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Early Childhood Longitudinal Study, Kindergarten Class 1998-1999 Project Summary

The critical importance of high-quality, equitable education for the continued development and prosperity of the country has emerged as a very high priority on the national agenda. Parents, educators, and policy makers are reconsidering the ways children are taught in schools and are looking for more effective approaches to education.

Much of the public discussion on education is focused on the early years, children's development and learning during the early childhood period from birth to age eight, their preparation for formal school, the first school experience, and the progress they make over the first years of school. A number of factors have contributed to the research and policy focus on children's early school experiences. These include: 1) the increased public awareness of the importance of children's early experiences, specifically school readiness; 2) the educational goal that all children be able to read by the end of third grade; 3) the changing nature of children's preschool and early school experiences as many children now attend preschool and as kindergarten attendance has become nearly universal; 4) the increasingly diverse population of children entering school and the challenges this poses for schools; and, 5) the expanded role that schools are expected to play in supporting and nurturing development and learning.

Vital to efforts to improve schools and the education of all the nation's children is a research and data collection program that increases our understanding of the dynamics of school achievement, particularly of those factors that lead to the differential success of important groups of children during the early school years. The National Center for Education Statistics (NCES) has embarked on an ambitious study to provide a comprehensive and reliable data set that can be used to inform policies related to early and middle childhood education, defined as kindergarten through fifth grade. The Early Childhood Longitudinal Study, Kindergarten Class of 1998–99 (ECLS-K), in which a cohort of entering kindergarten children are sampled and studied intensively over time, responds directly to the concerns decision makers, educational practitioners, researchers, and parents have about our nation's schools and American education.

Purpose

The ECLS-K has two purposes: descriptive and analytic. On the one hand, it provides descriptive data on a national basis of (1) children's status at entry into school; (2) children's transition into school; and (3) their progression through fifth grade. On the other hand, the ECLS-K provides a rich data set that enables researchers to study how a wide range of family, school, community, and individual variables affect early success in school.

For the first time, national data are now available on public and private kindergarten programs and the children who attend them. A goal of the kindergarten data collection is to describe accurately the diversity of kindergarten children and the programs they attend.

Such information is critical to establishing policies that can respond sensitively and creatively to this diversity.

Data collected during the kindergarten year also serves as baseline data to examine how schooling shapes later individual development. The longitudinal nature of the study enables researchers to study children's reading achievement, growth in mathematics, and knowledge of the physical and social world in which they live. It also permits researchers to relate trajectories of growth and change to variations in children's school experiences in kindergarten and the early grades.

Issues to be Addressed by the ECLS-K

In general, the ECLS-K focuses on children's 1) transition to school, 2) schooling and performance in the early grades, and 3) the interaction of school, family, and community. While these general areas encompass a vast array of issues and research questions, certain issues have been identified as more important for the study. The four key issues addressed by the ECLS-K are 1) school readiness; 2) children's transitions to kindergarten, first grade, and beyond; 3) the relationship between children's kindergarten experience and their elementary school performance; and 4) children's growth in math, reading, and general knowledge (i.e., science and social studies) and progress through elementary school. Each of these key issues is described within the context of the three general areas in the following paragraphs.

Children enter kindergarten with differing levels of preparation and performance. Some children adjust to their first encounter with formal school and have a positive school experience while other children experience problems. Just as the characteristics of children differ, so too is the nature of their kindergarten experience. Within these programs, curriculum and instructional practices vary. Thus, one set of issues that the ECLS-K focuses on includes the status of children at entry into kindergarten, the expectations of schools about what skills, behaviors, and attributes are necessary, and how children fare in the new environment. Data on a range of characteristics of the children, their families, their schools, kindergarten programs, and classrooms are collected to examine these issues.

