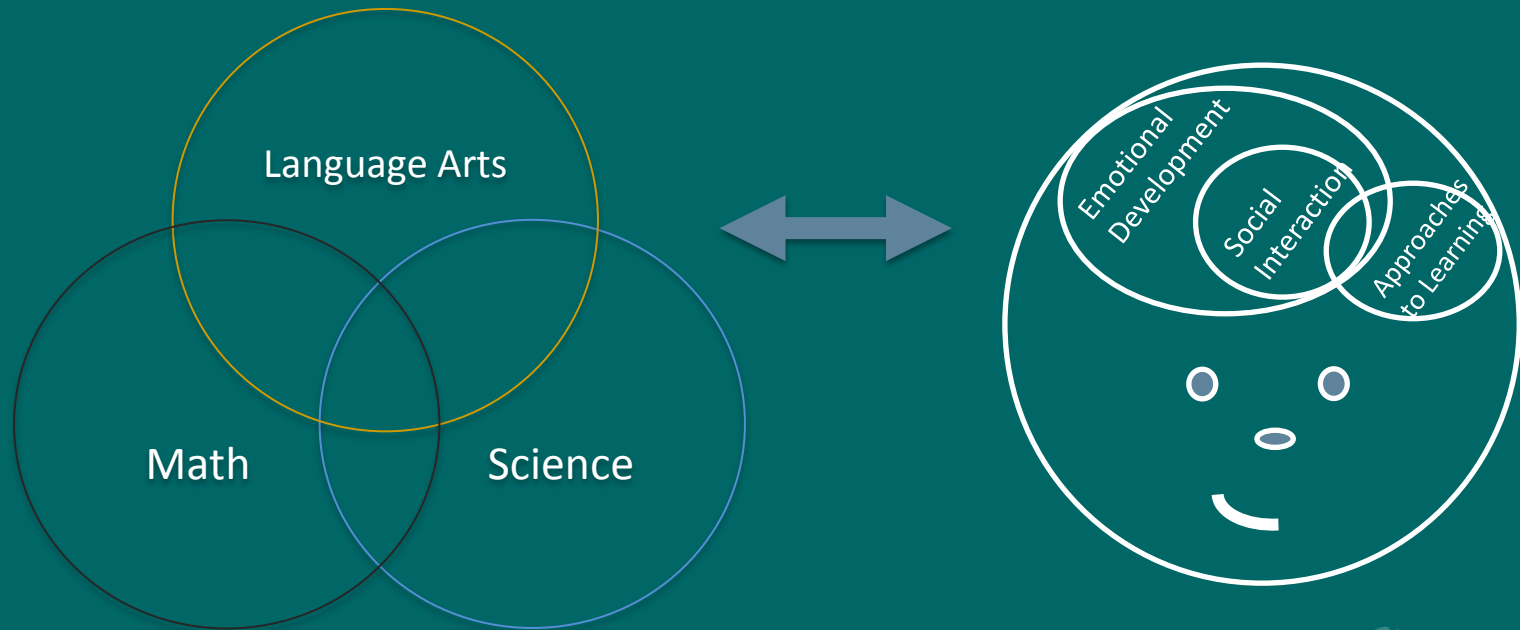
## Teacher Support

- 1) Meetings/Check-ins
- 2) Mentoring/Coaching
- 3) Workshops/Seminars



# K-2 Language Arts: Learning in Context

Engaging in reading, writing, and oral communication related to science-based topics allows students to make connections between these two domains, enhancing learning in both



K-2 Science





# K-2 Science

- ❖ **Science** is comprised of process skills related to the scientific method (inquiry) and content knowledge related to the natural sciences. Specific skills include:
  - ❖ Observing
  - ❖ \*Asking questions
  - ❖ \*Generating hypotheses and predicting
  - ❖ Experimentation or testing
  - ❖ \*Summarizing or analyzing data
  - ❖ \*Communicating results
  
- ❖ Critical thinking
- ❖ Logic and reasoning
  
- ❖ Life Science (plants, animals, health, etc.)
- ❖ Earth Science (weather, environment, etc.)
- ❖ Physical Science (gravity, velocity, etc.)
- ❖ Space Science (planets, stars, etc.)
- ❖ \*Measurement and classification



