

Economic Literacy Among Primary-Grade Students*

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Abstract

Curricular reforms that emphasize instruction of basic economic concepts have affected several generations of primary-grade students. To evaluate the degree to which primary-grade students have been gaining economic literacy, this study highlights the key achievements in efforts to add economics to the curriculum and to assess young students' understanding of basic economic concepts. The study also examines current strategies to teach economic concepts, and it reviews a large body of children's literature for economics-related content. We argue that even after most states began to mandate economics curricula for every grade level beginning with kindergarten, surprisingly little attention has been paid to the suitability of these mandated concepts in the primary grades of elementary school. Our review of children's literature makes clear that there is no shortage of opportunities to learn about economics through reading. We identified close to two hundred picture books and easy readers that have an economics-related theme as their principal focus.

I. Introduction

Curricular reforms that emphasize instruction of economic concepts have affected several generations of elementary-school students. Beginning in the late 1950s with the New Social Science reform movement, traditional social science programs in elementary schools were replaced by more sophisticated curricula that emphasized basic economic concepts. More recently, the ferment over learning standards in American schools has provided further opportunity to press for the inclusion of economics in the K-12 curriculum. Because of the standards movement, even elementary-school teachers face considerable pressure to teach economic content that is based upon state requirements and often linked to school accreditation and funding. Increasingly crowded curricula are a common issue, and many teachers feel they are too busy or ill-equipped to teach economics. For example, Conrad (1998: 167) quotes an elementary school teacher as saying: “Everyone keeps adding to what we’re supposed to teach. I spend most of my time just teaching children how to read and add. I don’t have time to teach them economics.”

As most states have added economics to their state-mandated curricula already in the primary grades—commonly defined as kindergarten up through third or fourth grade—teaching strategies have needed to change. In turn, assessing how well young students actually understand economic concepts has gained increasing importance over time. To evaluate the degree to which primary-grade students have been gaining economic literacy in the past fifty years, this study uses a three-step approach. First, we highlight the key achievements in historical efforts to add economics to the curriculum and to assess young students’ understanding of basic economic concepts. Next, the study identifies the economic principles and skills to which primary-grade students are currently exposed as a result of national and state-level standards, and we discuss important debates in current

assessment efforts. Finally, we examine current strategies to teach these concepts and we review a large body of children's literature for economics-related content.

Our findings indicate that significant innovations in economics instruction at the primary-grade level occurred in the 1950s and 1960s as a result of the efforts by educational reformers to introduce economics to the curriculum. A large body of research has examined the teaching and learning of economics in elementary school, with the overwhelming finding that students in elementary school are fully capable of understanding a variety of economic concepts. However, even after most states began to mandate economics curricula for every grade level, surprisingly little attention has been paid to the suitability of these mandated concepts in the primary grades of elementary school. Instrumentation problems in assessing young children's learning of economics help to explain this lack of evidence. We do know that primary-grade students can gain a direct understanding of basic economic principles if teachers use literature with economic content as their principal device for teaching children how to read. Using such an approach, teachers are then simultaneously teaching their students to read and empowering their students to understand economics. This idea is supported by the current trend among numerous states to link their English standards to required readings with topics in social sciences, including economics. Our review of children's literature makes clear that there is no shortage of opportunities to learn about economics through reading. We identified close to two hundred picture books and easy readers that have an economics-related theme as their principal focus.¹

I. Assessment of Economic Understanding: Historical Precedents

For any subject area in the elementary school curriculum, care must be taken in presenting material to young children so that they are challenged but not overwhelmed. This cautionary note

is particularly true of a discipline such as economics. Indeed, the U.S. economy itself is often perceived as an abstraction. But young children, as a function of everyday life, are already familiar with some basic economic concepts before they enter school. Hence they arrive at the primary grades ready to learn economics. Assessment efforts dating back to the 1950s have attempted to better understand just what techniques should be used to teach economics most effectively to these young students.

What do children know? K. Danziger was among the first researchers to study children's earliest conceptions of economic relationships. Danziger conducted his research within a Piagetian framework, in which knowledge acquisition is a process whereby each person constructs meaning for him/herself through direct interaction with the immediate environment. Piaget formulated age-related stages of cognitive development through which children typically progress. Every child new to a field of knowledge, like economics, goes through developmental stages that begin with simple concrete actions and proceed to complex operations (Furth and Wachs, 1975). Using these stages as a reference point, Danziger (1958) interviewed 41 Australian children divided into two age groups: one of children ages five to seven and one of eight-year-olds. The interview questions dealt with the meaning of rich and poor, the uses of money, and the position of the "boss" at work.

The children's answers suggested a development sequence, with a statistically significant difference between the responses of the two groups. The younger children gave simplistic, non-relational responses to the questions, whereas the eight-year olds' more sophisticated replies showed evidence of beginning notions of capital accumulation. Children understood that there are multiple ways to acquire and increase wealth, and they showed an emerging understanding of exchange based on reciprocity. Danziger hypothesized the following four stages in the development of economic

understanding: first, the child lacks economic categories of thought; second, the child's conception of reality is grounded on particular actions that are explained by moral or personal choices; third, the child is able to conceptualize some economic relationships characterized by reciprocity; and fourth, the child can conceptualize a system of economic relationships (pp. 239-240).

Also in this line of work, Berti and Bombi (1988) conducted a series of studies on the child's construction of economics. Approximately a thousand Italian children between the ages of three and fourteen years were interviewed individually. The standardized questions dealt with work and payment for work, the source of money, the source of goods and commercial exchanges, and the means of production and their ownership. Based on their results, Berti and Bombi created a development synthesis that parallels Piaget's stages of cognitive development, with the first three stages of relevance to children in the primary grades. Stage one (ages 3 to 6) represents conceptions of the preoperational period, and knowledge is restricted to first-hand experiences. For example, children know that shops are places to obtain things, but the reason why people pay for what they buy is unclear. Although children recognize money, they do not know its proper function. Stage two (ages 6 to 7) represents conceptions of the intuitive level. The relation between work and wealth is forming during this stage. Although children can discriminate the values of different types of money, they are not yet able to understand the function of "change" in buying and selling. They also do not connect goods in shops with industry. The last relevant stage (ages 7 to 10) represents conceptions of the concrete operational period. During this stage, buying and selling is no longer restricted to the physical exchange of objects in shops, and children can differentiate between shopkeeper and producer. They recognize hierarchy in which the "boss" is also the owner of buildings and tools. However, they do not understand that the price of goods is based on the costs

of production, including labor, nor do they understand that the money which workers are paid is derived from the sale of goods and services produced by their work.

