Learning Math and Loving It
ESSO Family Math
Faculty of Education: Community Outreach Center and Kingston Literacy & Skills
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Introduction

The Early Math Strategy: The Report of the Expert Panel on Early Math in Ontario published by the Ontario Ministry of Education in 2003 emphasized that, “success in mathematics in the early grades is critical. Early mathematics understanding has a profound effect on mathematical proficiency in the later years” (p. 2). The precise means to bring about positive early mathematical experiences is a concern including support from home (Ministry of Education, 2003). Programs, educators and parents who build on children’s inherent curiosity about math through concrete, playful situations can support children’s knowledge and enthusiasm about math learning (Flaget, 1975). Parental attitudes about math impacts the types of math support parents feel able and confident to give their children throughout their elementary school years. Rockcliffe (2001) suggests that parents often lack depth of understanding about their child’s math curriculum and that teachers’ perceive parents as lacking the confidence necessary to help their children learn math. Rockcliffe (2001) recommends that schools engage in strategies that increase parents’ understanding and confidence in math learning.

One way to do this is by hosting events such as family literacy nights. Play-based family literacy programs are events where different community groups, family members and children from different backgrounds come together to engage in learning opportunities that make math meaningful. The purpose of this study was to determine if family involvement in a play-based family literacy program influence the knowledge perceptions of mathematics in the family unit. The following research questions guided the research:

1. How does family involvement in a play-based family literacy program influence parents’/ caregivers’ knowledge of the five strands of the mathematics curriculum?
2. How does family involvement in a play-based family literacy program influence parents’/ caregivers’ knowledge of available mathematics resources?
3. How does family involvement in a play-based family literacy program influence the family unit’s perceptions of mathematics?

Purpose

Methods

This study employs a qualitative research approach to determine how family involvement in the ESSO Family Math program, influences the knowledge and perceptions of mathematics in the family unit. Fifteen families participated in the six family math nights between February 16th and April 5th, 2012. Data was collected from 15 volunteer family units using pre- and post-program interviews, weekly questionnaires and observations of the six family math sessions. The data was analyzed qualitatively using an inductive data analysis procedure which grouped data into broad themes to determine trends in the knowledge and perceptions of the family unit. It is hoped that this research will help inform early childhood educators, teacher candidates and elementary teachers about how they can nurture young children’s math learning by engaging parents meaningfully in their children’s education.

Curriculum

The learning expectations outlined in the Ontario mathematics curriculum curriculum are organized into five major knowledge and skills strands: number sense and numeration, measurement, geometry and spatial sense, patterns and algebra, and data management and probability. To determine if family involvement in a play-based family literacy program influences parents’ and caregivers’ knowledge of the mathematics curriculum, individuals’ thoughts concerning the curriculum before and after the program were compared.

Prior to participating in the ESSO Family math program all of the interview participants indicated that they were not familiar with the Ontario mathematics curriculum. Although a few parents indicated they had seen the five strands on report cards or on the school website, most had never heard of the five strands: “I really don’t know a lot in terms of the curriculum, unfortunately” (P’s pre interview, 19). At the end of each ESSO family math night the facilitators discussed how the night’s activities fit into the five mathematics strands in the Ontario curriculum. Based on observations of the program, comments on the questionnaire, and post interview responses, parents’ and caregivers’ understanding of the curriculum was found to improve. Parents and caregivers were more confident in helping their children with math following the completion of the ESSO family math program.

Results & Discussion

The play-based family literacy program was found to influence parents’ and caregivers’ knowledge of available resources. The participants’ beliefs about what could be used as a mathematical resources was found to expand from store bought books and tools to everyday things found around the home.

Perceptions

To determine if family involvement in a play-based family literacy program influences parents’ and caregivers’ perceptions of mathematics, individuals’ responses before and after the program were compared. Parents’ and caregivers’ perceptions, toward mathematics and their beliefs about teaching and learning mathematics were examined.

Beliefs towards mathematics remained fairly consistent before and after the program. Parents and caregivers suggested that “math is all around” (Questionnaire, Week 3, 24) and that they felt learning mathematics is important. Most of the parents and caregivers who participated in this study explained that they struggled with mathematics as a student. They also expressed traditional beliefs about how mathematics should be taught and learned before participating in the ESSO Family math program. Although it is unclear if these beliefs changed at the end of the program they expressed these beliefs: (1) children cannot think about it (2) they cannot do anything with it. In her post interview It explained, “when they build the houses, they have to picture how the houses will look[,] then it’s more on the fun of it. The whole learning through play rather than just instruction from a teacher” (46). All participants recognized that how mathematics is taught and learned has changed from when they were a child. In some cases the teaching methods were viewed as better but in most cases they were just recognized as different. This study did find that more parents and caregivers were more confident in helping their children with mathematics following the completion of the ESSO family math program.

In conclusion, a play-based family math program was found to positively influence parents’ and caregivers’ perceptions of mathematics teaching and learning.

Future Directions & Acknowledgements

This current research project clearly found that family involvement in a play-based family literacy program influences the knowledge and perceptions of mathematics in the family unit. Future studies may wish to focus on how family involvement in a play-based family literacy program impacts the knowledge and perceptions of the children who participate. Longitudinal studies examining the impact family literacy program such as the ESSO family math program have on student achievement may also be of interest.

Special thanks go to all of the families who participated in this study; Jamie Hill and Anne Jackson (co-facilitators), Kingston Literacy & Skills, Queen’s University Community Outreach Center, Imperial Oil Foundation, Mike Blackburn, Darlene Armer, and the Lennox & Addington Resources for Children for making this project possible. All contributors were more confident in helping their children with mathematics following the completion of the ESSO family math program. It is hoped that this research will help inform early childhood educators, teacher candidates and elementary teachers about how they can nurture young children’s math learning by engaging parents meaningfully in their children’s education.

Resources

Mathematical resources include anything that can support or be used to help children learn mathematics. To determine if family involvement in a play-based family literacy program influences parents’ and caregivers’ knowledge of available resources, individuals’ responses to questions about resources use were compared before and after the program. Prior to participating in the ESSO Family math program, all of the parents and caregivers described using store bought resources such as books, cards and games to help their child/children learn mathematical concepts. “We have the flash cards, math flash cards, books that we have bought at Flour Makers, that we work on as well” (L’s pre interview, 81). Following the completion of the program very few participants discussed using store bought resources. Parents and caregivers expressed the belief that almost anything can be used to help their children learn mathematical concepts. When one parent was asked what resources she would use in the future to help her child, she explained, “I mean you can use anything around the house, I think we have a lot of the materials already to do most of it” (P’s post interview, 42).

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References


