



The Impact of *Mother Goose Cares About Math and Science* Program 2004 Research Brief

This Research Brief presents selected findings from Year 1, Year 2, and Year 3 RMC Research reports, based on data collected during the 2001—2002, 2002—2003, and 2003—2004 school years.

***Mother Goose Cares About Math and Science* Program**

Mother Goose Cares About Math and Science is a program developed by the Vermont Center for the Book to meet the professional development needs of early childhood professionals. Using reading, conversation, and a multitude of hands-on and other activities, *Mother Goose Cares About Math and Science* is intended to introduce child care providers to literacy, science, and math vocabulary, skills, knowledge, and instructional techniques so that young children can acquire important kindergarten readiness skills. Funded by the National Science Foundation (NSF), this program was targeted to child care providers in rural Vermont and inner-city Philadelphia, Pennsylvania, who worked in either center-based or home-based settings during the period from 2001-2003.

The Study

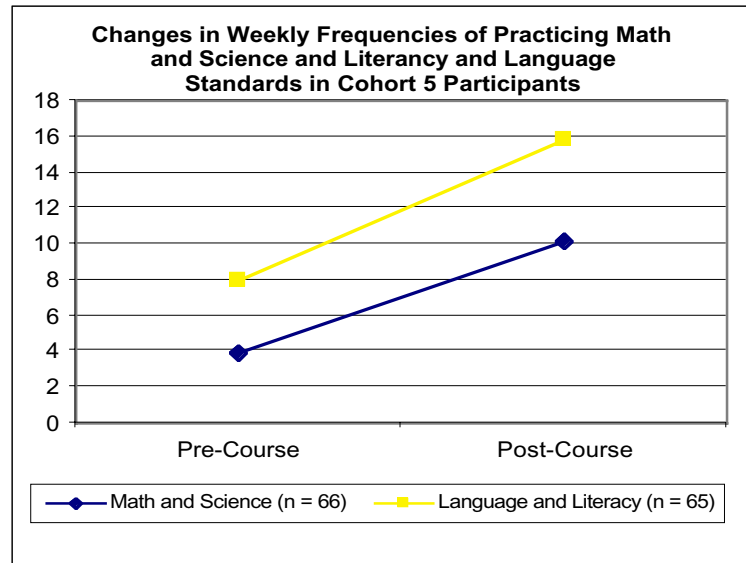
RMC Research conducted an evaluation over a three-year period, exploring the quality and impact of the materials and the training used for professional development. The Year One evaluation examined the short-term impact on the child care providers involved in the program, investigating their acquisition of skills and knowledge during the training sessions and their application of the skills and knowledge to their work during or shortly after participating in the training. The Year Two and Year Three evaluations were targeted at examining retention of knowledge and sustained practice, establishing both short- and long-term impacts of participation in *Mother Goose Cares About Math and Science* on providers and the children they served. Long-term impact refers to the continued implementation over time of those strategies and approaches that providers learned from their participation. The evaluations also included assessments of children to determine whether they were able to demonstrate mastery of some of the math, science, and literacy skills that they were taught by the providers.

Over the course of the project, the Vermont Center for the Book served nearly 600 providers in six cohorts. Over 300 four-year-old children in the care of some of those providers (*Mother Goose* group) and about 200 in the matched comparison group were assessed. Various data analysis techniques, such as chi-square tests, paired samples *t* tests, and repeated measures analysis of variance (RMANOVA), were utilized.

Selected Findings

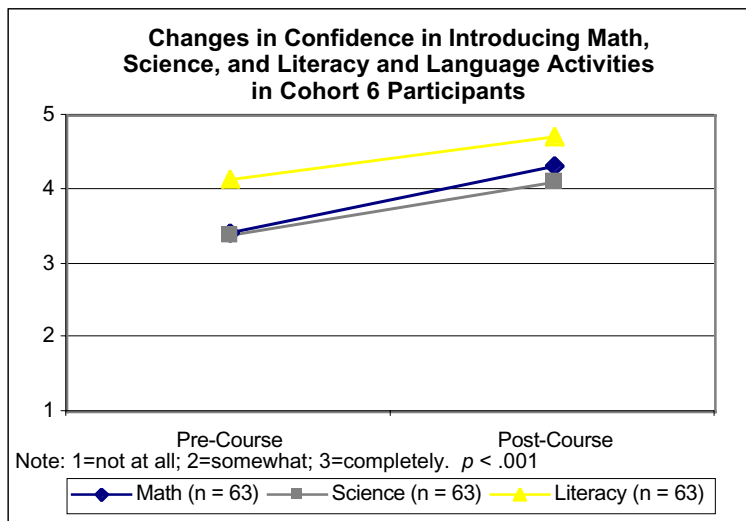
Providers who participated in the *Mother Goose Cares About Math and Science* significantly increased the frequency with which child care providers addressed standards for math, science, literacy, and language in their settings, over time.

Statistically significant differences in providers' average frequency of teaching to math, science, literacy and language standards were found over time for all cohorts after they participated in the training sessions. Providers addressed literacy and language standards more frequently than math and science standards.



Note: Scores were the average number of times providers addressed standards in content areas during five working days. $p < .001$.

Statistically significant differences were found for the average ratings of providers' confidence in introducing math, science, and literacy and language development activities after the training.



