

Program Director
Jerry West
U.S. Department of Education
Institute of Education Sciences
National Center for Education Statistics
ECLS@ed.gov
Web Site: <http://nces.ed.gov/ecls>

Early Childhood Longitudinal Study - Birth Cohort Project Summary

The National Center for Education Statistics (NCES) in collaboration with several health, education and human services agencies is conducting an ambitious new study¹, The Early Childhood Longitudinal Study, Birth Cohort (ECLS-B). The ECLS-B selected a national sample of children, born in the year 2001, to follow from birth through first grade.

The National Center for Health Statistics, the National Institutes of Health (NIH), the U.S. Department of Agriculture, the Administration for Children, Youth and Families, the Office of Special Education Programs, the Maternal and Child Health Bureau (HRSA), the Office of the Assistant Secretary for Planning and Evaluation (ASPE), the Office of Indian Education, the Centers for Disease Control and Prevention and the Office of Minority Health (OPHS) are working collaboratively with NCES on the design and implementation of this study. Sponsoring Institutes from NIH are the National Institute of Child Health and Human Development, the National Institute of Mental Health, the National Institute on Nursing Research, the National Institute on Aging, the National Institute of Deafness and Other Communication Disorders, the National Center on Minority Health Disparities and the Office of Behavioral and Social Sciences Research.

The ECLS-B is part of a longitudinal studies program comprised of two cohorts—a birth cohort and a kindergarten cohort. Together, these cohorts provide the range and breadth of data required to more fully describe children's health, early learning, development and education experiences. The birth cohort study (ECLS-B) focuses on those characteristics of children and their families, as well as children's early health care and in-home and out-of-home experiences, that influence children's first experiences with the demands of formal school, i.e., kindergarten and first grade. It provides important information about the way America raises, nurtures, and prepares its children for school. The kindergarten cohort study (ECLS-K) measures aspects of children's development and their environments (home and school) as they enter school for the first time and examines how these influence their academic achievement and experiences through the fifth grade².

The provision of high-quality, equitable care and education and solutions to the problems facing the nation's parents and schools are at the top of the national agenda. Parents, educators, health practitioners and policy makers are being asked to reconsider the ways in which children are being cared for and educated throughout early childhood. With new research, such as that on early brain development, researchers and practitioners searching for answers are turning to the critical years before formal schooling as a source of information and a place to start. Children's earliest experiences and health care are essential building blocks for later development and school achievement.

As researchers and policy makers pay more attention to early childhood issues, there have been more calls for better, more detailed data both at the state and national levels. Many researchers and policy makers have pointed to the limited information available on which to base many of the complex decisions

¹ The National Center for Education Statistics is a division of the Institute of Education Sciences in the U.S. Department of Education.

² This paper is focused on the ECLS birth cohort study. More information on the ECLS kindergarten cohort study is available from NCES at the ECLS website (<http://nces.ed.gov/ecls>). For the ECLS-K, base-year data were collected from a nationally representative sample of kindergartners attending public and private schools and early childhood programs in the fall of 1998. Follow-up waves 2, 3 and 4 were conducted in the spring of 1999, the fall of 1999, and the spring of 2000, respectively. Wave 5 was conducted in Spring 2002, and wave 6 is planned for Spring 2004.

the Nation faces concerning children's care and education. The information that is available is often fragmented, difficult to access, and of unknown reliability. Current, representative, and comprehensive data are needed to study children's experiences during the critical years before compulsory school attendance.

Vital to any effort to improve the health, early care and education for all of the nation's children is a research and data collection program that increases our understanding of the dynamics that lead to differential school success. Currently no study exists that follows a national sample of U.S. children from birth through the early formative years and on to school. Most research on children's early development and education has been conducted on small, often nonrepresentative samples of specific groups of children. There are some notable exceptions, but most are not nationally representative. Furthermore, few existing databases permit the study of children's early development, health care, transitions into non-parental care and early education, as well as their early school experience by such characteristics as race-ethnicity, gender, or region. Most research tends to focus on one or two aspects of children's lives (e.g. health care and child characteristics). Studies that look at the influence of multiple domains simultaneously are sorely needed.