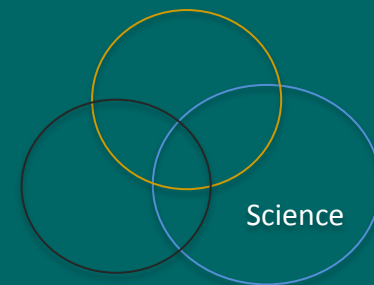
# K-2 Science

## ❖ Common Misconceptions & Myths

- 1) Children below age 11 cannot reason about abstract concepts
  - In fact, early exposure to both science and math positively contributes to later cognitive development, higher-order thinking and scientific literacy
- 2) Science negatively encroaches on teaching of key K-2 domain learning, especially literacy (and to a less extent math)
  - Science can be a time efficient scaffold for simultaneously engaging and developing science, math, oral language and literacy skills

## ❖ Common Challenge

- 1) Teachers lack science content knowledge and confidence in teaching science
  - Provide curricula or “tool-kits” that provide teachers with developmentally appropriate lessons, activities, and ideas on topics naturally of interest to K-2 students



# K-2 Science:

## Effective Curricula and Programs

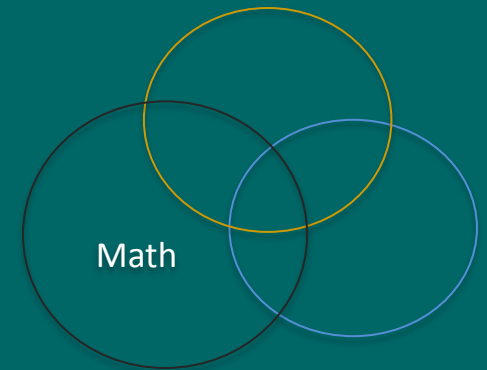
- ❖ **LARGE Effects:**
  - ❖ **Science IDEAS+**
  - ❖ **Scientific Literacy Project+**
  - ❖ **Project Clarion**
  - ❖ **Waterford Early Math & Science**
- ❖ **Common Content/Active Ingredients:**
  - ❖ **Facilitate child-directed, hands-on exploration**
  - ❖ **Translate lived experiences into questions and testable hypotheses**
  - ❖ **Create opportunities to solve problems to answer questions**
  - ❖ **Provide Comprehensive teacher PD**
  - ❖ **Directly tie science to other academic domains (literacy, math, social studies)**