Of particular interest to the study is the transition that occurs as young children go from being kindergartners to first graders and as they move from first grade to the later elementary grades. These transitions are an ongoing process which are mutually determined by the child's characteristics, the family and school environments, and the demands, resources, and responses within both family and school settings. Therefore, these transitions may be quite different for children depending upon the characteristics of the settings and their experiences in each. The study pays particular attention to student achievement during these years, as well as to other measures of student performance, and to how these vary by characteristics of students, their schools, and classrooms.

A second set of issues centers on the experiences of children in schools. As learning environments, schools and classrooms play a critical role in promoting children's

outcomes. Schools and classroom teachers are expected to provide children with opportunities and motivations to learn, to implement programs and use instructional practices that promote academic success and development for all children, to facilitate positive relations within the school, and to support the conditions of children and their families outside of school. However, schools vary in the quality of their programs, student level performance expectations, and the extent to which content is taught at different grades. There is also great variability in the quality of teachers and the level of resources, at both the school and classroom levels. Classrooms, even within the same school, may use very different instructional approaches and the quality of instruction and the learning environment may be quite different from one classroom to the next.

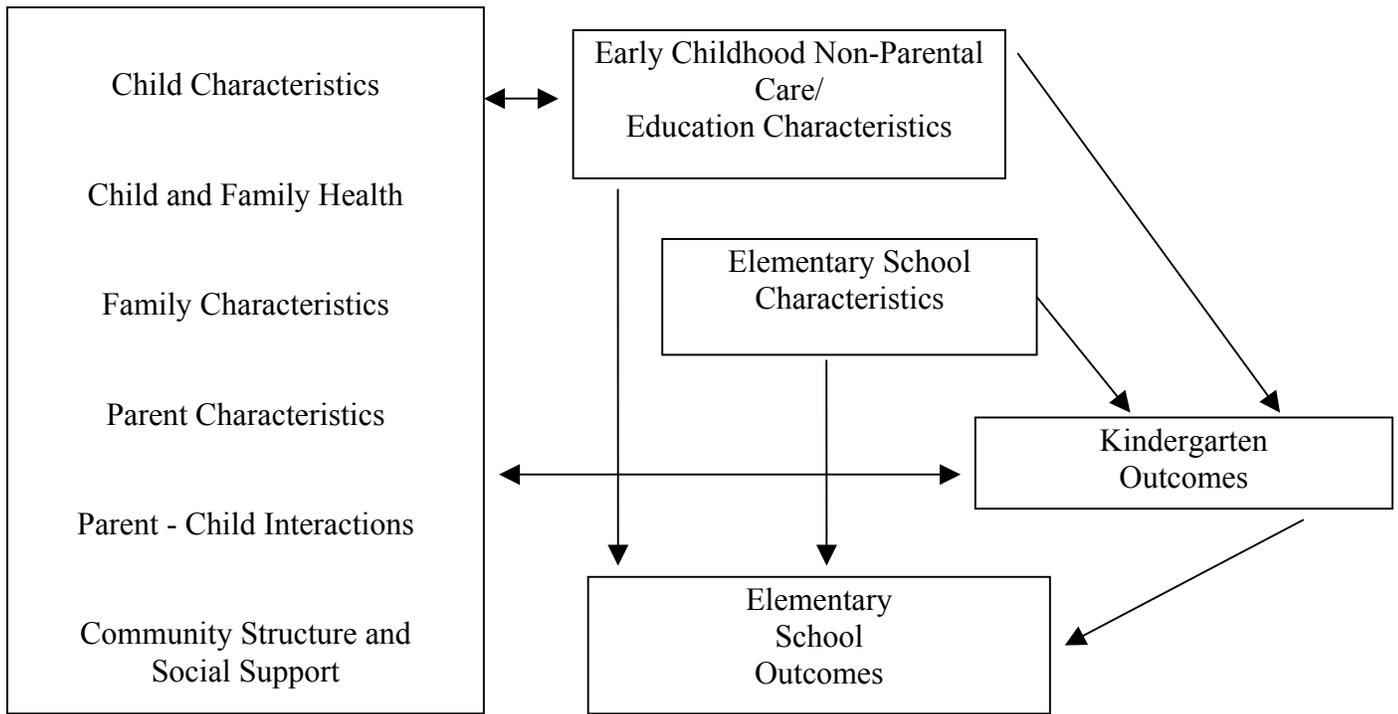
By closely monitoring student performance, the ECLS-K provides useful information on how schools and classrooms address the needs of all children, including those with special needs (e.g., due to limited English proficiency or disabling conditions). It collects data on how well children do in different kinds of schools and classrooms and on the interaction between children's backgrounds and their performance in different types of classrooms. The study also provides useful data on when children begin to experience problems with their school work and the circumstances surrounding these difficulties. It provides data on the longevity of these problems and on the responses of the children's families, schools, and teachers.