Purpose

The ECLS-B provides information necessary for filling gaps in the existing data. Unlike previous early childhood studies, the ECLS-B examines the progression of a national birth cohort through early childhood. Measures of early development are taken prospectively, rather than retrospectively, and these measures are more comprehensive, collecting data in all domains, including physical, cognitive, social and emotional development. In taking a broad view of child development across these many domains, the ECLS-B includes assessments on attachment, early health care and nutrition, language acquisition and cognitive and social functioning across the home, school and child care environments. Consequently, the ECLS-B can be used to effectively inform policies regarding children, their families, and their health, early care and education.

The ECLS-B has two goals: descriptive and analytic. The study provides descriptive data on (1) children's health status at birth, (2) children's experiences in the home, non-parental care, and school, and (3) children's development and growth through first grade. The study also collects data that can be used to explore the relationships between children's developmental outcomes and their family, health care, non-parental care, school, and community. Data collected during the first year of life (around 9 months) serve as a baseline for examining how children's home environment, health status, health care, and early child care and education shape their development. The longitudinal nature of the study enables researchers to study children's physical, cognitive, social, and emotional growth and to relate trajectories of growth and change to variations in children's experiences.

Issues Addressed by the ECLS-B

A vast array of issues and research questions exist pertaining to children's early care, health and education that can be studied with a national birth cohort sample. The four key areas addressed by the ECLS-B are 1) children's health status at birth and at regular intervals during early childhood; 2) children's growth and development in critical domains; 3) children's transitions to child care and early childhood education programs, kindergarten, and beyond; and 4) school readiness. These key areas are described in more detail in the following paragraphs.

Children's Health Status. Children who are well-nourished and physically strong are more able to explore their environment and prepare for school. Children's early growth, development, and readiness for learning are influenced by many health factors, but especially their mother's prenatal behavior and the prenatal care she received. The ECLS-B, therefore, is interested in children's health status at birth and various points thereafter. The ECLS-B describes the prevalence rates of several health conditions (e.g., asthma, ear infections, gastrointestinal problems) and practices (e.g., regular health and dental care, access to health insurance). Over the early childhood years, changes in children's health status due to health-related disabilities, acute childhood illnesses, chronic health conditions, and the care and treatment of reported illnesses or conditions affect their developmental well-being and in turn their preparedness for school. In examining children's health status and its influence on their growth, development, and later school experiences, the ECLS-B addresses several questions, including:

- How are children's early health care and health status, including prenatal care and pregnancy outcomes (e.g., low birth weight and premature birth), hospitalizations, illnesses, disabilities, injuries, and exposure to household environmental risks related to their preparedness for formal school?
- What is the effect of different early child and family medical histories and health care practices on children's development and school readiness? What is the effect of health insurance coverage and access to health care on children's health and well-being?
- Which groups of children seem to have more developmental difficulties and how does family involvement in early intervention, early childhood education programs, and health promotion and prevention programs enhance the rates of growth and development for these most vulnerable children?

Children's Growth and Development. The ECLS-B is especially interested in children's development during the critical years before school. A major goal of the study is to monitor children's growth and development during these years. The study seeks to better understand children's physical, social, emotional, cognitive and language development in relation to important influences in their lives.

The early experiences of children born today most likely differ from those of children born in previous decades. For example, increasing numbers of young children have mothers in the labor force, live in poverty, live in single-parent households, have limited proficiency in English, have poor nutrition and receive inadequate health care. These and other changes have contributed to the erosion of the economic and social capital available to children through their families and communities, which in turn impacts children's growth and developmental trajectories. Some of the specific questions the ECLS-B addresses include:

- What are children's competencies and skills at different ages during the first six years of life? What are most children in the United States able to do in the domains of physical, cognitive, social-emotional and language development at key points during these first years of life?
- What are the levels and rates of cognitive growth over time for different groups of children? What characteristics of children, their families, and their non-parental care providers and early education programs are associated with different levels and rates of growth?

