

MIND RESEARCH INSTITUTE EARLY MATH PROGRAM

Presenter

Tina Earl

In 1997 Tina Earl joined the MIND Research Institute prior to the organization's formal formation, working with University of California, Irvine, researcher and MIND co-founder Dr. Gordon Shaw. She worked as a research assistant on the early pilots of the ST Math software program with groups of 3-4 year-olds and eventually elementary school students. After the ST Math software program was launched following the initial pilots, Ms. Earl became the Director of Customer Support, where she oversaw a team of education support specialists throughout the country in the scheduling, training and support for school staff and administration in implementing computer and music components of the ST Math and ST Math+Music programs. In 2009, Ms. Earl became the Director of Research and Development, overseeing all of MIND's research and development activities. She continues to oversee the development, research and piloting of MIND's early childhood education (pre-K) program in Orange County.

School District Representatives Available for Questions:

Janneth Linnell

Early Childhood Education Coordinator
Santa Ana Unified School District

Peggy Nguyen

Early Childhood Education Program Administrator/Coordinator
Newport Mesa Unified School District

MIND Research Institute Early Math Literacy Project

There is a growing national concern regarding the preparedness and competitiveness of U.S. children in the scholastic areas of science, technology, engineering and math (STEM). Prior to kindergarten, many children acquire mathematics knowledge. Early childhood programs however do not always challenge and extend children’s mathematical knowledge. Young children from low-socioeconomic status backgrounds are especially vulnerable in that they show lower mathematics knowledge than their peers. Children with early math skills correlate strongly with future school achievement. In January 2009, the Commission’s invested in the MIND Research Institute preschool program for an early math start-up program and expansion of the program to Orange County’s children.

One of the Commission’s strategies for increasing early math among Orange County children includes a partnership with the MIND Research Institute to develop a math program targeting preschool-aged children in schools of lower academic performance. The MIND Research Institute is an Orange County based nonprofit organization that developed an interactive instructional software program to improve the math proficiency and problem solving skills of pre-kindergarten children.

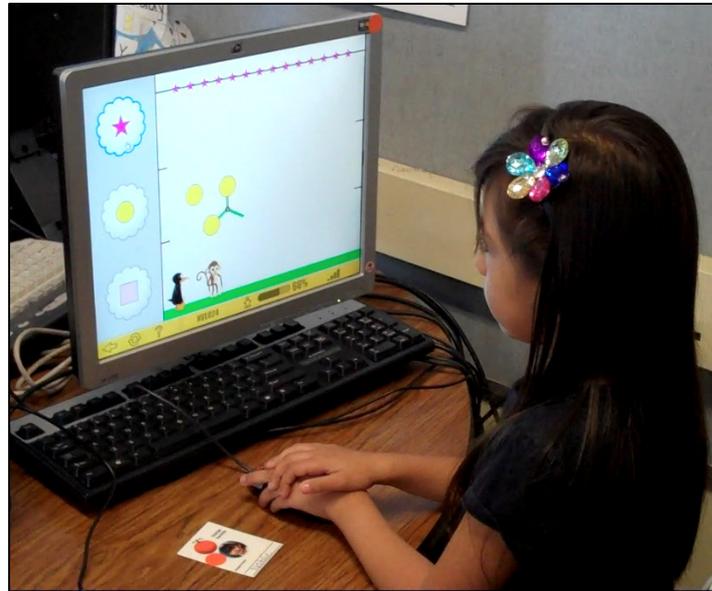
Overall, the Commission invested \$720,000 in four phases of program development that concluded in October 2012 with the *ST Math Integrated Instructional System: PreK Program*. The MIND Research Institute developed an implementation strategy recognizing the Commission’s, and participating school districts’ investment in the joint research and development project, and recouping a portion of the Commission’s start-up investment.

Early Math Literacy Project			
Phase	Funding	Term	Scope
I	\$73,400	1/2009-6/2009	Preliminary adaptation of kindergarten games for preschool, aligning software games to the California Early Childhood Education Foundations, and pilot use in schools.
II	\$115,000	7/2009-2/2010	Based on pilot results, modify the interactive computer programs aligned with the California Early Childhood Foundations, develop new programs and features including a parental education component, and pilot use in schools.
III	\$331,600	3/2012-2/2011	Final development software, development of professional training and materials for PreK teachers, development of parent education components including translation, conduct final evaluation, and prepare for release.
IV	\$200,000	3/2011-10/2012	Based on the development and pilot results, further refine the ST Math software curriculum to address remaining identified concerns. Pursue funding and investment opportunities as a sustainability strategy. Project objectives include: <ol style="list-style-type: none"> 1. Master early childhood development foundations as defined by the California Department of Education 2. Exhibit fluency and proficiency in math and problem solving skills at the end of kindergarten 3. Participating students score “Proficient” or high on 2nd grade California Standards Test
	\$720,000		TOTAL FOUR-YEAR FUNDING