Can children learn? Before the 1960s, young students were exposed to economic ideas indirectly through social studies lessons, which tended to focus on history, civics, geography, and traditions. Subsequently, the New Social Science reform movement attempted to replace traditional elementary social studies programs with more sophisticated curricula that emphasized the development of basic concepts in one or more of the social science disciplines. The most prominent benchmark curriculum in economics at the primary level was “Our Working World,” developed in the late 1950s by Lawrence Senesh.² In addition to teaching economics through the use of textbooks, Senesh also stressed the use of children’s literature as a vehicle for illustrating economic concepts. He argued that basic concepts can indeed be taught to young children through simple stories, often related to practical issues in the routine life of a child. He used stories specifically written for economics lessons as opposed to general children’s literature. Children’s stories recorded on phonograph records served as vehicles through which pupils discovered economic concepts, and illustrations for the recorded lessons were contained in a pupil book.³ By the late 1960s, economics instruction began to have a formal and more substantial place in the primary-grade curriculum as a result of efforts by reformers such as Senesh.

At the time of their development, it was assumed that discipline-based programs such as Senesh’s would provide a fascinating and meaningful experience for children. Hence the development of valid and reliable evaluative instruments to document children’s success with the material became a major concern for program designers. Shaver and Larkins (1966, 1967) were among the first researchers to suggest ways to adapt text format and procedures to assess young

children's economic knowledge. They developed an economics achievement test for young children that consisted of matched-pair items. This approach involved writing a reversed item for each concept tested, with the words "YES" and "NO" appearing next to each statement. Both statements must be answered correctly for either to be counted. According to the researchers, the matched-pairs format compensated for the tendency of young children to respond affirmatively to statements even if they do not know the answer. Shaver and Larkins used the matched-pairs test in experimental studies that examined the economic understanding of first-grade students taught with Senesh's program, compared to control groups that did not experience the program. They reported a significant difference in test scores in favor of the experimental groups. Drawing on this new line of work, Davison and Kilgore (1971) developed "The Primary Test of Economic Understandings" using the same matched-pairs format.⁴ Test results demonstrated that primary-grade students formally exposed to economic concepts could indeed understand them.

Some argue that since the reforms of the 1950s through the early 1970s, economics intervention at the primary-grade level has been less significant. For example, in his comprehensive history and assessment of social studies, Jenness (1990) fails to identify even a single economic education program for young children beyond that stemming from Senesh's work. Rather than introduce economics into the curriculum, curricular changes in subsequent decades focused on conceptualizing economic ideas into formal content standards. The next section explores these curricular reforms and efforts to assess the validity of the standards for the primary grades.

III. Content Standards: Development and Assessment

Development of content standards. The initial efforts by educational reformers to introduce economics to the curriculum led to efforts in subsequent decades to develop a formal and cohesive

set of content standards. These efforts have been led by the National Council on Economic Education (formerly the Joint Council on Economic Education), which over the past 50 years has developed and promoted a host of economic courses, programs, and infusion efforts. The Council's DEEP program (Developmental Economic Education Program) involves economics councils in all 50 states, providing curriculum guidance, materials, networking, and summer workshops. This program also involves close to 300 campus-based centers providing in-service training and help with testing and assessment. Millions of students have been reached by these initiatives.

During the 1970s and 1980s, coinciding with the U.S. reform movement toward a standards-based system of education, the Council formulated a voluntary national curriculum commonly known as the *Master Curriculum Guide*.⁵ Until the mid-1990s, economics standards at the national level were represented by this voluntary set of concepts. Most recently, the Goals 2000 Educate America Act of 1994 mandated the development of standards in nine core subject areas, including economics. A coalition of organizations in economics and in education, including the Council, was assembled to write content standards for teaching economics in the primary and secondary grades. The new standards, published as the *Voluntary National Content Standards in Economics* (NCEE 1997), consist of 20 essential principles in economics that students should understand, accompanied by a statement about how students can use this knowledge. Each standard also includes a set of benchmarks (for grades 4, 8, and 12) that elaborate on the key principle in an increasingly sophisticated fashion. The voluntary standards in economics and selected benchmarks for the primary grades are reproduced in the Appendix. The new standards differ from the earlier conceptualization of economics standards in the *Master Curriculum Guide* with the focus on principles rather than concepts (Hansen, 1998).

By the year 2000, almost all states (48) included economics among their state-mandated curricula. As shown in Table 1, which reports the incidence across the U.S. in economics standards and testing, this number increased rather sharply from 38 states just two years earlier. Since 1998, about a third of all states have required that schools offer an economics course, and about a quarter of states have required students to enroll in an economics course. Because students in four of these states alone—California, Texas, New York, and Florida—account for one third of all students enrolled in public high schools, the proportion of all U.S. students covered by these requirements is even higher. More than half of all states require student testing in economics, with four additional states in the process of developing tests (NCEE 2003a). Finally, of the 48 states with economics standards, almost all have standards for every grade level beginning with kindergarten.

Assessment issues. A large number of studies at the elementary school level indicate that young children have the ability to learn economics. These studies cover topics falling into a range of categories, including students' overall learning of economics, learning outcomes following student exposure to certain curricular materials, student learning of particular concepts, the effectiveness of different teaching strategies, and children's cognitive development.⁶ This body of research has taught us that children can understand economic concepts at an early age; a variety of effective approaches to teaching economics have been developed; and students' achievements and attitudes often improve following teacher training programs in economics. Yet even after most states began to mandate economics curricula for every grade level, little attention has been paid to the suitability of these mandated concepts in the primary grades.⁷

An exception is Sosin, Dick, and Reiser (1997), who use an approach based on education production functions for grades three through six to test students' understanding of particular

economics concepts by grade level.⁸ Results show that students could understand a variety of ideas in economics, ranging from basic concepts such as scarcity and opportunity costs to more sophisticated concepts such as competition and unemployment. The authors conclude that it is not too soon to start teaching economics in the third grade, leaving open the question about suitability of economics standards for kindergarten through second grade. What we do know is that K-12 teachers and administrators generally agree with the scope of the concepts specified in the Council's *Master Curriculum Guide*. Survey results in Watts (1987) indicate that teachers and administrators agreed that students were capable of learning the concepts and it was practical to teach the concepts. Teachers trained in economics responded that particular concepts could be taught at significantly earlier grades compared to teachers not trained in economics, and this difference in responses was largest for the basic concepts at the elementary school level.

