



**Agenda Item No. 3
February 2, 2011 Meeting**

DATE: January 24, 2011

TO: Children and Families Commission of Orange County

FROM: Michael M. Ruane, Executive Director 

SUBJECT: Early Math Literacy Initiative – Progress Report

SUMMARY:

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 considerable 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. This report outlines the current status of the Commission's investment in the MIND Research Institute Pre-K program for increasing early math literacy among Orange County children.

MIND Research Institute Early Math Literacy Project

One of the Commission's strategies for increasing early math literacy 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, an Orange County based nonprofit organization, has developed interactive math instructional software programs to engage and train students at varying levels of academic and language proficiency. MIND's programs have successfully been used at the kindergarten level in local schools for four years.

Over the last two years, the Commission has implemented and funded a project with MIND to adapt their kindergarten games for preschool, creating a developmentally appropriate approach to teaching mathematics to improve the math proficiency and problem solving skills of pre-kindergarten children. Criteria for development have included that the product needed to be designed to be responsive to the California Preschool Learning Foundations and that an effort needed to be made to garner support from districts to implement a preschool math strategy. An additional requirement was that the project needed to be designed in conjunction with a consultant with Early Childhood Education expertise/math literacy specialization to ensure developmentally appropriate instructional content and professional development components for preschool educators.

The Commission's investment to develop a math program component for preschool aged children; specifically targeting schools in the lower three deciles of California's Academic Performance Index, has been implemented in three phases, as indicated on Attachment 1.

Phases I, II and III of the MIND Pre-Kindergarten Math Literacy Project are now complete. Although it was anticipated that the project would be completed in three phases, there were many lessons learned that

have required both additional technical design and the continued development of enhancements to emphasize teacher training, parent involvement, and home-school connections. In addition, what started out as an adaptation of an existing program is now being developed as a distinct program. A representative from MIND Research Institute will provide a presentation on the project development process at your meeting (Attachment 2).

Next Phase

Upon completing the initial research and development of the project, MIND Research Institute is requesting funding for a fourth phase to refine the math program for the preschool audience. The Commission has made a significant investment in this joint project, and entering a fourth and final phase is recommended. The anticipated budget is in the range of \$250,000 to \$475,000 depending on the project scope. It is further recommended that a contract include language to recognize the Commission's initial investment in the partnership and to ensure that its subsequent distribution recognize this investment either through a formal partnership or a reduction of costs for Orange County school districts. The goal of the start-up investment is to ensure that the Commission could support expansion of the program to Orange County's children in the future. Upon Commission approval, a funding recommendation and term sheet for the fourth phase of the math program with the MIND Research Institute will be presented at the March 2011 meeting.

STRATEGIC PLAN & FISCAL SUMMARY:

The proposed action has been specifically reviewed in relation to the Strategic Plan and is consistent with the Early Learning goal, among others. There is no request for funding related to this agenda.

PRIOR COMMISSION ACTIONS:

- March 2010 - Awarded funding to implement Phase III of the Project
- July 2009 – Awarded funding to implement Phase II of the Project
- November 2008 – Awarded funding to implement Phase I Project
- July 2008 – Received MIND Research Institute's Strategic Funding Plan
- June 2008 – Commission Planning Retreat - Received report on the Innovation Network concept and MIND performance data

RECOMMENDED ACTIONS:

1. Receive Early Math Literacy Initiative update.
2. Provide direction regarding the scope and terms for the next phase of the Math Literacy Project and direct staff to return to the March meeting with a proposed funding action.

ATTACHMENTS:

1. Math Literacy Accomplishments to Date
2. MIND Research Institute Presentation

Contact: Alyce Mastrianni

MIND Research Institute
Math Literacy Project - Accomplishments to Date

Phase I: Initial Pilot

Allocation: \$73,400

Term: 6 months (January 2009 – June 2009)

- Scope: Preliminary adaptation of kindergarten games for preschool, aligning the software games to the California Early Childhood Education Foundations, and pilot use in schools.
- Four interactive computer programs were developed, along with manipulatives (in collaboration with Santa Ana Unified School District) and curriculum was tested with 2 classes of students.
- Students who participated in Phase I of the project exhibited increases in their pre-test to post-test scores in student problem solving and reasoning skills, after one month of program implementation.

Phase II: Development

Allocation: \$115,000

Term: 8 months (July 2009 – February 2010)

- Scope: Based on pilot results, further modify the interactive computer programs aligned with the California Early Childhood Education Foundations, develop new programs and features including a parental education component, and pilot use in schools.
- Data analysis indicated that all three participating sites demonstrated steady progress throughout the program. The majority of students who completed more of the math games scored higher on the post-tests whereas the majority of the students who completed less of the math games scored lower on the post-tests.
- Study observations allowed MIND staff to identify learning barriers and areas in the software that need to be enhanced during Phase III of the project to ensure that the program is age appropriate and accessible for all preschool students regardless of socioeconomic or cultural background.

Phase III: Final Development

Allocation: \$331,600

Term: 12 months (March 2010 – February 2011)

- Scope: Final development software, development of professional training and materials for Pre-K teachers, development of parent education components including translation, conduct final evaluation, and prepare for release.
- Project was implemented at 10 schools within 2 school districts serving high-need populations. Product was made web based.
- A Pre-K friendly log in system was developed to allow implementation in a typical Pre-K classroom.
- Teacher manuals were developed along with student mouse training and strategies for enhanced parent connections.

ST Math for PreK: Project Summary

Need:

- Early math understanding has highest impact on academic achievement
- Currently, few students are getting the foundation they need
- Educational software can greatly improve the situation

Project Outcomes To-date

- Blended preK curriculum with self-paced software and teacher-guided activities
- Complete coverage of Calif. foundations
- Professional development and training materials
- Web-based
- Parent connections

Evaluation Results

- Piloted at 10 schools in 2 districts, among 700 students
- 20%-40% improvements on assessment
- Positive feedback from parents, teachers, students
- More in-depth professional development needed
- Software needs to be more adaptive to different developmental levels of students

Proposed Next Steps

- Materials/tools to better support teachers
- Pilot remainder of new and modified software games
- Incorporate adaptive “engine” to further meet individual learner’s needs

Goals:

- Improve implementation success; teacher content knowledge
- Make program scalable