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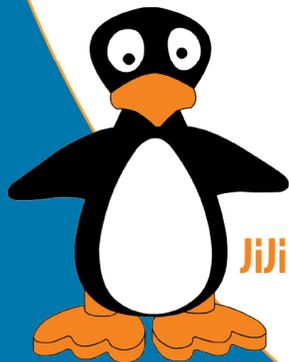
ST Math Early Math Literacy Project

Update



Tina Earl

Director, Research and Development



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Agenda

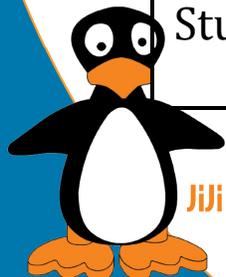
- Overview of MIND Research Institute and Children and Families Commission Early Math Literacy Project
- ST Math Early Learning Program Goals and Objectives
- Challenges and Lessons Learned
- Program Results
 - Current Early Learning Program
 - Future Planning
 - Q & A



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MIND and CFCOC Early Learning Project

	PHASE I 2009	PHASE II 2009- 2010	PHASE III 2010- 2011	Early Learning Program Pilot 2011-2012	Early Learning Math Initiative Beta Release 2012-2013
Districts	Santa Ana	Santa Ana	Santa Ana Anaheim Newport-Mesa	Santa Ana Newport-Mesa Placentia-Yorba Linda	Anaheim Santa Ana Newport-Mesa Placentia-Yorba Linda
Schools	1	3	16	6	14
Teachers	2	6	40	11	22
Students	40	142	786	268	602



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1,838 Children

Program Development

Phase I

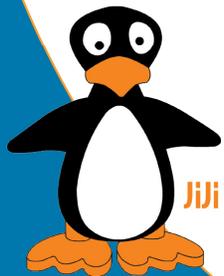
- Feasibility Study
- Research and design games aligned with California Foundations

Phase II

- Develop and test games aligned with Learning Foundations
- Develop activities to strengthen math concepts
- Design structure suitable for in-class implementation
- Develop Home-School component

Phase III

- Expand program to larger population
- Improve software games
- Test activities
- Evaluate full program



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Program Development

2011-2012 Program - Phase IV

- Added and tested new games and activities
- Tested enhanced games and activities from Phase III pilot
- Included content-specific professional development
- Used outside assessment tool to assess student mastery of math concepts

MIND Early Learning Program Beta Release 2012-2013

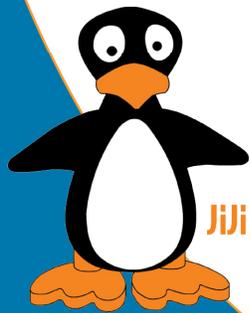
- Test final curriculum
- Feasibility test – Special Needs children
- Identify appropriate assessment tool



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Goals and Objectives of Project

- ✓ Establish feasibility of using ST Math in Early Learning environment
- ✓ Develop an Early Learning Program that helps children master the Math Foundations in preparation for advanced learning
 - ✓ Teachers respond favorably and report positive benefits of professional development provided by MIND
 - ✓ Parents respond favorably
 - ✓ Students respond favorably



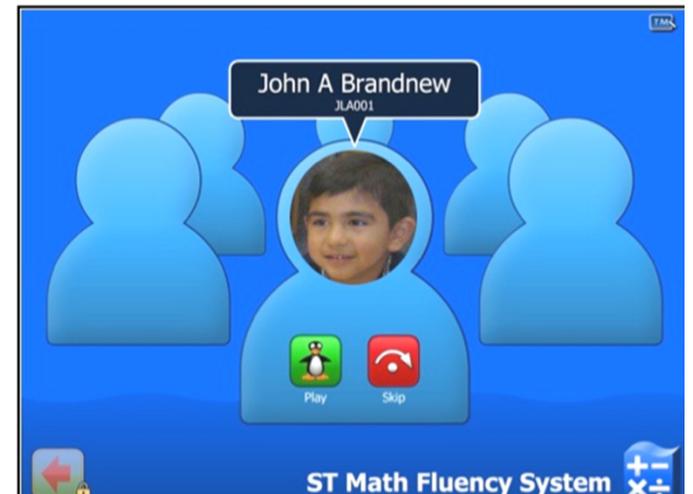
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Challenges and Lessons Learned