An explanation for the lack of empirical studies on students' understanding of economics concepts at the primary-grade level is the surprising absence of assessment materials. One of the most commonly cited instruments for assessing student learning of economics in elementary school is the *Basic Economics Test* (Walstad and Robson, 1990), yet this test is aimed toward the fifth and sixth grades, not the primary grades. Few sophisticated assessments are underway in the early elementary grades beyond assessments of state-mandated curricula. As an example of the concepts that are being tested and how students perform, Table 2 provides recent economics test scores for one school district in Virginia. Third grade students in Virginia take five Standards of Learning (SOL) tests, one of which covers history and social science. Of this test, about one quarter of the questions cover economic concepts. Students record the highest scores on questions asking them to identify an occupation and a basic need, but they have more difficulty with questions on economic

specialization and technological change.

One of the problems of assessing children's learning of economics is instrumentation. It is difficult to develop appropriate subject matter tests for young children. The traditional paper-pencil, multiple-choice format used in state and national testing programs is unsatisfactory because of the limited reading ability of primary-grade pupils, leading to a strong correlation for primary-grade students between test scores and reading abilities. Another consideration is the maturity and attention span of this age group. Testing programs at the primary-grade level are quite limited now because of rules restricting researchers in the classroom; schools focus on the required standards, with very little other testing allowed. Despite these restrictions on testing, discussions are underway at the state and national levels to develop new assessment tools in economics and conduct testing at the primary level using these tools. For example, numerous states are conducting assessments to measure the impact of their Council on Economic Education training programs in local schools, and the U.S. Department of Education has been developing a sweeping economics assessment at the national level, scheduled for the year 2006.

In trying to simplify the standards and make strictly defined categories for the youngest students, the standards often generate unnecessary confusion. For example, in numerous states, primary-grade students must be able to differentiate between wants and needs. Yet it serves no clear purpose for students to make this distinction, since wants and needs often involve considerable overlap. Another commonality is for states to define buyers and sellers for very young students, and then to upgrade the language to consumer and producer for older students. This switch in terms is unnecessary and confusing. Many states also stress the concept of money, but young students need a good developmental sense of value in order to understand money. Primary-grade students confuse

the size and quantity of coins with their value, preferring, for example, to take eight pennies or a nickel instead of a dime. Similarly, experimental evidence shows that young students are more likely to risk losing a dime than risk losing a nickel or a quarter (Krause and Harbaugh 1999). This result cannot be explained by economic theory but can be explained by coin size.

Primary-grade students have less trouble identifying the types of skills that people need in order to perform different jobs. They understand the concept of work and are familiar with the notion of different kinds of occupations. Yet the task is more difficult for occupations that require primarily mental skills rather than physical skills. To support this argument, we conducted a simple evaluation of 67 kindergarten students in which they engaged in a discussion about the occupations that people choose and the skills required for these occupations. Following the discussion they filled out a picture-based survey showing the pictures of 18 different occupations that had been illustrated and discussed, half of which involved primarily physical skills and concrete objects, while the other half involved primarily mental skills and abstract concepts. When asked to choose which occupation the students could identify with the most, the vast majority (about 85%) of students chose occupations based primarily on physical skills—such as firefighter, deep sea diver, and ballet dancer—rather than occupations based primarily on mental skills—such as scientist, stockbroker, and designer. This proportion did not vary by gender of the students.

IV. Economics Instruction in the Primary Years

The use of children's literature for describing economic ideas to young people dates back to when children's books were first being published. In particular, children's stories written by Maria Edgeworth in the early nineteenth century contained a rich set of economic themes. Her work became a benchmark for evaluating subsequent publications in children's literature and in economics

education (Henderson 1995). Furthermore, Senesh's argument about using simple stories to teach basic economic concepts to young children has retained its validity over time and underlies the current predominance of using children's literature to teach economics in the primary grades.

Economics in children's literature. In an effort to determine the accessibility of economics within the genre of children's literature, we conducted a comprehensive review of children's picture books and easy readers for their economic content.⁹ Our search produced a list of about 200 books that embrace economic themes. A selected number of these books, arranged by economic concept, are shown in Table 3, and the complete list of titles is available online.¹⁰ This list should provide a useful reference to primary-grade instructors, parents, and professional economists who are interested in improving the economic literacy of their students and children through the act of reading. Overall, these reading materials teach a full range of economic concepts in a clear and interesting fashion. The majority of books cover the relatively simple economic concepts that are expressed in the early benchmarks for the voluntary national standards. For instance, the popular Berenstain Bear series by Stan and Jan Berenstain includes *Mama's New Job* about Mother Bear's decision to return to work (Standard 13); *Mad, Mad, Mad Toy Craze* about a fad in the goods market (Standard 7), and *Trouble with Pets* about the added benefits and costs from caring for a new pet (Standard 2). In another popular series by Marc Brown, *Arthur's Pet Business* describes an entrepreneurial endeavor (Standard 14), and *Arthur's TV Trouble* highlights the persuasiveness of television commercials to shape wants (Standard 1). Several classic books, such as Virginia Burton's *Mike Mulligan and His Steam Shovel* and *The Little House* illustrate the theme of economic development and technological change (Standard 15). Young students learn from these texts how living standards have changed and how new machinery can improve worker productivity.

A number of children's books also cover economic themes that are quite sophisticated and beyond those actually mandated in state curricula. For example, Doreen Cronin's *Click Clack Moo: Cows That Type* tells the story of a barn full of cows who learn to type and use their new skills to demand improved working conditions. The book teaches children about collective bargaining and going on strike without actually using the terminology. Similarly, Robin Tzannes's *Sanji and the Baker* teaches children about positive externalities, without actually using the term, through the story of a baker who unsuccessfully tries to receive payment from a boy who enjoys smelling the aromas that drift out of the bakery. The ending revolves around the baker's enjoyment from hearing the sound of clinking money. Kimiko Kajikawa's *Yoshi's Feast* plays on a similar idea but includes negative externalities from the smell of cooking the stinkiest fish in Japan. Both of these books on externalities add cultural content by using a foreign setting, yielding additional benefits for children's learning. In a final example, *Beatrice's Goat* by Page McBrier, with an epilogue by Hillary Rodham Clinton, portrays the story of a young African girl whose family receives a goat donated by a foreign aid program. The girl sells the goat's milk and saves enough money to buy a school uniform and books so that she can enroll in school. Not only does this picture book teach concepts found in the early benchmarks, such as natural resource (Standard 1) and money (Standard 11), but it also presents more complex lessons about contrasting standards of living for children in a poor country and the impact of a nonprofit organization that donates livestock and training.