Numerous factors unrelated to school/classroom structure and programs influence children's school and other life outcomes. Because of changes in the larger society (e.g., a rising proportion of single parent families, an increasing number of working mothers, and diverging beliefs and expectations), the challenges placed on schools are changing and vary greatly among communities, as do the resources to meet those challenges. A third set of issues looks outward to the family and community in which children live by focusing on the resources of the family, the home environment, and the community that have a profound impact on children's success in school and provide the context within which schools must operate. The ECLS-K provides critical information on the roles that parents and families play in preparing for and supporting their children's education and how families, schools, and communities interact to support children's education.

Conceptual Model

The design of the ECLS-K is guided by a framework of children's development and schooling that emphasizes the interaction between the child and family, the child and school, the family and school, and the family, school, and community. The ECLS-K recognizes the importance of factors that represent the child's health status, socio-emotional and intellectual development, and incorporates factors from the child's family, community, and school-classroom environments (see Exhibit 1). The study is particularly interested in the role that parents and families play in helping children adjust to formal school and in supporting their education through the primary and middle elementary grades. It is also interested in understanding how schools prepare for and respond to the diverse backgrounds and experiences of the children and families they serve.

Exhibit 1. ECLS-K Conceptual Model



Overview of the Study Design

The ECLS-K is concerned with the Nation's children. It is designed to focus on the educational experiences of minority and majority, disadvantaged and advantaged children alike. It is a highly complex study that requires the involvement of many organizations and individuals to achieve its stated goals. Key characteristics of the ECLS-K design are outlined briefly in the following sections.

Sample

A nationally representative sample of approximately 22,000 children enrolled in about 1,000 kindergarten programs during the 1998-99 school year were selected for participation in the study. These children were selected from both public and private kindergartens, offering full-day and part-day programs. The sample consists of children from different racial-ethnic and socioeconomic backgrounds and includes an oversample of Asian children, private kindergartens, and private school kindergartners. The sample is designed to support separate estimates of kindergartners in public and private schools; Black, Hispanic, White, and Asian children; and children by socioeconomic status.

The sample design for the ECLS-K is a dual-frame, multistage sample. First, 100 Primary Sampling Units were selected (PSUs are counties or groups of counties). Schools within the PSUs were then selected; public schools from a public school frame and private schools from a private school frame. In the fall of 1998, approximately 23 kindergartners were selected within each of the sampled schools.

One of the benefits arising from a national longitudinal study of kindergarten children is the collection of nationally representative data on a wide range of early learning experiences and environments for diverse populations of children. Such a study provides a valuable context in which to interpret findings from an array of smaller studies of specific populations.

Multi-factor Model

Numerous factors unrelated to school/classroom structure and programs influence children's school and other life outcomes (see Exhibit 1). Nonetheless, it is imperative that children's school experience be examined in detail if an understanding of children's success or lack of success in school is to be achieved. Furthermore, in order to advance our understanding of why some children adjust easily to the environment of the school and appear to make critical transitions without much difficulty while others experience varying degrees of difficulty, it is important that the discipline boundaries surrounding much of the past and current research on young children's learning and schooling be eliminated. Consequently, NCES actively sought the input of individuals and organizations representing the health, education, and human service communities as it developed and refined its plans for the study.