- Staff members taught us:
 - Classroom philosophy varies
 - Teacher support is vital
 - Student login must be simple
 - Professional development improves learning



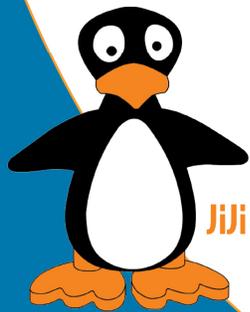
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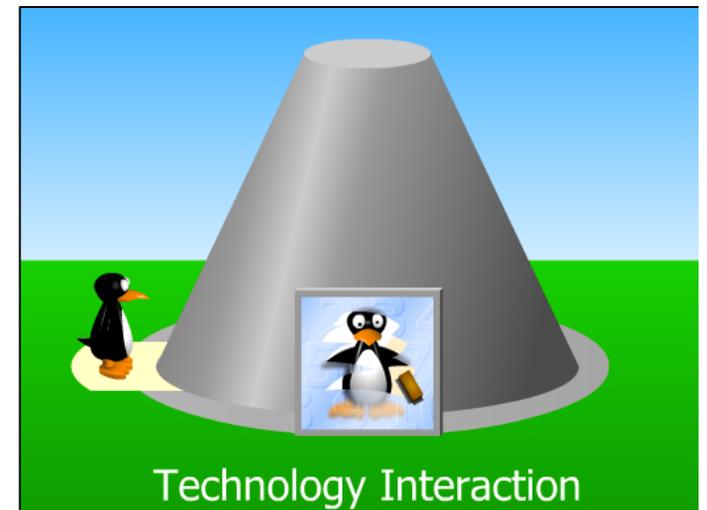
1,838 Students Taught Us

The program must provide:

- Ease of use
- Technology training
- Focus training
- Scaffolding and coherence of math content is critical
 - Games
 - Activities
 - Language integration
 - Parent participation