Teaching strategies. Children's literature with economic content has become an important component of current strategies to teach economics in the primary years. A common approach is for teachers to integrate books with economic content into classroom time devoted primarily to reading aloud to children or to reading instruction, with a relatively short discussion of the main economic

ideas. Children enjoy stories, so teaching economics within a literature framework can add to student motivation. The visual images and text work together to help students conceptualize how economics operates in the world around them. In this approach it is critical that teachers highlight the economics lesson to their students; otherwise, students just enjoy the story and miss the point. For example, teachers could introduce *Mike Mulligan and His Steam Shovel* as follows: “Boys and girls, while you listen to the story, think about what the capital resource is in the story. Remember, capital resources are goods made by people to produce other goods and services.” As another example, Rosemary Wells’s *Bunny Money* presents a humorous story of two young bunnies that have problems differentiating between wants and needs. Before reading the story, a teacher could say: “Max has all sorts of problems choosing between wants and needs. What is an example of a want? A need? As I read *Bunny Money* to you, think about Max’s wants and needs.” Closely related, a teacher could introduce *Arthur’s TV Trouble* with the following: “Have you ever wanted something you saw advertised on TV? When you got the thing you wanted, was it just what you expected? In this story, Arthur learns a lesson about his wants.”

Alternatively, teachers can structure an extensive, comprehensive economics lesson based on children’s literature and active learning techniques. Educational materials for teachers that link economics and children’s literature are now widely available in print and online at the state and national level.¹¹ Such lesson plans often combine reading aloud with a wide range of active learning techniques to teach economics. Two examples are presented in Table 4, which summarizes the lessons plans for teaching economic concepts found in *Mama is a Miner* by George Ella Lyon and *Abuela’s Weave* by Omar Castañeda. Both lessons involve an introduction by the teacher emphasizing the new concepts, a warm-up activity, time to read the book aloud, a class activity and

discussion time, and a conclusion. Unlike the first approach, these lessons can take a full hour, with the possibility of additional suggested projects that can be completed at home or at school.

When teachers integrate read-aloud time with activities, children observe economics at work in their reading materials, and they experience economics at work in their learning activities. The benefits of active learning techniques are well documented, with findings that such teaching devices motivate student participation, improve the understanding of reading material, and increase class enjoyment.¹² Involvement in economics-related activities introduces students to experiences beyond what could be gained by the relatively more passive act of reading and discussing. Observing how children respond to these activities can also give teachers and researchers a better idea of the degree to which students are internalizing or using economic concepts in their everyday lives.

Reading aloud to children. The reading materials chosen by primary-grade teachers overlap with the reading materials chosen by parents who read aloud to their children at home, and even the materials chosen by preschool teachers who read aloud to their students. As shown in Figure 1, a large and growing share of the nation's children participate in preschool reading activities. In 2001, 84 percent of preschool children aged 3 to 5 had a family member read to them at least three times a week, up from 78% in 1993. Children in households with more educated mothers have a greater likelihood of being read to at home. Among children whose mother had graduate school training, 96% engaged in at-home reading activities, compared to 69% of children whose mother had less than a high school degree. However, the frequency of reading at home has increased across the board since 1993, regardless of mothers' educational attainment.

The benefits of reading aloud to young children are well documented. For example, Zuckerman and Kahn (2000) cite evidence from the National Commission on Reading that the act

of reading aloud to children is the most significant determinant of the development of children's literacy skills. Studies of child development are shifting their focus on the determinant of children's literacy skills away from the formal teaching of reading and writing skills in the primary grades, toward the more informal reading aloud of picture books by parents to their children (Whitehurst and Lonigan 1998, Whitehurst *et al.* 1988). Leibowitz (1974) finds that parental investments in reading to children, telling stories, and teaching writing have a positive and statistically significant effect on young children's human capital as measured by IQ. The study finds a positive relationship between time input by parents and children's ability using a direct measure of children's home education. Leibowitz (1977) further argues that time investments by parents in their children are positively related to verbal development of children. Reading by parents to children appears to be the most important activity for promoting children's verbal skills.

Not only does reading to children help them to become better readers, it also improves school performance (Snow, Burns, and Griffin 1998). The early development of reading skills also affects labor market outcomes. For example, Currie and Thomas (1999) find that test scores measured at age 7 are a significant predictor of future educational attainment, wages, and employment. Test scores reflect a number of factors, including cognitive ability and the ability to concentrate, both of which are influenced by investments that parents make in reading to their children. In related work, Lynch (2000) argues that encouraging parents to invest in the human capital of their children by reading to them at home contributes to the skill development that students need to succeed in the labor market. Because the act of reading to young children yields well-documented benefits, the content of the reading materials that parents choose makes a difference. When they choose economics-related children's books, parents are effectively setting the stage for their children to learn

basic economic concepts and better understand the lessons that will be taught at school.

V. Conclusion

The economic lessons that young students learn in their early education form the building blocks toward achieving a solid understanding of economics at higher levels of educational attainment. Young students in the primary-grade levels—kindergarten through third or fourth grade—are already gaining a rich exposure to a wide variety of ideas in economics, and they are gaining the skills to apply this new knowledge. The principles taught at a level appropriate for primary-grade students are crucial for a basic understanding of the economic world around them. Early instruction at the primary-grade level in key economic principles can help bolster the understanding of economics for all secondary school students. This argument takes on added significance given that more than half of all high school graduates never take a formal economics class (Walstad 2001).

Decades of research in economics, education, and early childhood development have shown that young children enter the primary grades with an experience-based knowledge of economics, and they are quite capable of learning basic economics during the primary grades. Broad-based economic literacy among primary-grade students improved with the introduction of economics to the curriculum beginning in the late 1950s. Students have also been affected by the long-term efforts of the National Council on Economic Education to devise formal content standards in economics, train teachers, and create and disseminate teaching materials. Yet more research is needed on children's increasing sophistication in understanding the economic concepts currently mandated in the primary grades in almost all states. Interventions to test student understanding would provide invaluable information on whether there is an optimal way to organize the conceptual information

by age groups when devising economics standards by grade levels. It is clear from our review that young people are gaining economic literacy when they are being read to, even before entering kindergarten, and when they learn to read themselves in the primary grades. A large volume of children's literature is providing young students with a rich exposure to basic economic concepts. Motivated by the adage that a good story helps students to remember key points, primary-grade teachers are using picture books and easy readers with economic content as their primary vehicle for teaching economics.