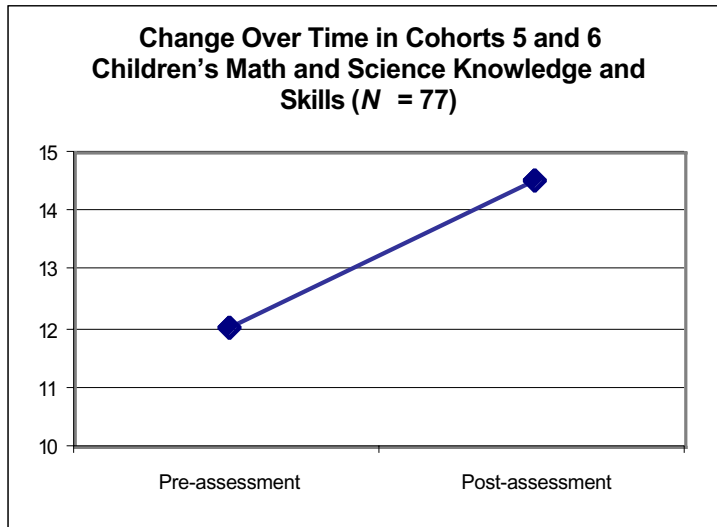
Providers across cohorts reported increased confidence in introducing math, science, and literacy and language development activities after they participated in the training. Providers reported greatest increases in their level of confidence in introducing math and science standards.

Participation in *Mother Goose Cares About Math and Science* changed daily classroom operations and reinforced providers beliefs about how children learn.

I have always read books to the children and encouraged interaction. But now I know that children are hands-on learners and they need to relate to the things they learn in the real world.

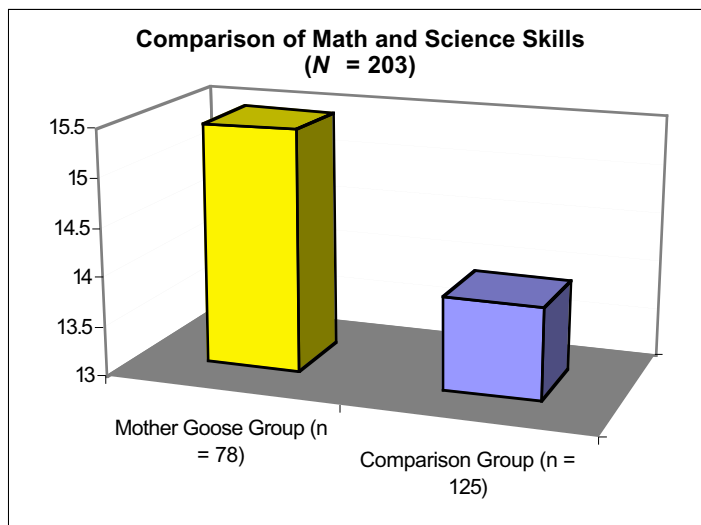
Providers reported conducting more hands-on and enrichment activities, intentional use of vocabulary, linkage of activities with books, and integrated learning. Providers felt that their participation in the training made them more aware of what they should do in daily practice with children.

Children in the care of providers who participated in *Mother Goose Cares About Math and Science*



Science showed a statistically significant gain in math and science knowledge and skills and in literacy and language skills over time. Children from Cohorts 5 and 6 significantly increased their math and science scores over time. Significant change was also detected for the two book handling tasks: why someone's name is on the cover and the term used for the person who writes a book (author).

Note: Scores were calculated by counting the number of tasks successfully completed by a child. Highest possible scores are 22. $p < .001$



Children in the care of providers who participated in the *Mother Goose Cares About Math and Science* training outperformed their peers whose providers did not participate in the training, on math and science knowledge and skills assessments.

Children in the *Mother Goose* group had significantly higher math and science scores than their peers in the comparison group. Girls in both the *Mother Goose* and comparison groups had higher math and science scores than boys.

Note: Math and science scores were calculated by counting the number of tasks successfully completed by a child. Highest possible scores were 24. $p < .05$

Children in the care of providers who participated in the *Mother Goose Cares About Math and Science* training outperformed their peers in the literacy and language tasks. Children in the *Mother Goose* group were more likely to answer correctly the question asking why someone's name was on the cover of the book than their peers in the comparison group. Analyses also revealed statistically significant differences between the *Mother Goose* and the comparison groups in the state of Vermont. *Mother Goose* children in Vermont were more likely to answer the literacy items correctly than their peers in the comparison group. Significant group differences were found in Vermont for identifying the title, why someone's name is on the cover, and the term for the person who writes a book (author). Although both boys and girls in the *Mother Goose* group outperformed their peers in the comparison group, the differences were greater for girls.

Comparison of Answers to the Question Why Someone's Name is on the Cover (N = 203)

	<i>Mother Goose</i> Group	Comparison Group	Total
Correct	26 (33.3%)	22 (17.6%)	48 (94%)
Incorrect	52 (66.7%)	103 (82.4%)	155 (6%)
Total	78	125	203

A profile of children whose providers participated in the *Mother Goose Cares About Math and Science* training showed that providers sustained their learning over time. Children demonstrated higher skills on math and science tasks compared to literacy and language tasks.

Tasks in which children performed best were spatial knowledge tasks. Children were also successful in sorting or identifying shapes or patterns. These same effects were found for children whose providers took the course over two years ago, signifying that the providers continued to implement what they had learned from the course.

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