- Which groups of children seem to have more developmental and academic difficulties and which groups seem to have fewer of these difficulties and more accomplishments?
- What is the outlook for those children who experience early difficulties and how do family resources, early interventions, early childhood programs, health promotion and prevention programs, and school programs enhance the rates of growth and development for these vulnerable children?
- What aspects of children's health and parental health relate to children's growth and development?

Transitions to out-of-home programs and school. Children and adults are continually making transitions from one status to another. Of particular interest to the ECLS-B is the transition that occurs as young children go from being cared for exclusively by their parents to the care of other persons. For some children, this transition may occur shortly after birth, while for others, their first significant experience with adults other than their parents in a regular care and educational setting may be when they enter school for the first time. Other transitions include the transitions to a group-based early childhood program, the transition from preschool to school, and from kindergarten to first grade. The ECLS-B is especially interested in looking at these transitions and their impacts on different groups of children and families defined by race-ethnicity, socioeconomic status, language minority status and family structure (e.g., single-parent families and teenage mothers). Specific questions the study addresses include:

- When do children first receive regular care from someone other than their parents? What are the characteristics of this care? How do parents make choices in determining both the timing of this care and the nature of the child care arrangements?
- What effect, if any, does the types of arrangements chosen, the timing of mother's return to work and her balancing of work and home life demands have on children's growth and development, children's health status, and the family's well-being?
- Do children who receive regular care from someone other than their parents have more difficulties than children who are cared for only by their parents? Do the problems children experience vary by the type of care children receive, the timing of this care and important characteristics of children and their families?
- At what point do parents decide to place their preschool-age child in an early childhood program? What are the characteristics of the programs that children attend? What factors do parents consider in making this decision and in evaluating alternative programs?
- What are the characteristics of the early childhood programs attended by children who exhibit different levels and rates of cognitive growth? How do these program characteristics interact with characteristics of children and their families to affect children's social and cognitive development?
- What effect does participation in *different* types of early care and education programs/arrangements have on children? Are the outcomes of participation the same for different groups of children defined by race-ethnicity, SES, and other characteristics of children and their families?
- How continuous is the non-parental care and early childhood education children receive? How consistent are the characteristics of the different settings when change occurs? Do children who change care and early education programs many times experience any adverse effects not found among children who attend the same program for a continuous period?

- What are the transition patterns of children as they move from preschool (or no school) to kindergarten? For example, what percentage of children go from full-time private nursery school programs to part-day public kindergarten programs? What percentage of children go from a high quality and developmentally appropriate preschool program to a comparable kindergarten program?

School Readiness. Some children seem to adjust easily to their first encounter with formal schooling and are able to have a positive school experience, while other children experience problems. For most children, the first formal school experience is kindergarten. In addition, before they reach the age of compulsory school attendance, large numbers of young children experience out-of-home care/education. Kindergarten attendance is now nearly universal, and the majority of primary school children have had at least one organized group experience (i.e., day care center and/or nursery school) prior to starting first grade (West et al., 2001).³ However, the nature of these early experiences in and before kindergarten is quite variable, and the demands it places on children differs across programs.

