National Financial Educators Council

Financial Literacy Programs and Education for Young Children

This NFEC Brief Summary is based on a comprehensive research paper – *'Financial Literacy Programs Targeted on Pre-School Children: Development and Evaluation'* by Karen Holden, Charles Kalish, Laura Scheinholtz, Deanna Dietrich, and Beatriz Novak at the University of Wisconsin-Madison

Overview:

This report examines the feasibility of teaching financial literacy young children age, based on their cognitive ability to grasp key financial concepts. This report helped to guide the NFECs development of effective curriculum for teaching concepts of personal finance to very young children.

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Library of Congress Cataloging-in-Publication Data
ISBN: 978-0-9797853-2-0

Printed in the United States of America

10 9 8 7 6 5 4 3 2 1

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Brief Summary Published by the National Financial Educators Council

Abstract

This report examines the feasibility of teaching financial literacy to children of young children, based on their cognitive ability to grasp key financial concepts. This brief report summarizes the authors' review of the literature to help guide the development of effective curriculum for teaching concepts of personal finance to children between the ages of three and eight. The goal of subsequent phases of the project is to develop and rigorously evaluate a financial literacy program for preschool to second grade-aged children, a program consistent with children's cognitive development and capability to grasp the basic financial concepts that underlie good financial decision-making.

Section 1: Overview

Why target young children?

The authors focused their investigation on preschool-aged children for several reasons connected to the roots of early childhood education, parental influence, and processes of cognitive development (CUNA, 2005; Habschick et al., 2007). They theorize that financial personal finance concepts must be instilled early in a child's life in order to be adopted and employed effectively as the child moves into adulthood. The authors further recognize a need to identify and agree upon the fundamental financial concepts that, when learned early, serve to strengthen adult financial knowledge and decision-making ability. Thus they argue that placing focus on teaching children about money has value for the following reasons:

1. Money management skills acquired in childhood and habits instilled by parents may be most important to later behavior patterns.

2. Few current financial education programs target preschool children.

3. Since very young children have little personal finance experience, teaching money management concepts (like trade and exchange) may strengthen their knowledge more than enabling institutions and practices.

4. Since very young children do not interact independently with financial institutions and markets, effective curricula to reach them must be fundamentally different than those for adolescents or adults.

5. Young children's understanding of basic personal finance concepts likely is tied closely to cognitive development, so their developmental stage must be considered when designing programs.

6. Since very young children do not attend school, kids financial literacy curriculum must involve parents as teachers and provide content that's attractive to preschools.

Section 2: Cognitive Development and Financial Understanding

This section describes general theoretical approaches to research on cognitive child development, and then reviews the empirical findings regarding children's thinking about personal finance topics. The authors recognize limitations in the available literature, and seek to concentrate on concepts that are both fundamental to financial literacy and important to a child's general education.

General Conceptual Development

The research reviewed here draws from three theoretical approaches: Piaget's cognitive development theory; the *theory-theory* or *socio-cultural* traditions emphasizing the role of experience and learning on children's cognitions; and neuroscientific theory of brain development.

Piaget. Piaget's cognitive development theory says that individuals learn by reconciling inconsistencies in understanding via a process called equilibration. People are in a state of disequilibrium when they don't understand a concept. Children go through four developmental stages as they equilibrate new concepts: sensorimotor, preoperational, concrete operations, and abstract thought. All stages are distinct, consecutive, and mandatory. The stages are briefly characterized as follows:

Sensorimotor: infants up to the age of two learn about the world through sensory interaction.

Preoperational: from ages 2-7, children begin to use and understand language; they tend to experience the world from a selfish perspective where they only understand one feature of a situation or object.

Concrete operational: children aged 7-11 can use multiple dimensions of a problem or situation to reason about the world, as long as the situation is made concrete.

Abstract thought: at around age 12 children begin to reason beyond concrete examples, and can start applying hypothetical, philosophical, and scientific principles to learning about the world.

The guidance for kid's financial education summarized in this report is aimed toward young children who are in the *preoperational* stage.

Theory-Theory/Socio-cultural or Core Knowledge Theory. These traditions challenged Piaget's theory by saying that age or stage matter less than the level at which a child engages with particular theories about the world. Children gain world concepts by modifying theories they create through interaction with objects or situations. Everyone starts with innate core knowledge and then builds individual world theories based on experiences, which are strongly influenced by the person's culture and history. This is especially true in relation to

personal finance topics. Children begin by forming naïve theories about money, and learn to correct and mature those theories by engaging in money practices.

Brain Development. Neuroscience and studies of the developing brain have begun to influence cognitive development theory. Thinking is defined by the central process of neuron connectivity. Learning and memory are affected by rate of *myelinization*—growth of the myelin coating around neurons that improves their connective speed and efficiency. Because the frontal lobes are not fully myelinated until late adolescence, children's executive function is limited, a fact which must be considered when creating kids money management materials.