# K-2 Math:

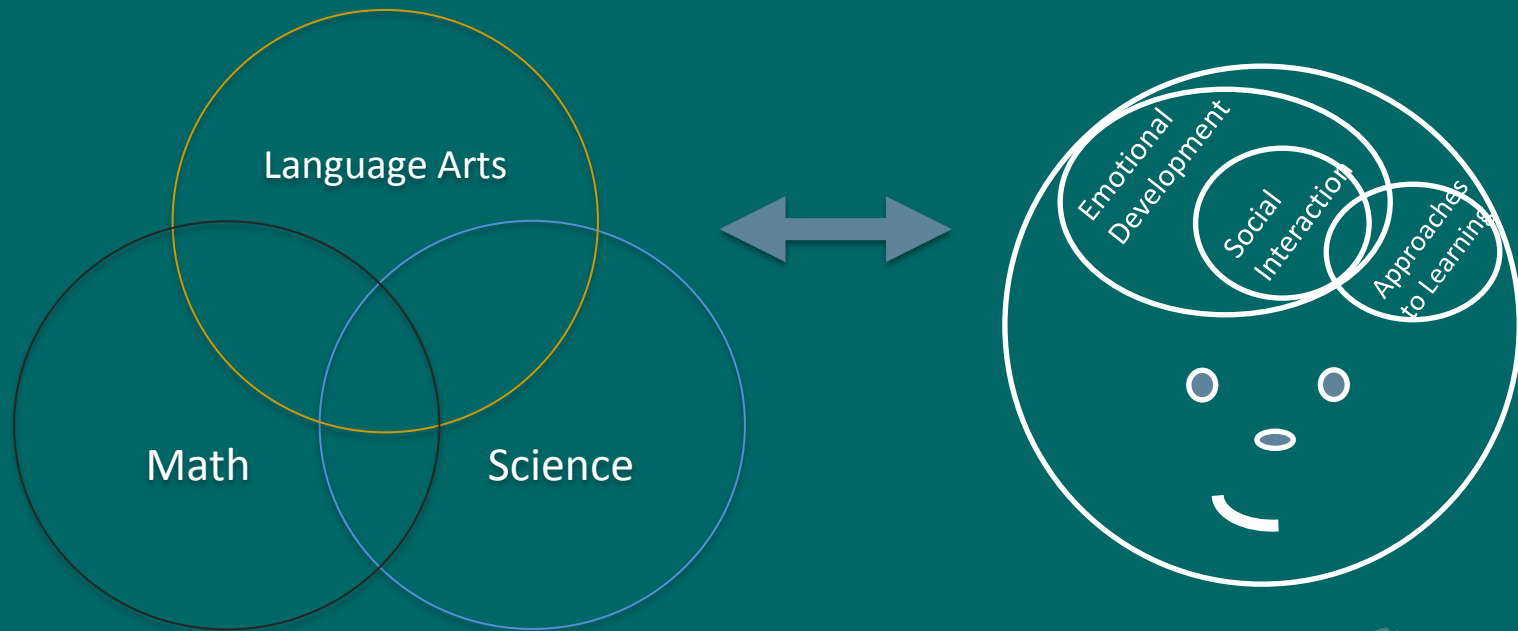
## Effective Curricula and Programs

- ❖ **SMALL Effects:**
  - ❖ **Math Expressions**
  - ❖ **Saxon Math**
  - ❖ **enVision Math**
  - ❖ **Early Learning in Mathematics**
  - ❖ **DreamBox Learning\***
- ❖ **Common Content/Active Ingredients:**
  - ❖ **Detailed implementation scripts**
  - ❖ **Focus on student-teacher interactions**



# K-2 Language Arts: Learning in Context

Children's social-emotional development and approaches to learning are shaped by their experiences engaging (and struggling) with academic content in the school, home and community





## K-2 Social-Emotional Development

# K-2 Social-Emotional Development

- ❖ **Social-Emotional Development** is comprised of two subdomains, Emotional Development and Social Interaction.
- ❖ **Emotional Development** refers to children's ability to regulate their emotions. Specific skills that enable emotion regulation include:
  - ❖ Emotion knowledge
  - ❖ Self-awareness
  - ❖ Self-confidence, independence & self-direction
  - ❖ Flexibility in changing environments
  - ❖ Perspective taking
  - ❖ Empathy
- ❖ **Social Interaction** refers to children's development and maintenance of relationships with others. Specific skills that support positive social interactions include:
  - ❖ Awareness and respect for others
  - ❖ Following routines and rules
  - ❖ Concept of fairness



# K-2 Social-Emotional Development: Effective Curricula and Programs

- ❖ LARGE to MEDIUM Effects:
  - ❖ First Step to Success
  
- ❖ MEDIUM Effects
  - ❖ Acting/drama lessons\*
  
- ❖ MEDIUM to SMALL Effects:
  - ❖ INSIGHTS into Children's Temperament
  - ❖ Promoting Alternative Thinking Strategies (PATHS)
  - ❖ Incredible Years
  
- ❖ Common Content/Active Ingredients:
  - ❖ Perspective-taking
  - ❖ Reflection on self and other feelings and emotions
  - ❖ Recognizing, identifying and regulating emotions
  - ❖ Role-playing
  - ❖ Positive reinforcement of desired behaviors
  - ❖ Parent-child interaction component (not well-defined)







## K-2 Approaches to Learning

# K-2 Approaches to Learning

- ❖ Approaches to Learning is comprised of the skills and behaviors children use to engage in learning, and is strongly tied to Social-Emotional Development. Specific skills and behaviors include:
  - ❖ Persistence
  - ❖ Attention
  - ❖ Motivation
  - ❖ Curiosity
  - ❖ Learning mindsets (incremental vs. entity)
  - ❖ Structured learning (goal setting, planning, organizing)



# K-2 Approaches to Learning: Effective Curricula and Programs

- ❖ No K-2 programs in this domain
- ❖ One small-scale intervention (Teach the Brain) focused on improving children's inhibitory control, effortful control, and executive attention/control with mixed results
- ❖ At this time, approaches to learning and associated growth mindsets are best developed through active engagement and learning





**Take Home Message**



Kenneth  
Rainin  
FOUNDATION

# Take Home Message

**The best “bang for your buck” is to create multi-disciplinary learning opportunities that integrate content learning (science, math) with language arts**

- ❖ Create opportunities for students to learn, inquire, collaborate and struggle with expository content
  - ◆ Allows for opportunities to use oral language skills, read and write
  - ◆ Encourages critical thinking and innovation
  - ◆ Fosters collaboration among peers
  
- ❖ Provide Teachers with comprehensive support in the form of:
  - ◆ Mentoring/Coaching
  - ◆ Meetings/Check-ins
  - ◆ Workshops/Seminars
  
- ❖ Be explicit in teaching and tracking development of foundational skills, but also encourage student inquiry through structured multi-disciplinary learning activities



Thank you!  
Krfoundation.org