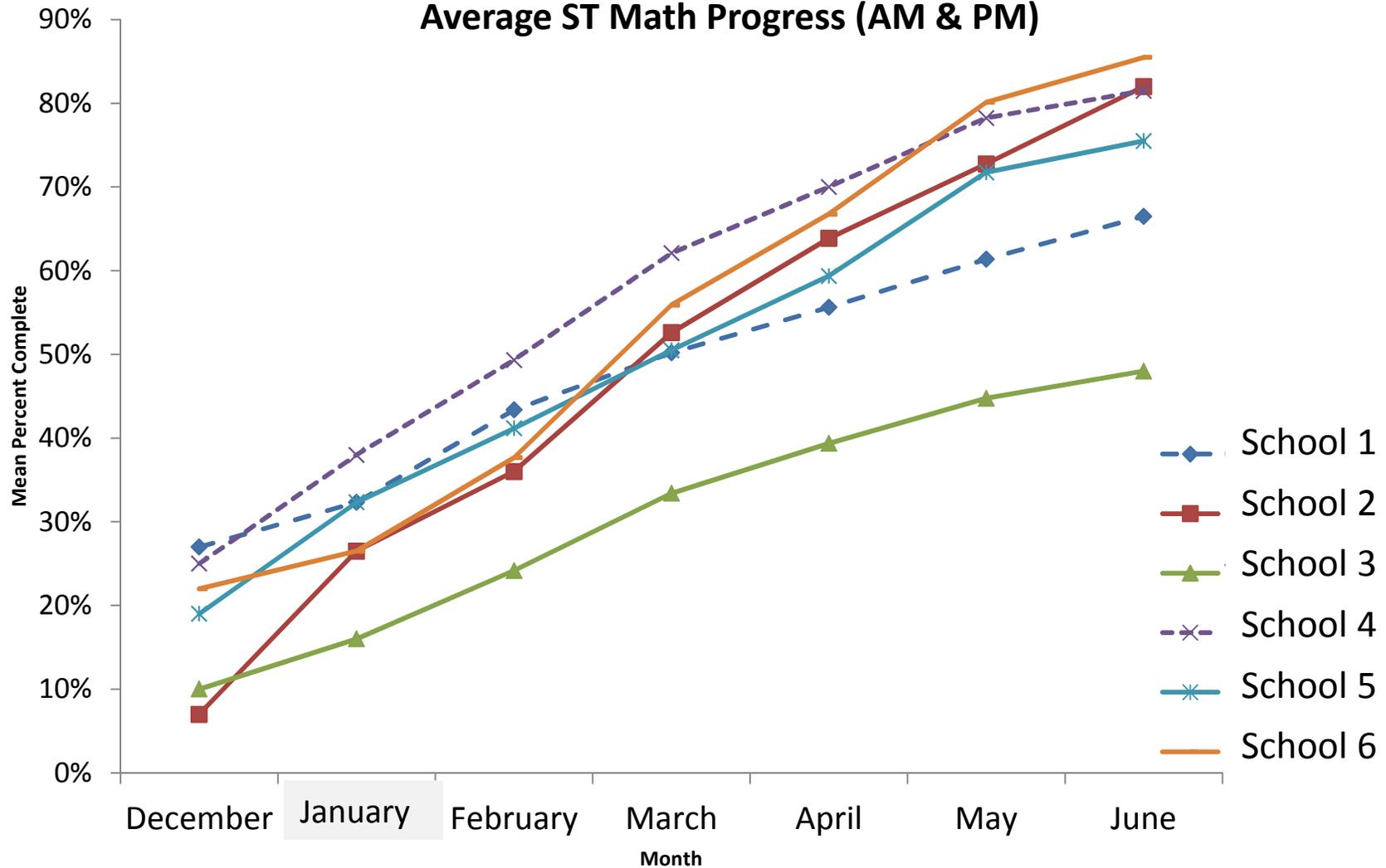


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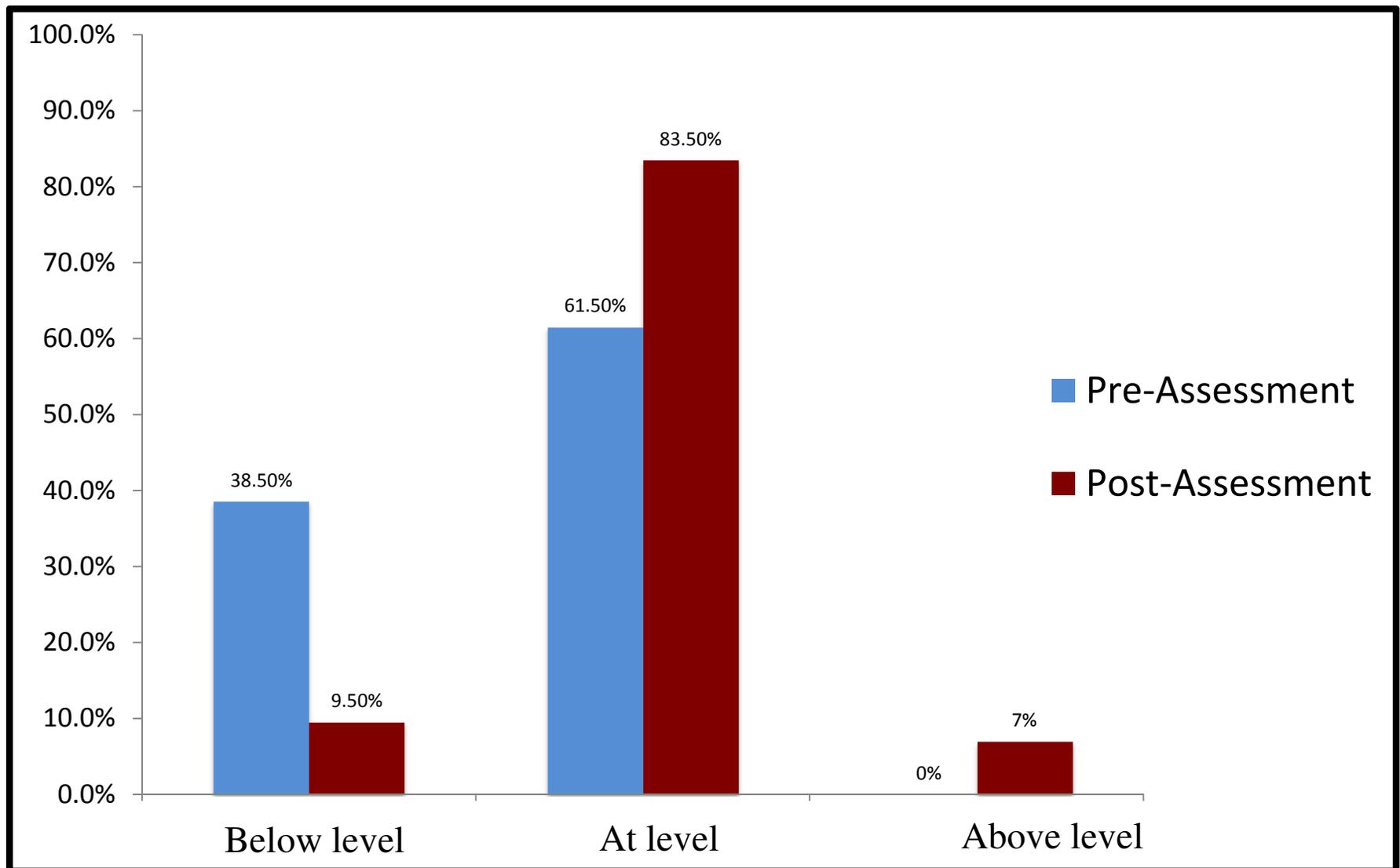
Average Completion of ST Math Software by School 2011-2012