References

- Berti, Anna, and Anna Bombi. 1988. *The child's construction of economics*. New York: Cambridge University Press.
- Conrad, Cecelia. 1998. National standards or economic imperialism? *Journal of Economic Education* 29 (2): 167-169.
- Currie, Janet and Duncan Thomas. 1999. Early test scores, socioeconomic status and future outcomes. National Bureau of Economic Research working paper no. 6943.
- Danziger, K. 1958. Children's earliest conceptions of economic relationships (Australia). *Journal of Social Psychology* 47: 231-240.
- Davison, Donald and John Kilgore. 1971. *Primary test of economic understanding: Examiner's manual*. Iowa City, IA: The University of Iowa.
- Furth, Hans and Harry Wachs. 1975. *Thinking goes to school: Piaget's theory in practice*. New York: Oxford University Press.
- Gilliard, June. 1988. *Economics: What and when?* New York: National Council on Economic Education.
- Hansen, W. Lee. 1998. Principles-based standards: On the voluntary national content standards in economics. *Journal of Economic Education* 29 (2): 150-6.
- _____. 1977. *A framework for teaching economics: Basic concepts*. New York: National Council on Economic Education.
- Henderson, Willie. 1995. *Economics as literature*. London: Routledge.
- Jenness, David. 1990. *Making sense of social studies*. New York: Macmillan Publishing
- Krause, Kate, and William Harbaugh. 1999. Economic experiments that you can perform at home

- on your children. University of New Mexico working paper.
- Krueger, Alan. 1997. Experimental estimates of education production functions. *Quarterly Journal of Economics* 114 (2): 497-532.
- Leibowitz, Arleen. 1977. Parental inputs and children's achievement. *Journal of Human Resources* 12 (2): 242-251.
- _____. 1974. Home investment in children. *Journal of Political Economy* 82 (2): S111-S131.
- Lynch, Lisa. 2000. Trends in and consequences of investments in children. In Sheldon Danziger and Jane Waldfogel, eds., *Securing the future: Investing in children from birth to college*. 19-46. New York, Russell Sage Foundation.
- National Council on Economic Education (NCEE). 2003a. Survey of the states: Economic and personal finance education in our nation's schools in 2002. Mimeo. New York: NCEE.
- _____. 2003b. *Teaching economics using children's literature*. New York: NCEE.
- _____. 1997. *Voluntary national content standards in economics*. New York: NCEE.
- Robeson, Patricia, and Barbara Yingling. 2003. Economics and geography lessons for 32 children's books. Online at www.mcps.k12.md.us/curriculum/socialstd/Econ_Geog.html. Montgomery County, MD: Montgomery County Public Schools.
- Salemi, Michael. 2002. An illustrated case for active learning. *Southern Economic Journal* 68 (3): 721-31.
- Saunders, Phillip *et al.* 1984 and 1993. *A framework for teaching the basic concepts: Master curriculum guide in economics*. New York: National Council on Economic Education.
- Saunders, Phillip and June Gilliard. 1995. *A framework for teaching basic economic concepts, with*

- scope and sequence guidelines, K-12*. New York: National Council on Economic Education.
- Schug, M., and William Walstad. 1991. Teaching and learning economics. In James Shaver, ed., *Handbook of research on social studies teaching and learning*. 411-419. New York, MacMillan.
- Senesh, Lawrence. 1973. *Our working world*. Chicago: Science Research Associates.
- Shaver, James, and Guy Larkins. 1967. Matched-pair scoring technique used on a first-grade yes-no type economics achievement test. Accession No. ED029699.
- _____. 1966. SRA economics materials in grades one and two. Evaluation Reports. Accession No. ED029700.
- Shepard, Aaron. 2000. *The business of writing for children*. Los Angeles, Shepard Publications.
- Snow, Catherine, M. Susan Burns, and Peg Griffin (eds.). 1998. *Preventing reading difficulties in young children*. Washington, DC: National Academy Press.
- Soper, John, and William Walstad. 1991. Economic knowledge in junior high and elementary schools. In William Walstad and John Soper, eds., *Effective economic education in the schools*. 117-36. Washington, DC: National Education Association and Joint Council on Economic Education.
- Sosin, Kim, James Dick, and Mary Lynn Reiser. 1997. Determinants of achievement of economics concepts by elementary school students. *Journal of Economic Education* 28 (2): 100-121.
- SPEC Publishers. 1993. *Economics and Children's Literature*. Ballwin, MO: SPEC Publishers.
- U.S. Department of Education, National Center for Education Statistics. 2003. *The condition of education 2003*. Washington, DC: U.S. Government Printing Office.
- Virginia Department of Education. 2001. Student performance by question. *Virginia: Standards*

- of learning assessment*. Richmond, VA: Virginia Department of Education.
- Walstad, William. 2001. Economic education in U.S. high schools. *Journal of Economic Perspectives* 15 (3): 195-210.
- Walstad, William, and Denise Robson. *Basic economics test (second edition)*. New York: National Council on Economic Education.
- Watts, Michael. 1998. Using Literature and drama in undergraduate economics courses. In William Becker and Michael Watts, eds., *Teaching economics to undergraduates: Alternatives to chalk and talk*. 185-207. Cheltenham, UK: Edward Elgar.
- _____. 1987. Survey data on precollege scope-and sequence issues in economics. *Journal of Economic Education* 18 (1): 71-91.
- Watts, Michael, and Robert Smith. 1989. Economics in literature and drama. *Journal of Economic Education* 20 (3): 291-307.
- Whitehurst, Grover, *et al.* 1988. Accelerating language development through picture book reading. *Developmental Psychology* 24: 552-59.
- Whitehurst, Grover, and Christopher Lonigan. 1998. Child development and emergent literacy. *Child Development* 69 (3): 848-872.
- Zuckerman, Barry, and Robert Kahn. 2000. Pathways to early child health and development. In Sheldon Danziger and Jane Waldfogel, eds., *Securing the future: Investing in children from birth to college*. 87-121. New York, Russell Sage Foundation.

TABLE 1: Economics Standards Across the United States, 1998-2002.

	<i>Number of States in</i>		
	<i>1998</i>	<i>2000</i>	<i>2002</i>
Include economics in standards	38	48	48
Require economics standards to be implemented	28	36	34
Require that schools offer economics	16	16	17
Require enrollment in an economics course	13	13	14
Require student testing in economics	25	22	27

Source: National Council on Economic Education (2003).

TABLE 2: Sample Economics Test Results for Third Grade Students, 2001.

<i>Question Topic</i>	<i>% of Students Correct</i>
Identify an occupation from a given description.	93
Recognize a basic economic need.	87
Identify an effect of limited resources.	58
Select an example of a human resource.	67
Use an example to identify the concept of credit.	57
Use an example to identify economic specialization.	49
Demonstrate an understanding of opportunity cost.	73
Distinguish between a good and a service.	69
Recognize the process of paying by check.	72
Identify efforts to improve communications.	43

Note: Results are at the school-division level.

Source: Virginia Department of Education (2001).