Development of Number Concepts

The concept of number is important to financial literacy. One must understand basic ideas of more or less, production/consumption, patterns/measurement, and data analysis. Piaget says that children gain symbolic understanding at the preoperational stage, which allows them to represent the amount of a set of objects with a written number. However, preschoolers may still have trouble distinguishing number from mass or volume (Piaget, 1965).

Theory-theorists believe number understanding is primitive and innate (Spelke, 2000; Wynn, 1995), and that children begin to understand counting by about age 2 ½ (Markman, 1989). More mature counting knowledge is gained via encounters with real-world counting situations. In sum, while simple number concepts are innate, those developing appropriate financial curricula for young children should understand the constraints on children's ability to grasp number complexity, and design lessons to help them overcome common childhood misconceptions about number.

Development of Time Concepts

Individuals must have an accurate representation of time—in terms of past, present, and future—in order to understand personal finance for kids. Understanding what "future" means is necessary for delayed gratification, a skill essential to saving money. Since the concept of future is abstract, Piaget believed it was outside young children's understanding. Theory-theory says some sense of time is innate and tied to biological functions; a child's idea of how time works becomes more sophisticated as the child gains time experiences. Brain development theorists tell us that deep understanding of the future does not develop until neuronal growth accelerates much later in a child's life. The future can be made more real by linking it to a concrete image like a birthday or holiday (Friedman, 2000). Thus children's knowledge of the future can be improved by personalizing the concept and relating it to major life events.

Development of Money and Income Concepts

Several key personal finance concepts involve money and income, including the value of bills and coins, money functions, money as storage of value, money sources, and what earning means. Piaget's theory says that preoperational children will find understanding the dimensions of money very difficult, and this has proven true (Strauss, 1952). But theory-theory argues that increased exposure to money and income experiences will improve grasp of the important concepts. Exposing children to money and personal finance transactions should give them greater opportunity to keep facts about money straight in their heads and help them develop a more sophisticated understanding of how income works.

Development of Market and Exchange Concepts

A sound financial education for kids must cover the economic principles of markets and exchange, including topics like prices, supply and demand, profit, competition, debt, credit, barter/trade, cost of borrowing, fees and interest rates, spending, managing money, property ownership, and taxes. According to Piagetian development theory, young children's reasoning is constrained from understanding complex exchange concepts. Theory-theorists like Fiske (1991) propose that young children can be taught the basic exchange principles of communal sharing (considering every member of a category to be equal) and market pricing (goods or services correspond to an appropriate cost). A mock-store simulation might be useful to provide children with exchange experiences and help address misunderstandings about supply, demand, and the role of stores and salespeople in the world.

Development of Choice Concepts

A well-rounded money management for kids program requires a critical set of skills involving choice and decision-making, in order for the individual to comprehend and deal with such concepts as scarcity, opportunity cost, perceived need, thrift, budgeting, and financial risk. Piagetian theory explains that choice is dependent upon the development of self-control, which is difficult for children in the preoperational stage. Young children will be most likely to choose a reward now, regardless of the relative size or desirability of a later reward. Several core knowledge studies have shown that young children can be taught to delay gratification when helped to cope with the delay (Mischel & Moore, 1984; Mischel & Baker, 1975). For example, distracting the child from the immediate desires of the money (by proposing another activity) or focusing the child's attention on the properties of the bill (you might challenge the child to collect a one-dollar, five-dollar, and ten-dollar bill to see the pictures on each) can begin to develop the child's self-control skills faster. Further research has shown that children understand their choices better when they are involved in the process (Horn & Fabes, 1984). Thus children become more apt to save money when they have successfully saved money in the past. Games in which children use savings in response to risk of loss and variation in income have proven

successful in teaching saving behavior. Other tactics include structured parent interviews and analyses of financial education materials (Otto et al., 2006; Sonuga-Barke & Webley, 1993).

According to brain development theory, children around age 3-4 have particular difficulty delaying gratification (i.e. Zelazo et al., 2003). In studies involving simple sorting tasks, young children lacked ability to inhibit the effect of an initial sorting rule in order to apply a second rule. Children of this age may not be able to hold that much information in their memories at one time; or they may be physically incapable of inhibiting attention to the initial rule. When faced with a financial decision, it may be better to draw the child's attention to *why* they think the way they do to help enable their focus on multiple aspects of the choice they must make.

Development of Social Values Concepts

Financial domains were created for the purpose of allowing people to navigate within and across societies. Thus successful learning about personal finances and economics depends upon an understanding of basic social values. Such social concepts as gifts/charity, generosity, public service, and a sense of community play important roles in a child's financial learning.

Most available research addresses older children and financial literacy for students is outside the focus of this report. Piagetian theory accounts for the paucity of research for young children by observing that children under 7 years of age lack cognitive reasoning to understand economic inequalities. In one study (Leahy, 1981) most 6-year-old children described rich versus poor people based on peripheral qualities (like material possessions), while older children and adolescents began to base descriptions on more central qualities (like psychological makeup or thought processes). Theory-theory, on the other hand, says children's understanding of financial inequality is determined by their experiences in the world. Children may encounter life experiences like an inability to get money or to afford a purchase. Yet the child sees that other people are able to get money or to make the same purchase. These experiences offer a forum within which the child learns to reason about inequality in the economic world. Larger social environments including family, religion, culture, and politics offer further explanations of social justice and economic inequality, which may either support or compete with the child's experience.