Average ST Math Progress (AM & PM)



2011-2012 Assessment Results

TEAM Math Competency



Current Early Learning Program

Full math curriculum

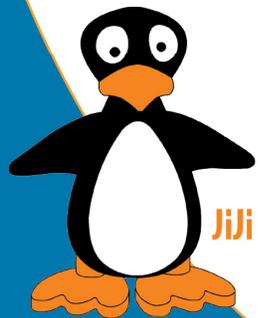
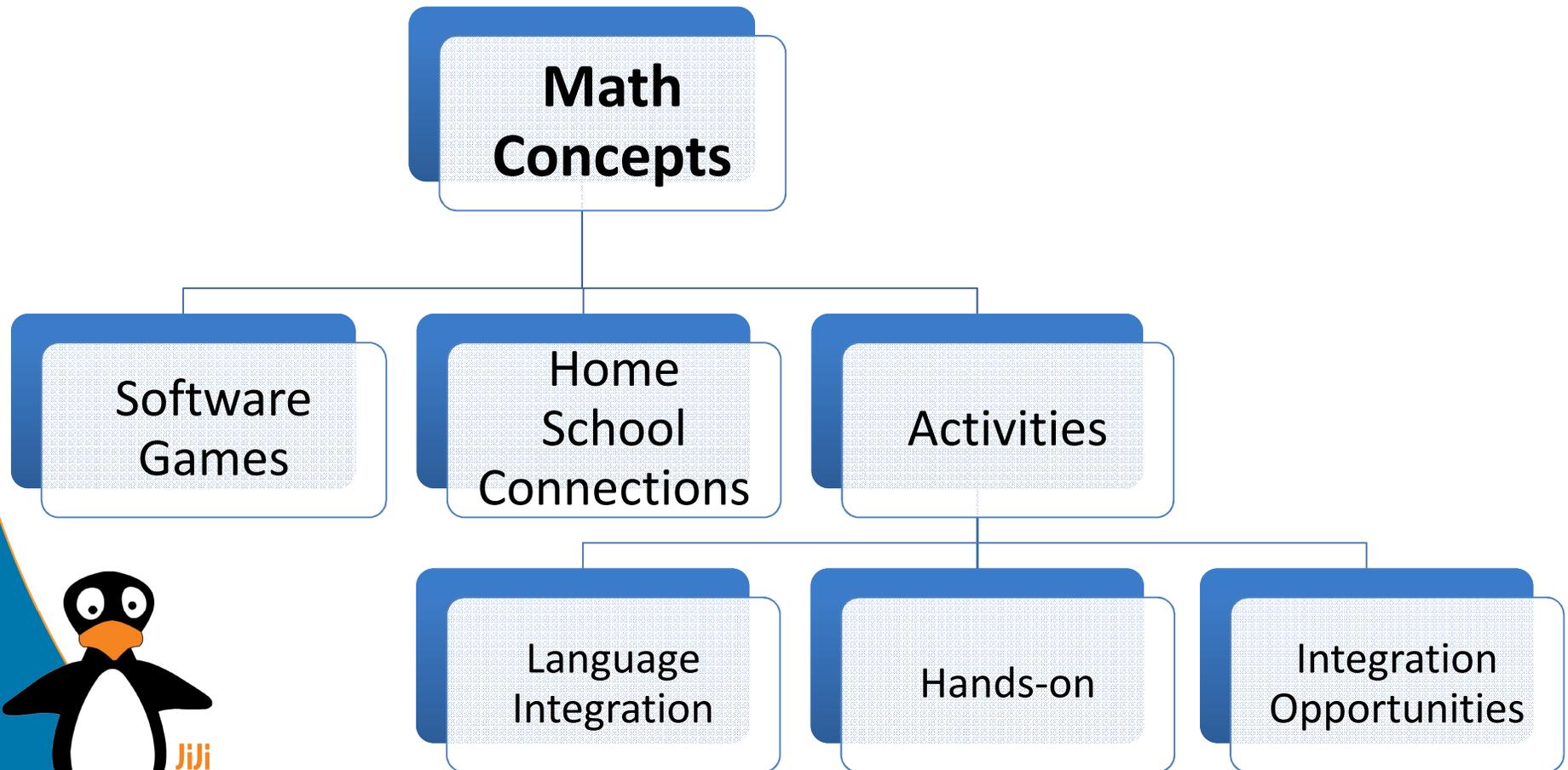