TABLE 3: “Top Five” List of Children’s Books for Selected Economic Concepts

<i>Concept</i>	<i>Title</i>	<i>Author</i>	<i>Publisher</i>	<i>Year</i>
Barter	<i>Bearhide and Crow</i>	Johnson, Paul	Holiday House	2000
	<i>New Coat For Anna, A</i>	Ziefert, Harriet	Alfred A. Knoph	1986
	<i>One Fine Day</i>	Hogrogian, Nonny	Alladin Paperbacks	1971
	<i>Rosie's Birthday Present</i>	Moskin, Marietta	Athenum	1981
	<i>Saturday Sonocho</i>	Torres, Leyla	Farrar Straus	1995
Entrepreneurs	<i>Berenstain Bears and Mama's New Job</i>	Berenstain, Stan & Jan	Random House	1984
	<i>Chicken Sunday</i>	Polacco, Patricia	Philomel Books	1992
	<i>This Is a Good Place for a Hot Dog Stand</i>	Salzberg, Barney	Hyperion	1995
	<i>Uncle Jed's Barber Shop</i>	Mitchell, Margaree	Simon & Schuster	1993
	<i>Wonderful Pigs of Jillian Jiggs</i>	Gilman, Phoebe	Scholastic	1988
Goods/Services	<i>Arthur's Pet Business</i>	Brown, Marc	Little, Brown & Co.	1990
	<i>Helga's Dowry</i>	dePaola, Tomie	Harcourt Brace	1977
	<i>On Market Street</i>	Lobel, Arnold & Anita	Scholastic	1981
	<i>Strega Nona Meets Her Match</i>	dePaola, Tomie	G.P. Putnam & Sons	1993
	<i>What Do People Do All Day?</i>	Scarry, Richard	Random House	1968
Human Capital	<i>Bea and Mr. Jones</i>	Schwartz, Amy	Bradburry Press	1982
	<i>Curious George Takes a Job</i>	Rey, H. A.	Houghton Mifflin	1947
	<i>Little Nino's Pizzeria</i>	Barbour, Karen	Harcourt Brace	1987
	<i>Mr. Bear's Chair</i>	Graham, Thomas	Unicorn Paperback	1991
	<i>Music, Music for Everyone</i>	Williams, Vera	Greenwillow	1984
Interdependence	<i>Bananas, From Manolo to Margie</i>	Ancona, George	Clarion Books	1982
	<i>How to Make an Apple Pie and See the World</i>	Priceman, Marion	Alfred A. Knoph	1994
	<i>Pancakes, Pancakes</i>	Carle, Eric	Picture Book Studio	1990
	<i>Paper Crane, The</i>	Bang, Molly	Picture Book Studio	1985
	<i>What If?</i>	Benjamin & Chapmin	Little Tiger Press	1996
Money/Banking	<i>If You Made a Million</i>	Schwartz, David M.	Lee & Sheppart	1989
	<i>Monster Money Book</i>	Leedy, Loreen	Holiday House	1992
	<i>Owen Foote, Money Man</i>	Greene, Stephanie	Clarion Books	2000
	<i>Pigs Will Be Pigs</i>	Axelrod, Amy	Simon & Schuster	1994
	<i>Round and Round the Money Goes</i>	Berger, Melvin & Gilda	Ideals Children's Bk	1993
Natural Resources	<i>Beatrice's Goat</i>	McBrier, Page	Atheneum	2000
	<i>Giving Tree, The</i>	Silverstein, Shel	Harper & Row	1964
	<i>Goat in the Rug, The</i>	Blood, Charles & Link	Four Winds Press	1976
	<i>Magic School Bus at the Waterworks</i>	Cole, Joanna	Scholastic	1986
	<i>Milk Makers, The</i>	Gibbons, Gail	Macmillan	1985