Study Components

The emphasis that is being placed on the whole of the child's environments and development has critical implications for the design of the ECLS-K. The design of the study will allow for the collection of data from the child, the child's parents/guardians, teachers, and schools.

- **Children** are asked to participate in various activities to measure the extent to which they exhibit those abilities and skills deemed important to success in school. They are asked to participate in activities designed to measure important cognitive (e.g., general knowledge, literacy and quantitative skills) and noncognitive (e.g., social skills) outcomes. All measures of a child's cognitive skills are obtained through an untimed one-on-one assessment of the child using Computer Assisted Personal Interviewing. During later years of the ECLS-K, children report on their perceptions of their abilities and achievement as well as their interests in and enjoyment of all school subjects.
- **Parents/guardians** are an important source of information about the families of the children selected for the study and about themselves. They are asked to provide key information about their children, especially during the first years of the study. Parents are one of the important sources of information about children's development at school entry and their experiences both with family members and others. Information is collected from parents each time children are assessed using Computer Assisted Telephone Interviewing (or Computer Assisted Personal Interviewing if they do not have a phone).
- **Teachers**, like parents, represent a valuable source of information on themselves, the children in their classrooms, and the children's learning environment, i.e., the classroom. Teachers are not only asked to provide information about their own backgrounds, teaching practices, and experience, they are also called upon to provide information on the classroom setting for the sampled children they teach and to evaluate each sampled child on a number of critical cognitive and non-cognitive dimensions. Teachers complete self-administered questionnaires each time children are assessed (with the exception of the fall of first grade).
- **School administrators, principals, and headmasters** are asked to complete self-administered questionnaires during each of the spring data collections. They are asked to provide information on the physical, organizational, and fiscal characteristics of their schools, and on the schools' learning environment and programs. Special attention is paid to the instructional philosophy of the school and its expectations for students.

Data Collection Schedule and Periodicity

The data collection schedule for the ECLS-K is both ambitious and intense. The goal is to conduct several follow-up surveys (see Exhibit 2). As much as possible, the planned frequency of data collection is linked to a desire to capture information about children as critical events and transitions are occurring rather than measuring these events retrospectively.

Exhibit 2. ECLS-K Data Collection Schedule

Data Source	School Year											
	K		First		Second		Third		Fourth		Fifth	
	F'98	S'99	F'99*	S'00	F'00	S'01	F'01	S'02	F'02	S'03	F'03	S'04
Student												
Parent												
Teacher												
School												

F=Fall; S=Spring

In the fall of first grade, data were collected from only a 30 percent subsample of the cohort. For these children, assessments were conducted and parents were interviewed.

Data on the kindergarten cohort is collected twice during the base year of the study—once in the beginning and once near the end of the school year. The beginning of the year data collection is needed in order to get baseline data on children prior to their exposure to the influences of school. It provides measures of the characteristics and attributes of children as they enter formal school for the first time. The data collected at the end of the school year, together with the beginning school year data, will be used to examine children's first encounter with school.

In the fall of the 1999-2000 school year, when most of the cohort moves to the first grade, data are collected from a 30 percent subsample of the cohort. Assessments are conducted with these children, and interviews are conducted with their parents. In the spring, data are once again collected from the entire sample, their parents, teachers, and school administrators. Additional follow-up surveys of the sampled children are conducted in the spring of 2002 (third grade) and spring of 2004 (fifth grade).

Assessment of Kindergarten Students

A critical component of the ECLS-K is the assessment of children along a number of dimensions such as physical development, social and emotional development and

cognitive development. These domains were chosen because of their importance to success in school. The ECLS-K obtains the status and growth of its children along these domains.