The ECLS-B examines children's preparation for school by studying the different characteristics of children, their families, and their out-of-home care and educational experiences. The study is particularly interested in the role that parents and families play in helping prepare children for formal school and in the effects of children's participation in early care and education arrangements. However, in order to understand children's preparation for school, it is critical to understand how the educational system prepares for and responds to the diverse backgrounds and experiences that children bring with them as they enter school for the first time. Some of the questions the ECLS-B is designed to address are:

- What early literacy, cognitive knowledge and skills, social behaviors and physical motor skills do children demonstrate as they enter formal schooling? How much variation is there in the knowledge, skills and behaviors children demonstrate as they enter school for the first time? Do the knowledge, skills and behaviors children demonstrate differ by race-ethnicity, socioeconomic status, family structure, and other child and family characteristics?
- What characteristics of children, their families, out-of-home care and educational experiences during the years prior to school influence the knowledge, skills, and behaviors they demonstrate upon entry to kindergarten? What characteristics of the in-home and out-of-home child-rearing environments during the first five years are most important in determining children's readiness for school?
- What role do fathers play in early child care and child-rearing and how does their involvement with their children and the family relate to children's school readiness? What role do resident and non-resident fathers play? What contributions do fathers make to children's preparedness for school that are independent of mothers' contributions?
- How are children's early health care and health status, including prenatal care and pregnancy outcomes (e.g., low birth weight and premature birth), hospitalizations, illnesses, disabilities, injuries, and access to health care related to their readiness for school?

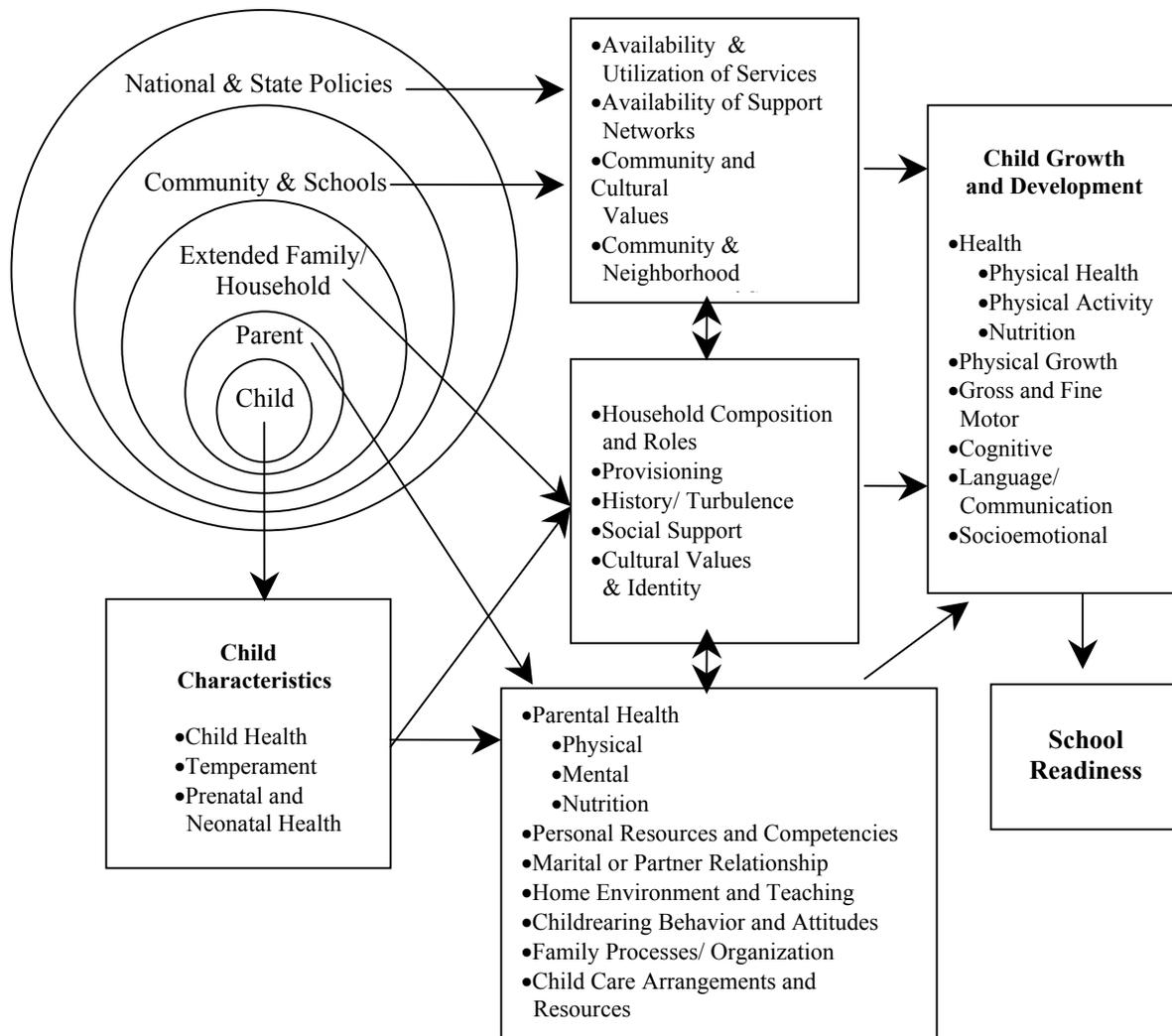
³ West, J., Denton, K., Germino-Hausken. (2001). *America's Kindergarteners: Findings from the Early Childhood Longitudinal Study, Kindergarten Class of 1998-1999*. NCES Publication 2001-070R. Washington, DC: U.S. Department of Education, National Center for Education Statistics.