- Increased concept coverage
- Appropriate learning paths
- Step-by-Step Manual
- Math professional development
- Engineered for Touch



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Current Early Learning Program Math Curriculum



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ST Math Early Learning Program

Computer Games	Teacher Directed Activities	Language Integration Activities	Home-School Connection*
 Intro to Pattern Monkey (pg. 61)	Play with AB Patterns (pg. 60)	Chant: Pattern Monkey (pg. 58)	Copycat Patterns (pg. 56-57)
 Pattern Walkway (pg. 63)	Investigate Pattern Units (pg. 62)		





ACTIVITY Play with AB Patterns
Objective: Intro to Patterns

Objectives:

- Children will construct patterns on their own.
- Children will construct a given pattern.
- Children will predict what comes next in the pattern.
- Children will identify the missing repeating elements of a pattern.

Content Areas:

- Algebra and Functions
- Mathematical Reasoning

Directions:

- Gather enough manipulatives so that there are at least three different types of items.
- Explain to the children that they will be making AB patterns.
- Place the manipulatives on the table for children to choose from to create their AB patterns.
- Encourage children to use different manipulatives.

Extensions:

- Create a pattern with one or two repeating elements and identify the missing part.
- Encourage children to identify patterns in the tile, light, tile, light (AB) pattern.

Integration Opportunities for Exploring
Objective: Grid, Sorting and Classifying

Exploration/Work Time:

During this time, children should be encouraged to verbalize the attributes they use to classify to ensure that they connect vocabulary and the concept.

Art Center: Have children sort collage materials such as buttons and beads into different sizes or ask each child to string beads according to different attributes (e.g., one child string only one-colored beads, another string only large beads, and so on). Also, once children are done using the art supplies such as crayons and play dough, have them clean up the center by sorting those materials into the right color containers.

Meal Time:

Have students group their food items according to likes and dislikes, healthy and not healthy, fruit and vegetables, or hot and cold items.

Transitions:

Have children play "rock, paper, scissors" by asking every child to choose one of the items and show it after a countdown ("3, 2, 1. Show me your hand!"). Guide the children into 3 different groups depending on what they chose (rock, paper or scissors). Decide the first group to line up, and which group to line up next.

Outside Time:

Have children sort objects they find in the play yard (e.g., by placing the objects in hula hoops accordingly). Some sorting rules include natural (leaves, rocks etc.) versus man-made (shovel, rubber ball etc.), long versus short, little versus big or soft versus hard.

Materials Provided:

- None

Materials Needed:

- Units cubes

Preparation:

Use at least 8 different variations of an AB pattern unit using two distinguishable colors, such as blue, white and orange, black. Create 4 formal units of each color combination.



units to use." Have children hunt for red, blue units, and connect them into a pattern stick.

Then, ask children to choose one pattern unit of their own. Remind them that to make a pattern stick, they will need to use only pattern units that have the same two colors as the one they chose.

While children hunt for matching pattern units, comment on what they are doing. ("Maria is looking for more blue, white pattern units, to make her pattern stick longer.")

Children may make multiple pattern sticks, as materials allow.

How to break the stick apart, back into pattern units. The pattern unit is blue, white. I need to break the children disassemble the stick into its smallest