- **Physical and Psychomotor Development:** Children's height and weight is measured at each data collection period. In the fall of kindergarten, kindergartners were asked to demonstrate their fine and gross motor skills through activities such as building a structure using blocks, copying shapes, drawing figures, balancing, hopping, skipping, and walking backwards. Parents and teachers report on other related issues such as general health, nutrition, and physical activity.
- **Social and Emotional Development:** The focus of the ECLS-K assessments of social and emotional development is on the skills and behaviors that contribute to social competence. Aspects of social competence include social skills (e.g., cooperation, assertion, responsibility, and self-control) and problem behaviors (e.g., impulsive reactions, verbal and physical aggression). Parents and teachers are the primary sources of information on children's social competence and skills from kindergarten through first grade. In third grade, children were administered a Self-Description Questionnaire (SDQ), in which they rated their perceptions of competence and their interest in and enjoyment of reading, mathematics, and "all school subjects." Children also rated their perceptions of competence in making friends and popularity with peers and reported on perceived problem behaviors.
- **Cognitive Development:** The ECLS-K focuses on three broad areas of competence—language and literacy, mathematics, and knowledge of the social and physical worlds. The skills measured in each of these domains are a sample of the typical and important skills that children are expected to learn and are taught in American elementary schools. The ECLS-K assessment battery was developed to describe the behaviors, skills, and knowledge within broad cognitive domains that are most relevant to school curricula at each grade level and to measure children's growth from kindergarten to fifth grade. The ECLS-K assessment framework is based on current curricular domain frameworks for reading, mathematics, science, and social studies and assessment frameworks such as the National Assessment of Educational Progress (NAEP).

The assessments are developed after extensive field testing and analyses. The final items were selected based on their psychometric properties and content relevance.

The measure of language and literacy competency includes vocabulary comprehension, listening and reading comprehension, and basic skills (e.g., knowledge of the alphabet, phonetics, print recognition and orientation, and sight vocabulary). The mathematics subdomain measures the knowledge and skills necessary to solve mathematical problems and reason with numbers. The items measuring children's quantitative and analytic skills in kindergarten and first grade include recognizing numbers, counting, comparing and ordering numbers, and solving word problems. Other

measures of mathematical concepts include recognizing and solving problems involving graphic and numeric patterns and geometric relationships. Items involving the interpretation of picture graphs measure beginning analysis and statistics skills. In kindergarten and first grade, children's knowledge and skills in the natural and social sciences is measured in the general knowledge subdomain. The contents of this subtest, classified as science and social sciences, survey children's knowledge and understanding of relevant concepts. As children move up in the grades, the general knowledge subtest is replaced by a measure of science literacy. This permits a more in-depth assessment of children's knowledge and understanding of science.

Each direct child domain subtest consists of a routing test and three level tests. All children are first administered a short routing test of domain specific items having a broad range of complexity or difficulty levels. Performance on the routing test is used to determine the appropriate level assessment form that will be administered next to the child. The use of multilevel forms for each domain subtest minimizes the chances of administering items that are all very easy or all very difficult for the child. Children demonstrate their competency in these domains through one-on-one, untimed sessions with a trained child assessor using a computer to record responses. If necessary, the session can take place over multiple periods.

Information about children's competencies in reading, mathematics, and general knowledge is also collected from children's teachers. While the skills and knowledge rated by teachers overlap to some degree with those in the direct child assessments, the teacher evaluations provide additional information on children's skills that cannot be measured with the direct assessments.

Special Populations

One of the goals of the ECLS-K is to be as inclusive as possible. Several efforts are made to include all children in the study regardless of their background, English language ability, and disability status. The direct assessments, by their very design, accommodate the majority of children sampled. Furthermore, for those children who cannot complete the direct assessment, the full range of data from the other data collection sources (i.e., parents, teachers, and school administrators) are still gathered.