- What actions do parents take to prepare their children for school? What is the socioeconomic and cultural variation in these actions? What is the relationship between parent behaviors and children's readiness for school?
- What is the relationship between parents' attitudes and beliefs about their children's abilities and their children's development? What is the relationship between parent beliefs about children in general and the way children learn and their own children's cognitive and social competence?
- Are those characteristics of children's early childhood care/education programs that are used to define "high quality" programs related to different dimensions of school readiness? Are the relationships the same for groups of children with different backgrounds and experiences?
- Do children with different backgrounds and experiences enter schools that are responsive to their experiences? What role do schools and preschools play in easing the transition into kindergarten? What is the relationship between the actions that schools and preschools take and a child's early experience with school?

Conceptual Model

The design of the ECLS-B is based on the assumption that children's preparation for school begins at (or before) birth and continues until they enter school for the first time. It is guided by a framework of children's development, care, and schooling that emphasizes the interaction between the child, family, health care, non-parental care and education programs, and community (see figure 1). The ECLS-B recognizes the importance and inter-relatedness of factors that represent the child's health status, social/emotional and intellectual development.

Figure 1. ECLS-B Conceptual Framework



Overview of the Study Design

Key features of the study design are outlined below. NCES and the ECLS-B 9- month and 2-year contractor, Westat of Rockville, Maryland, worked with its federal partners and private researchers to develop these and other design parameters. Additionally, the Research Triangle Institute (RTI) of North Carolina, the 4-year (or preschool) contractor, is working with its federal partners and private researchers to build on Westat’s work for preschool component of the study.

Birth Cohort Sample. A nationally representative sample of approximately 13,500 children born during calendar year 2001 were selected for participation in the study. The sample consists of children from different racial-ethnic and socioeconomic backgrounds. Asian children, Pacific Islander children, Chinese children, moderately low birth weight children (1500-2500 grams), very low birth weight

children (under 1500 grams) and twins were oversampled. The best and most affordable way of sampling newborns is to use birth certificates. The National Center for Health Statistics assisted NCES and Westat in drawing a sample of newborns from birth certificates.⁴

Longitudinal Design and Periodicity. Children are selected at birth and followed longitudinally through the end of first grade⁵. The first data collection began in 2001 when the children were approximately 9 months of age. Capturing data this soon after birth is important because much of the data collected at this time pertains to prenatal care and the health care of the mother and child during the first months of life. Data are collected again when the children are 2 years of age. The next wave of data collection is planned for when most of the children are one year away from kindergarten (preschool wave, approximately 4 years of age). Additionally, data collections are also planned for when the children enter kindergarten and first grade. Exhibit 1 contains the data collection schedule for the full-scale study and field tests.