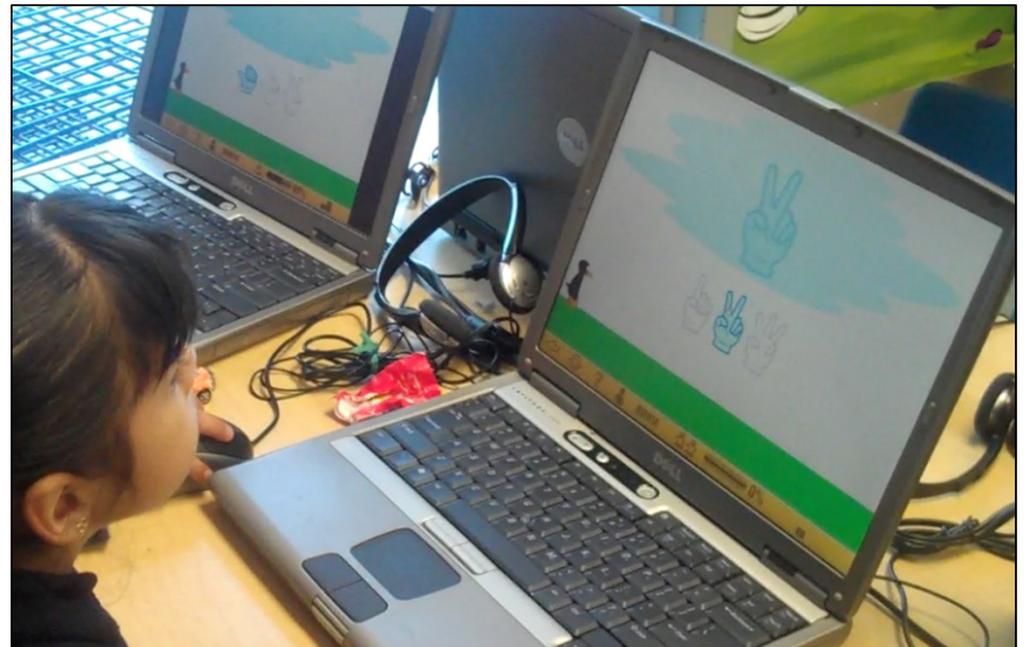
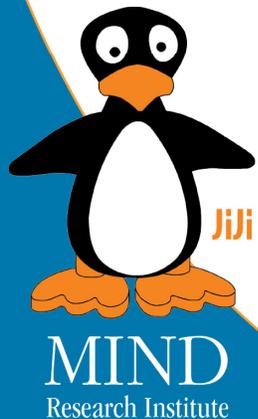


80 | PreK Teacher Manual

Early Learning - Teacher Manual | 63

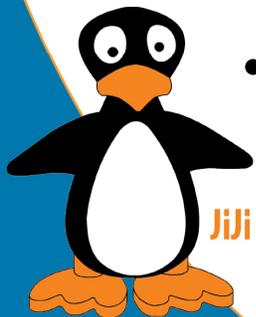
Future Plans; Next Steps

MIND Early Learning Math Initiative: The Foundation for Academic Success



MIND Early Learning Math Initiative 2012-2015

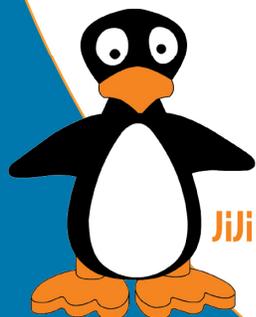
- Expand program to 40 new sites (target of 10 per year)
- Ongoing curriculum and game development
- Expanded professional development
- Complete an outside evaluation of the Initiative



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MIND Early Learning Math Initiative Budget 2012-2015

Program	Start Date	Four Year Program Budget
MIND Early Learning Program	Fall 2012	\$640,000
Education Process Implementation; Professional Development	Fall 2012	\$60,000
Initiative Staffing	2013	\$570,000
Early Learning Program Evaluation	Fall 2013	\$150,000
Program Development	2013	\$95,000
Total		\$1,515,000



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MIND Early Learning Math Initiative

Program Cost per Site

- Start up cost (funded by donors) - \$13,000
- Annual Renewal Fee; \$2,500
 - Sites are responsible for \$500
 - Through philanthropy MIND will cover the additional \$2,000

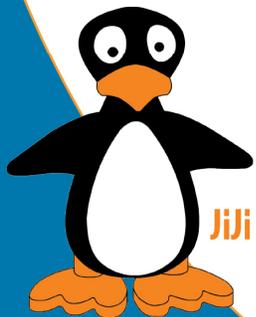


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MIND Early Learning Math Initiative 2012 - 2015

Goals

- 1) Secure funding for additional curriculum, expanded professional development and additional Early Learning sites
- 2) Complete an outside evaluation of the Early Learning Initiative
- 3) Create a sustainable program to pilot in Orange County that can serve as a scalable and replicable model for other areas

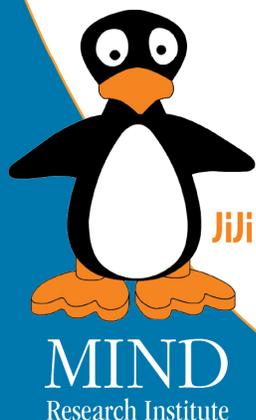


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MIND Early Learning Math Initiative 2012 - 2015 Strategies

Secure funding for additional curriculum, program staffing, expanded professional development and additional Early Learning sites.