Some children in the study start kindergarten speaking little or no English. ECLS-K field staff determined children's home language from school records and classroom teachers. Children whose home language is not English are first assessed to determine their proficiency in English. The ECLS-K assessment is administered in English to those children whose proficiency suggests that they can complete the assessment in English. For children who are found to be incapable of completing the assessment in English, two approaches are taken. If a child speaks Spanish, the reading and general knowledge sections of the ECLS-K assessment are not to be administered. However, the child receives a Spanish proficiency test, has his or her height and weight measured, and is administered the motor skills assessment and a Spanish translation of the math subtest of the direct assessment. If a child speaks a non-English language other than Spanish, data

collected directly from the child are limited to measures of height and weight. The English proficiency of all children who are unable to complete the assessment in English is continually reassessed until they achieve a satisfactory performance level and can be administered the ECLS-K assessment in English.

Over the course of the study, several children in the kindergarten cohort will be identified as having a disability that affects their learning. The untimed and one-on-one nature of the ECLS-K assessment allows many of these children to be accommodated in all or most of the direct assessments. ECLS-K staff make other accommodations (e.g., allowing the use of communication boards and pointing devices; permitting a school assigned personal attendant to sit with a child during the assessment) if at all possible.

Special Supplements

NCES has supported the development and implementation of a core design that achieves the goals of the study and provides the data needed to answer major research and policy questions. At the same time, the study is enriched by several supplements supported by other federal agencies.

The Office of Special Education Programs of the U.S. Department of Education sponsors a special education teacher questionnaire and the collection of more extensive data on children with disabilities and their programs. The special education teachers of all children with disabilities in the study are asked to complete the questionnaires, and the parents of all children in the study are asked questions about the identification of, the receipt of services for, and the use of special equipment for a number of disabling conditions that may interfere with a sampled child's ability to learn. The Food and Nutrition Service of the U.S. Department of Agriculture (USDA) supports the measurement of children's height and weight as well as specific components in the parent interview and teacher questionnaires on nutrition, welfare program participation, and physical activity levels. For each sampled child, height and weight data are collected during each data collection period of the study. In fifth grade, the USDA sponsored a measure of the children's purchase and consumption of food practices. The Administration for Children, Youth and Families of the Department of Health and Human Services funded the verification of children's Head Start participation. The parent and school of each sampled child was asked to identify whether the child attended Head Start and what Head Start Center he/she attended. Then, ECLS-K staff contacted the programs named by schools and parents to confirm that the child had indeed enrolled in a Head Start program.

Field Tests

NCES conducts field tests to ensure that the instruments and procedures used in the ECLS-K are sound. A number of field tests have been conducted. For example, in the 1996-97 school year, a large-scale field test took place. The central goal of the field test was to obtain psychometric data on the assessment battery. In addition, the field test

served as a test of the main study design and afforded the opportunity to look at alternative methods and procedures under consideration for the main study. The fall field test was conducted in 51 schools with 1,509 kindergartners, their teachers, and a 40 percent sample of their parents. The spring field test was conducted in the same schools with 1,453 kindergartners (the majority of which participated in the fall field test) and 1,464 first graders and their teachers, principals/head masters/directors, and a 40 percent sample of their parents.

In addition to large field tests, other small-scale pilot testing of the ECLS-K instruments assessments have been conducted. For instance, in the fall and spring of the 1995-96 school year, the direct assessments were administered to 157 kindergartners, and their teachers were asked to complete the indirect assessments. An additional test of the one-on-one child assessments took place in the fall of 1997 with 100 kindergartners. This was a small-scale pilot test of the two-stage set-up of the assessment. Prior to conducting the main study base year, a pilot test of operations took place in the spring of 1998 with approximately 250 kindergartners across 12 schools. Detailed analyses of results from field tests and pilot tests were conducted and modifications to ECLS-K data collection instruments and procedures were made by NCES and its contractor, Westat.