Multi-factor Model. It is imperative that the different contexts in which development and learning occur be examined in detail in order to improve our understanding of why some children adjust easily to school and appear to make critical transitions without much difficulty while others experience varying degrees of difficulty. It is also important to examine children's development across a number of critical cognitive and noncognitive domains.

The design of the ECLS-B captures data about children's homes, communities, health care, non-parental care and early childhood programs. As children reach school age, data about their schools, classrooms, and their teachers will be equally important. The ECLS-B collects data on children's physical, social, emotional, cognitive and language development.

Study Components. The emphasis that is given to a broad view of child development and the different environments in which development and learning occur is critically important for the design of the ECLS-B. While children's parents are the primary reporters throughout the life of the study, at varying points, it is necessary to gather data from children's birth records, their care and early education providers, their schools and teachers, and directly from the children themselves.

- Children's **birth certificates** provide information on their date of birth and gender. Additional information on parents' education, parents' race and ethnicity (including Hispanic origin) and mother's marital status, as well as information on mother's pregnancy history, prenatal care, medical and other risk factors during this pregnancy and complications during labor and birth was obtained from the National Center for Health Statistics (NCHS). NCHS also provided information regarding the health characteristics of children, such as congenital anomalies and abnormal conditions of the baby and the baby's APGAR score.
- A **parent/guardian** interview is conducted in the child's home at each data collection point. The parent/guardian interviews collect information about children's early health and development and about their experiences with family members and others. Parents/guardians also provide key

⁴ In a few places, alternative frames (e.g., hospital records) were used instead of birth certificates.

⁵ Ideally the sample would be followed well beyond first grade. Whether or not this is feasible and affordable will be evaluated over the life of the study.

information about themselves as caregivers, the home environment and the neighborhood in which they live. The parent/guardian interviewed is the individual who is the primary caregiver and the most knowledgeable about the care and education of the child. In most cases, this is the child's mother or female guardian.

- **Children's** participation in the study only occurs when it is appropriate for their age-level and with the full permission of their parents/guardians. Beginning at 9 months, children participate in activities designed to measure important developmental skills in the cognitive, social, emotional, and physical domains. The ECLS-B is using the Bayley Short Form – Research Edition. This instrument, designed specifically for the ECLS-B, is based on a smaller set of items from the Bayley Scales for Infant Development (BSID-II). It assesses children's gross and fine motor skills as well as their receptive and expressive language skills. At the 9-month home visit, the Nursing Child Assessment Teaching Scale (NCATS) from the Nursing Child Assessment Satellite Training (NCAST) is used to assess the parent-child interaction for early precursors of cognitive and social skills. At the 9-month home visit children's height, weight, and middle upper arm circumference are assessed. The same measures are used at 2-years, with two exceptions. First, the NCATS will be replaced with the Two Bags Task. The Two Bags Task is a modification of the "3-boxes-task" included in the NICHD Study of Early Child Care. It is a semi-structured play activity that captures the child's social interaction skills (e.g., clarity of cues, social responsiveness), as well as characterizes how the parent interacts with the child (e.g., sensitivity to child's cues, response to child's distress). Second, the Toddler Attachment Sort (TAS-45), adapted from the Massey Attachment Sort, is added at 2-years. This measure describes the nature of the child's attachment relationship and is completed by the interviewer. The interviewer, upon completion of the home visit, arranges a virtual deck of 45 cards on the laptop. These cards represent different attachment behaviors typical of 2-year-olds. The result of the card sort yields a characterization of the child's attachment to his/her primary caregiver. The assessment battery to be used during the preschool data wave beginning in 2005 is still underdevelopment. It will include measures of children's cognitive development (language and literacy), physical and psychomotor development, and socio-emotional development. These areas of development will be assessed again in kindergarten and first grade.
- With the permission of the child's parents, individuals and organizations who provide regular care for a child are interviewed. **Care providers and preschool teachers**, like parents, represent a significant source of information on themselves (their backgrounds, teaching practices, and experience), the children in their care, and children's learning environments. An estimated 45 percent of children under age 1 receive some type of care and education on a regular basis from a non-parental provider, primarily in a home environment; by age 4, the proportion of children receiving non-parental care increases to 78 percent, most in center-based programs⁶. Much of the data needed to describe the structure of children's care arrangements and education programs, to develop indicators of the quality of these arrangements and programs, and to profile the background and experience of the persons caring for these children can only be reported accurately by the care providers, teachers, and organizations themselves. Contacting children's care and education providers also provides other data collection opportunities (e.g., collecting information about children's development from sources other than their parents). This information is collected when the children are 2 years of age and again at 4 years of age. Additionally, a subsample of children is selected for observation. Trained observers visit the children's child care facility and record information about the facility. In child care centers, the Infant Toddler Environment Rating Scale (ITERS) is among the measures used, while the Family Day Care Rating Scale (FDRS) is used in place of the ITERS in home care settings.