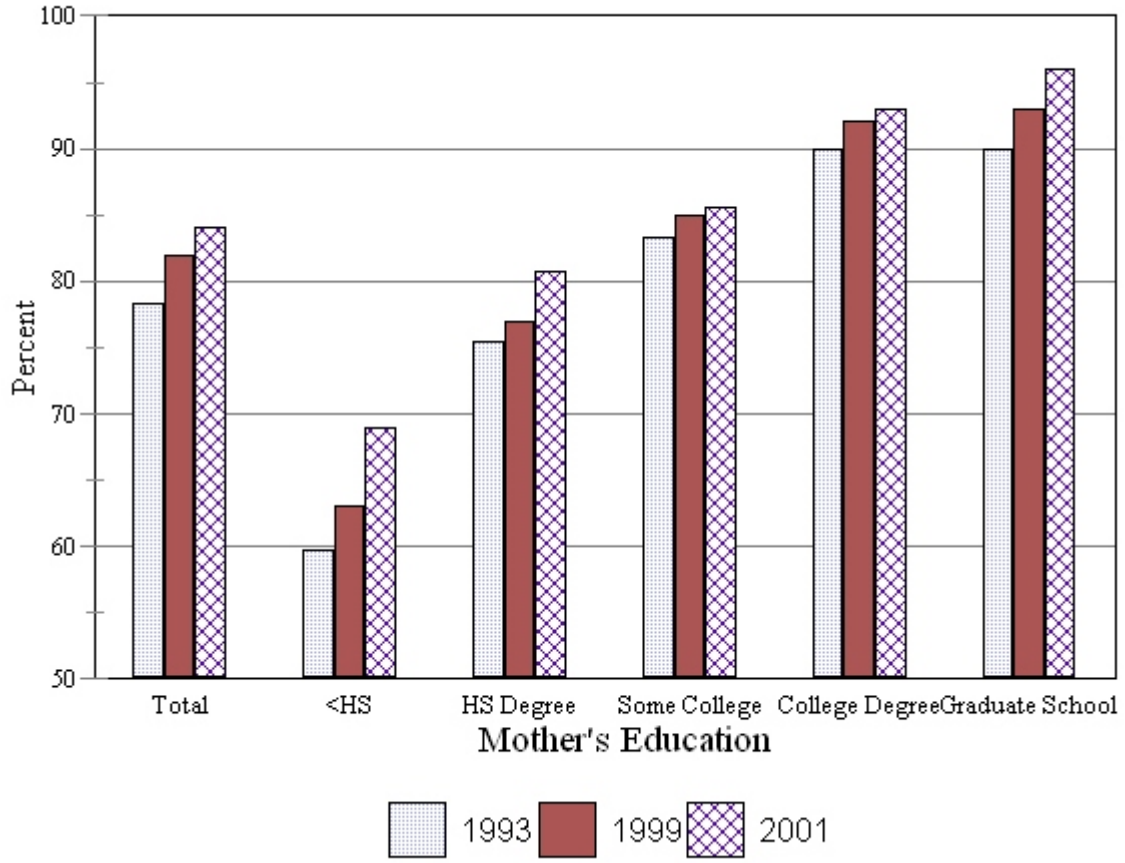
Opportunity Cost	<i>Alexander Who Used to Be Rich Last Sunday</i>	Viorst, Judith	Atheneum	1978	
	<i>For Rent</i>	Martin, Charles E.	Greenwillow	1986	
	<i>I Remember Papa</i>	Ketteman, Helen	Dial	1998	
	<i>Mama Is a Miner</i>	Lyon, George Ella	Orchard Books	1994	
Physical Capital	<i>Something From Nothing</i>	Gilman, Phoebe	Scholastic	1993	
	<i>From Graphite to Pencil</i>	Mitgutsch, Ali	Carolrhoda Books	1985	
	<i>How Is a Crayon Made?</i>	Charles, Oz	Simon & Schuster	1988	
	<i>Mike Mulligan and His Steam Shovel</i>	Burton, Virginia Lee	Houghton Mifflin	1931	
	<i>Up Goes the Skyscraper</i>	Gibbons, Gail	Macmillan	1986	
Producers/Consumers	<i>Where Jeans Come From</i>	Floyd, Luch	MCP	1996	
	<i>Hungry Farmer</i>	Nechaev, Michelle	CTP	1998	
	<i>Lemonade Stand</i>	Vaughan, Marcia	Grosset & Dunlap	1999	
	<i>Mr. Cookie Baker</i>	Wellington, Monica	Dutton Children's	1992	
	<i>Ox-Cart Man</i>	Hall, Donald	Viking Press	1979	
Savings	<i>Saturday Market</i>	Grossman, Patricia	Lothrop, Lee, Shepar	1994	
	<i>Chair For My Mother, A</i>	Williams, Vera	Mulberry Books	1982	
	<i>My Rows and Piles of Coins</i>	Mollel, Tololwa	Greenwillow	1999	
	<i>Something Special for Me</i>	Williams, Vera	Greenwillow Books	1983	
	<i>Summer Business</i>	Martin, Charles	Greenwillow	1984	
Scarcity	<i>Willie Wins</i>	Gilles, Almira	Lee & Low Books	2001	
	<i>Abuela's Weave</i>	Castañeda, Omar	Lee & Low Books	1993	
	<i>Doorbell Rang, The</i>	Hutchins, Pat	Scholastic	1987	
	<i>Little House, The</i>	Burton, Virginia Lee	Houghton Mifflin	1942	
	<i>Lorax, The</i>	Seuss, Dr.	Random House	1971	
Wants/Needs	<i>Mitten, The</i>	Brett, Jan	Scholastic	1989	
	<i>Arthur's TV Trouble</i>	Brown, Marc	Little, Brown & Co.	1995	
	<i>Bunny Money</i>	Wells, Rosemary	Dial	1997	
	<i>City Mouse and the Country Mouse, The</i>	Aesop	various	var.	
	<i>Getting Through Thursday</i>	Cooper, Melrose	Lee & Low Books	1998	
Other	<i>If You Give a Mouse a Cookie</i>	Numeroff, Laura Joffe	Scholastic	1985	
	Economics terms	<i>How to Turn Lemons Into Money</i>	Armstrong, Louise	Harcourt Brace	1976
	Externalities	<i>Sanji and the Baker</i>	Tzannes & Paul	Oxford University	1963
	Externalities	<i>Yoshi's Feast</i>	Kajikawa, Kimiko	Dorling Kindersley	2000
	Incentives	<i>How the Second Grade Got \$8205.50 to Visit....</i>	Zimelman, Nathan	Albert Whitman	1992
Strikes	<i>Click, Clack, Moo Cows That Type</i>	Cronin, Doreen	Simon & Schuster	2000	

TABLE 4: Sample Lesson Plans Using Two Children’s Books to Teach Economic Concepts

	<i>Mama is a Miner</i>	<i>Abuela’s Weave</i>
<i>Book summary</i>	This book by George Ella Lyon describes the experience of a young child whose mother works in a coal mine. The reader learns about the mines, the tools, and the costs and benefits for the family that come with holding a job as miner.	This story by Omar Castañeda describes how a young Guatemalan girl and her grandmother create some new weavings. They sell them at a market in which the demand for handmade tapestries and clothing is relatively high.
<i>Concepts</i>	Opportunity cost, production, resources	Scarcity, supply and demand, production
<i>Objectives for students</i>	<ol style="list-style-type: none"> 1) Identify various jobs involved in coal mining. 2) Identify the capital resources used in mining. 3) Discuss how technology has affected people’s lives. 	<ol style="list-style-type: none"> 1) Compare the goods made by local artisans with goods produced in factories 2) Identify the pros/cons of each production type.
<i>Warm-up activity</i>	<u>Simulation.</u> Teacher makes a simulated coal mine in the classroom using clothesline rope and a blanket to create a dark tunnel. Students pretend to be miners crawling on their hands and knees with a flashlight to find coal.	<u>Show and Tell.</u> Teacher holds up a sample mass-produced good and a similar item that is handmade, introduces new vocabulary while describing the items, and explains the difference in production methods.
<i>Lesson steps</i>	<ol style="list-style-type: none"> 1) Read the book aloud. 2) Have students complete a worksheet about the jobs of coal mine workers. 3) Have students respond to verbal questions, such as what are the gains and losses from mama’s job as coal miner. 4) Ask students to draw small pictures of 8 capital resources found in the book (such as pick, shovel, mantrip car). 5) Go back through the story to identify examples of technology and discuss how technology in mining has changed over time. 6) Have students talk or write about why they would like to be a coal miner, and why they would not like to be a coal miner. 	<ol style="list-style-type: none"> 1) Read the book aloud. 2) Divide the class into groups of 4 students, with half the groups roleplaying artisans and half the groups roleplaying workers on an assembly line. 3) In the artisan groups, each student draws or paints a picture of a person and decorates the picture freely. In the assembly-line groups, the first “worker” draws the head, the next worker draws the torso, and so forth. The assembly line repeats the process 3 more times, and each worker draws the same part the same way. 4) Have students discuss which finished products reflect more variety and what are the pros/cons of each production method. 5) Have students discuss why the handmade goods in the story sold so well at the market and why people were willing to pay a higher price for them.
<i>Conclusion</i>	Review the economic concepts and help students understand that technological changes can make life easier but can also involve costs for people or for the environment.	Review the economic concepts and use the terms in subsequent discussions of classroom supplies, time, and space.

Source: Condensed from Robeson and Yingling (2003).

FIGURE 1. Share of Preschool Children Who Are Read to at Home at Least Three Times a Week.