- MIND developed the “MIND Early Learning Math Initiative” a 4-year \$1,500,000 campaign to reduce early achievement gaps and prepare Orange County’s pre-kindergarten children for academic success.
- MIND continues to identify and approach individuals, corporations and foundations interested in early learning. To date more than \$500,000 in requests are pending.

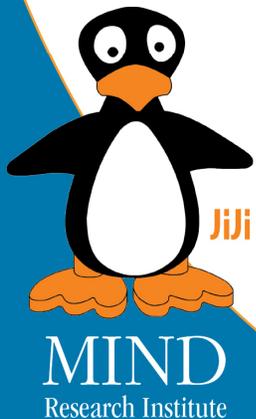


MIND Early Learning Math Initiative 2012 - 2015

Strategies

Secure funding for additional curriculum, program staffing, expanded professional development and additional Early Learning sites.

- Hire an Early Learning Education Support Specialist to support implementing sites
- For Professional development MIND's goal is to identify and create several modalities for delivery of professional development, including online, in person and regional trainings

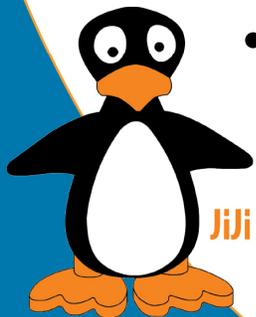


MIND Early Learning Math Initiative 2012 - 2015

Strategies

Complete an outside evaluation of the Early Learning Initiative

- Evaluation is a key component to MIND's ability to continually provide cutting-edge and proven math programs.
- By using an outside evaluation firm, we are assured a rigorous and impartial scientific study of our approach that will be viewed with much more credibility in the education arena.



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MIND Early Learning Math Initiative 2012 - 2015

Strategies

Create a sustainable program to pilot in Orange County that can serve as a scalable and replicable model for other areas.

- Using Orange County as a pilot region, MIND will be working with teachers and MIND's Education Support staff to determine how the program can be made scalable to expand beyond Orange County, while maintaining MIND's high-level of support and success.



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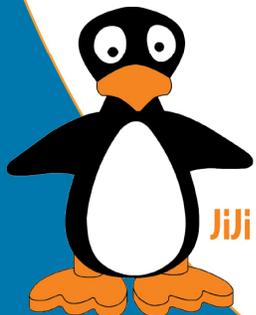
- MIND will work closely with participating teachers for feedback on how to enhance and improve the program.
- Continue to work closely with participating schools and sites – to gain insight and feedback on the program.

MIND Early Learning Math Initiative 2012 - 2015

Strategies

Create a sustainable program to pilot in Orange County that can serve as a scalable and replicable model for other areas.

- MIND is currently discussing implementation of the Early learning Program with areas outside Orange County
- There are several challenges MIND is addressing to ensure the program can be successfully implemented outside Orange County.
- Continue to work closely with participating schools and sites – to gain insight and feedback on the program.



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Special Thanks!



Children's Families
Commissioner's Office
Orange County

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ST Math Early Learning Project Participants

District	School	Year(s) Participated
Santa Ana Unified	Washington Elementary	Spring 2009, Fall 2009, Spring 2010, 2010-2011
	Pio Pico Elementary	Fall 2009, Spring 2010, 2010-2011
	Lowell Elementary	Fall 2009, Spring 2010, 2010-2011
	Davis Elementary	2010-2011
	El Sol Elementary	2010-2011, 2011-2012, 2012-2013
	Garfield Elementary	2010-2011
	Heninger Elementary	2010-2011, 2011-2012, 2012-2013
	Lincoln Elementary	2010-2011
	Madison Elementary	2010-2011
	Martin Elementary	2010-2011, 2011-2012
	Wilson Elementary	2010-2011, 2012-2013
	Warwick Kinder Readiness	2011-2012, 2012-2013
Anaheim City Unified	Gauer Elementary	2010-2011
	Guinn Elementary	2010-2011
	Olive Elementary	2010-2011
	Ross Elementary	2012-2013
	Orange Grove Elementary	2012-2013
	Marshall Elementary	2012-2013
Newport-Mesa Unified	College Park Elementary	2010-2011, 2011-2012, 2012-2013
	Davis Magnet Elementary	2010-2011
Placentia-Yorba Linda Unified	Melrose Elementary	2011-2012, 2012-2013
	Tynes Elementary	2012-2013
	Travis Elementary	2012-2013
	Topaz Elementary	2012-2013
	Rio Vista Elementary	2012-2013
	Mabel Paine Elementary	2012-2013