Gifting practices have been studied among young children, specifically within the context of exchange. Faigenbaum (2005) identified two types of gift exchange relevant to children: *associative reciprocity* (Person A gives Person B something because Person B gave him something in the past, or because Person A hopes Person B will give him something in the future); and *strict reciprocity* (giving to get a good deal based on the exchange value). Preschool children are most likely to operate under associative reciprocity, since exchange value is a difficult concept for young minds to grasp.

Section 3: Conclusions

This review summarizes descriptive studies to date examining children's thinking about financial and economic concepts. This summary is meant to provide a starting point for organizing the descriptive work according to a theory of cognitive development and/or a set of financial literacy principles. Most extant studies have been carried out within a Piagetian framework, which posits that young children operate at an appearance level, can only focus on a single salient feature at a time, and have little understanding of cause and effect. But this framework has not held up under empirical investigation. Young children have proven capable of complex, interactive, and abstract thinking about financial principles. They can appreciate the conditional structure of deals and trades, and can comprehend something about the relations between supply and demand in determining people's willingness to make certain exchanges. At the same time, preschool children are often ignorant about the nature of financial institutions, profit, and income-specific concepts and experiences. In general, children will have deepest understanding of those ideas that have formed important parts of our evolutionary history, or those that have been important features of their own experience.

While Piagetian and core knowledge theory differ in many respects, they also share commonalities. Piaget thoughts allows current researches to conclude that to effectively teach kids about money it must connect to existing cognitive structures; core knowledge theorists hold that effective education relates to existing theories or models. Both schools of thought emphasize that children are active learners who filter new information to fit with their current beliefs. From their review of the current literature, the authors suggest two sets of "core" structure that both constrain and advance young children's thinking about personal finance: exchange and value, and executive function.

Exchange and Value. Children begin engaging in transactions involving exchange of resources at a very early age. In the first year or so, parents give the child food. During the toddler and preschool years, transactions may become conditional (i.e., parents give the child a reward for certain behavior). Caretakers may give a child positive attention for acting in a certain way.

Research on children's concept of exchange has been limited. Fiske's work on the grammars of social organization forms the clearest picture of cognitive models describing economic activity like exchange and value. Financial literacy programs for young children might usefully translate Fiske's three basic models—Communal Sharing, Authority Ranking, and Equality Matching—into the financial concept of Market Pricing.

Financial literacy for kids involves being able to separate the concepts of financial value and social factors (like niceness and fairness) and to reason about them independently. The authors' research has indicated that children may not clearly distinguish ownership from other

sorts of attachments to property. Teaching sophisticated ownership and finance concepts may depend on refining pre-existing exchange and value models to focus only on certain aspects of those phenomena. Children may be very challenged to divorce financial considerations from their social and emotional aspects. When designing programs, it's important to remember that there is no such thing as purely financial behavior—all financial actions have emotional components. Interventions to change financial behavior should capitalize on behavioral motivations like enjoyment, ritual, mastery, and parental modeling. Financial literacy education should help children reflect on their financial practices to grasp the underlying financial issues driving their behavior.

Executive Function. Planning and executive function is the second core concept for financial literacy education advocated by these authors. Successful functioning and development, including school readiness and success, have been tied to executive function (e.g. Riggs et al., 2006). Efforts to improve executive function in early childhood should draw upon available research programs (e.g. Meltzer, 2007).

The challenge to helping preschool children develop executive function is that it may involve asking children to do things they're not designed to do. Our current society places planning and future-orientation demands on children that are unprecedented in our culture's evolution. That is, in modern Western society, young children are being asked to act as independent economic agents in ways they never have before. This unnaturalness has implications for developing financial literacy education. First, teaching children financial skills may be very difficult. Second, there may be substantial individual differences in the development of executive function, so different programs may be required to address variability among children. Third, it has been suggested that acquiring executive function skills may not be fun or enjoyable for children. While practicing and mastering certain skills (e.g. language, social cognition) can be intrinsically rewarding, other skills (e.g. advanced math, reading) may not be intrinsically rewarding, so a fair amount of social coercion may be required to encourage advanced development. We should be sensitive to the fact that the demands of modern adult society may not match well with children's natural developmental processes.

In sum, the authors hope this review will support financial education programs that are based on core developmental issues and sensitive to the lack of fit between core/intuitive ideas and modern societal demands. The psychological literature identifies elements of a financial literacy program for young children based on their ability to understand certain concepts. The other piece of the puzzle is determining what we want them to know and be able to do. Why we want to teach given aspects of financial literacy is not a psychological question alone; we should analyze children's financial environments and the adult capacities we want them to gain in order to identify appropriate educational programs.

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