Source: U.S. Department of Education (2003).

APPENDIX: The Voluntary National Economics Content Standards and Selected Primary-Level Concepts

<i>No.</i>	<i>Standard</i>	<i>Selected Concepts</i>
1	Productive resources are limited. Therefore, people can not have all the goods and services they want; as a result, they must choose some things and give up others.	Scarcity, opportunity cost, wants, resources, goods and services.
2	Effective decision making requires comparing the additional costs of alternatives with the additional benefits. Most choices involve doing a little more or a little less of something: few choices are "all or nothing" decisions.	Choice, costs and benefits, opportunity cost.
3	Different methods can be used to allocate goods and services. People acting individually or collectively through government, must choose which methods to use to allocate different kinds of goods and services.	Prices, contests, sharing.
4	People respond predictably to positive and negative incentives.	Rewards, penalties.
5	Voluntary exchange occurs only when all participating parties expect to gain. This is true for trade among individuals or organizations within a nation, and usually among individuals or organizations in different nations.	Barter, trade, goods and services.
6	When individuals, regions, and nations specialize in what they can produce at the lowest cost and then trade with others, both production and consumption increase.	Specialization, division of labor, productivity, interdependence.
7	Markets exist when buyers and sellers interact. This interaction determines market prices and thereby allocates scarce goods and services.	Markets, prices, producers and consumers.
8	Prices send signals and provide incentives to buyers and sellers. When supply or demand changes, market prices adjust, affecting incentives.	Prices, producers and consumers, incentives.
9	Competition among sellers lowers costs and prices, and encourages producers to produce more of what consumers are willing and able to buy. Competition among buyers increases prices and allocates goods and services to those people who are willing and able to pay the most for them.	Competition, prices, quality.
10	Institutions evolve in market economies to help individuals and groups accomplish their goals. Banks, labor unions, corporations, legal systems, and not-for-profit organizations are examples of important institutions. A different kind of institution, clearly defined and enforced property rights, is essential to a market economy.	Banking, saving, borrowing, interest.
11	Money makes it easier to trade, borrow, save, invest, and compare the value of goods and services.	Money, barter.
12	Interest rates, adjusted for inflation, rise and fall to balance the amount saved with the amount borrowed, which affects the allocation of scarce resources between present and future uses.	N/A

13 Income for most people is determined by the market value of the productive resources they sell. What workers earn depends, primarily, on the market value of what they produce and how productive they are.	Human capital, wages and salaries.
14 Entrepreneurs are people who take the risks of organizing productive resources to make goods and services. Profit is an important incentive that leads entrepreneurs to accept the risks of business failures.	Entrepreneurship, risk, invention, innovation.
15 Investment in factories, machinery, new technology, and in the health, education, and training of people can raise future standards of living.	Human capital, physical capital, productivity.
16 There is an economic role for government in a market economy whenever the benefits of a government policy outweigh its costs. Governments often provide for national defense, address environmental concerns, define and protect property rights, and attempt to make markets more competitive. Most government policies also redistribute income.	Public goods, taxation, public borrowing.
17 Costs of government sometimes exceed benefits. This may occur because of incentives facing voters, government officials, and government employees, because of actions by special interest groups that can impose costs on the general public, or because social goals other than economic efficiency are being pursued.	N/A.
18 A nation's overall levels of income, employment, and prices are determined by the interaction of spending and production decisions made by all households, firms, government agencies, and others in the economy.	N/A.
19 Unemployment imposes costs on individuals and nations. Unexpected inflation imposes costs on many people and benefits some others because it arbitrarily redistributes purchasing power. Inflation can reduce the rate of growth of national living standards because individuals and organizations use resources to protect themselves against the uncertainty of future prices.	Inflation, unemployment.
20 Federal government budgetary policy and the Federal Reserve System's monetary policy influence the overall levels of employment, output, and prices.	N/A.

Notes: Primary-level concepts are included in the Grade 4 benchmarks. N/A indicates the standard has no Grade 4 benchmark.
Source: National Council on Economic Education (1997).

Endnotes

1. These books are all readily available in bookstores and libraries; they are not specialized teachers' materials.
2. See Senesh (1973) for a more recent edition.
3. For example, in a story-lesson entitled "How Choices are Made," a young child discovers that economic choices—in this case, deciding whether to purchase a purple jar or a pair of shoes—involve giving up one thing in order to get another.
4. The following is an example of a matched-pair item from their test: "Families must choose what goods and services they will buy because their income is limited," and "Since the income of every family is large, they can buy all the goods and services they want." Each statement was read aloud by a test administrator. The children were asked to point to the statement as it was read and to circle either "YES" or "NO" after each reading.
5. According to Hansen (1998), this curriculum guide—introduced in the *Framework Report* (Hansen *et al.* 1977, updated in Saunders *et al.* 1984 and 1993) and later combined with *Economics: What and When* (Gilliard *et al.* 1988)—provided a catalog of economic concepts and accompanying teaching materials. The combination of these two sources was published as a single curriculum guide in Saunders and Gilliard (1995).
6. See Sosin, Dick, and Reiser (1997) for a review of this literature.
7. Schug and Walstad (1991) make a similar argument that more evidence is needed on the validity of economic standards by grade level.
8. Estimating educational production functions is a common approach in empirical research on the determinants of learning in economics. The education output is usually measured by a student

achievement indicator such as a post-test score. School inputs typically include school resources, class size, student characteristics, teacher qualities, and factors describing the effort spent teaching. A recent example for overall learning in the primary grades is Krueger (1999), which finds that small class size has a positive impact on student performance.

9. Reading materials analyzed are picture books, picture story books, and easy readers. Picture books are aimed toward preschool- to kindergarten-aged children. They have illustrations that either balance or outweigh the text, and combine text and art on a single page. Picture story books are aimed toward kindergarten- to third-grade students. The text and art appear on separate pages and the richer text could stand alone without illustration. Picture books and picture story books are commonly grouped together in the single category “picture books.” Easy readers are aimed toward first- and second grade students, with text that outweighs pictures and a plot line that is often split into several chapters or stories (Shepard, 2000).

10. The complete list is available at <http://faculty.wm.edu/yvrodg/bibliography.pdf>. Similarly structured reference lists of literature with economic content, geared toward older students and adults, are found in Watts and Smith (1989) and Watts (1998).

11. The National Council on Economic Education (2003b) and SPEC Publishers (1993) each provide a comprehensive set of lesson plans to accompany a number of popular children’s books, and many of the NCEE’s state-level councils have sponsored efforts to develop lesson plans.

12. See, for example, Salemi (2002) and Soper and Walstad (1991).