⁶ U. S. Department of Education, National Center for Educational Statistics, 1995 National Household Education Survey.

- Once the children enter formal schooling, **school administrators and teachers** provide information on the physical and organizational characteristics of their schools and on the schools' learning environments, educational philosophies, and programs. As the ECLS-B cohort enters kindergarten and the first grade, their school teachers become valuable sources of information on one of children's most immediate learning environments, the classroom. Teachers also represent important potential sources of information about children's development, both cognitive and social.
- **Fathers** complete self-administered questionnaires that addresses the particular role they play in the development of their children. The father questionnaire captures information about children's well-being and activities fathers engage in with their children. Fathers also provide key information about themselves as caregivers. This information is collected when the children are 9-months old and at all subsequent data collection waves. Both resident fathers and nonresident biological fathers complete self-administered questionnaires designed to collect information about their roles in their children's lives.

Data Availability

NCES plans to release the data from the ECLS-B for use by other researchers. The first release includes the 9-month (1) parent interview data, (2) child assessment data and (3) father questionnaire data. NCES will release data on subsequent waves approximately one year after data collection ends.

Exhibit 1. ECLS-B Data Collection Schedule

Project Activity	Calendar Year									
	2000	2001	2002	2003	2004	2005	2006	2007	2008	
Field Test										
Base-Year (9 mo. old)										
First Follow-up (18 mo. old)										
Second Follow-up (4 yr. old)										
Third Follow-up (Kindergarten)										
Fourth Follow-up (1 st Grade)										
Full Scale Collection										
Base-Year (9 mo. old)										
First Follow-up (2 yr. old) ¹										
Second Follow-up (4 yr. old) ²										
Third Follow-up (Kindergarten) ³										
Fourth Follow-up (1 st Grade) ⁴										

¹ The ECLS-B periodicity was changed in 2002 given the escalating costs of the study to 5 data collection waves, when children are 9-months, 2-years and 4-years of age, with additional follow-ups to occur when children are in kindergarten and first grade. This decision was made after an 18-month field test was near completion. As the 2-years data collection includes all aspects of the 18-month data collection, a separate field test was not conducted. However, where necessary pilot work was done. This change in periodicity was done in order to 1) maintain a sample of sufficient size to meet the goals of the study and 2) keep the core components of the study intact, while holding costs within budget.

² This collection is scheduled for the fall of 2005, when most of the children will be four-years-old and one year away from starting kindergarten (i.e., many children will be in preschool).

³ This collection is scheduled for the fall of the children's kindergarten year. Because of age requirements for school entry, the majority of children sampled in this study will be entering kindergarten in two different years. Data will be collected in the fall of 2006 for all children enrolled in kindergarten.

⁴ This collection is scheduled for the fall of the children's first grade year. Because of age requirements for school entry, the majority of children sampled in this study will be entering first grade in two different years. Data will be collected in the fall of 2007 for all children regardless of their first grade enrollment status.