



The Consultative Group on Early Childhood Care and Development

PREPARING CHILDREN FOR SCHOOLS AND SCHOOLS FOR CHILDREN

by Robert Myers and Cassie Landers
Consultative Group on Early Childhood Care and Development
A Discussion Paper prepared for the Fifth
Meeting of the Consultative Group on
Early Childhood Care and Development
UNESCO, PARIS, 4-6 OCTOBER, 1989

INTRODUCTION...	1
AN ANALYTICAL FRAMEWORK...	3
EFFECTS OF EARLY CHILDHOOD PROGRAMMES: A REVIEW OF THE EVIDENCE...	7
EARLY CHILDHOOD EDUCATION PROGRAMMES...	10
EARLY INTERVENTION PROGRAMMES: IMPACT ON SCHOOL ENROLLMENT, PROGRESS, AND PERFORMANCE...	11
READINESS OF SCHOOLS FOR CHILDREN...	13
PROGRAMME REVIEW...	13
SUMMARY AND POLICY RECOMMENDATIONS...	15
REFERENCES...	19
TABLES...	22

Introduction

When we are considering the effectiveness of primary school systems, there is a tendency to overlook the important education, growth, and development that occurs in the earliest years before a child enters formal schooling. This is so even though a growing body of evidence shows that early childhood development programmes can have important effects on a child's primary

school readiness, enrollment, progress, and performance. This review provides a critical examination of that evidence, within a framework positing an interactive effect between the readiness of children for schools and the readiness of schools for children. In this review, "readiness" refers to individual characteristics of children and schools as well as to family and community characteristics, values, expectations, structures, and organization. The review suggests that the most basic education of all begins during the preschool years, and that attempts to strengthen primary schools must therefore include interventions developed for the preschool years.

Evidence supporting this perspective is drawn from evaluations of early childhood development programmes in Third World countries. Since readiness for school has health and nutritional as well as educational dimensions, programmes focusing on these components are also presented. The discussion raises and provides insights into a set of complex questions surrounding the impact of early child development programmes on primary school performance, questions which include the following:

- Under what circumstances do programmes designed to improve early education and socialization have a positive and lasting effect on primary school enrollment, progress, and performance?
- How does the preparation of children for school interact with the preparation of schools for children to ultimately influence primary school enrollment, progress, and performance?
- How do family and community characteristics, values, structures, and organization affect early learning and the successful movement of children between home and school?
- What operational mechanisms can bridge home and school, preschool and primary school, nutrition and education, so that basic education at home and in school can be fostered and the potential benefits of both early education and of primary schooling can be realized?
- What successful early education programmes can be found to serve as examples to be adapted to other settings?

An analytical model is presented to guide the interpretation of evidence gathered from two groups of longitudinal studies. The studies which compare primary school enrollment progress and performance of children who have received early childhood interventions with that of similar children who did not receive such interventions. Finally, a set of recommended actions are presented and, where possible, examples of such actions are provided.

This article is based on Chapter 8 of the manuscript for The Twelve Who Survive by Robert Myers, Consultative Group on Early Childhood Care and Development UNICEF, 3 United Nations Plaza, New York, N.Y. (Paperback edition, Ypsilanti High/Scope Press, 1995.)

An Analytical Framework

Figure 1 (figure 1 not available) depicts an analytical framework in which the readiness of children for schools and the readiness of schools for children both affect the enrollment, progress, and performance of children in primary school.

As indicated in the Figure, a "child's readiness for school" is defined in terms of physical capabilities and activity level, cognitive ability, learning style, knowledge base, and social and psychological competencies. These characteristics reflect the child's nutrition and health status as well as psychosocial development at the time of school entry. This psychosocial development results from the child's interaction within a number of environments, including the family, the immediate community of friends and neighbors, the institutional community of formal service programmes (which provide support through such channels as health centres, child care and pre-school programmes), and the larger society with its predominant ethos, economic and political conditions, and social organization.

These environments affect a child's developmental progress in two interrelated ways. First, they determine the physical and social conditions of the child's interaction with the environment. Second, they operate indirectly through their influence on the assignment of childrearing responsibility and on the knowledge, beliefs, and expectations of caregivers as reflected in childrearing and child care practices.

Characteristics that define the "readiness of schools for children" considered in this framework include the school's availability, accessibility, quality, and most important, its responsiveness to local needs and circumstances. These readiness characteristics of schools are influenced by the actions of families and communities as well as by the economic, social, and political conditions of the wider environment.

The following discussion describes the child's readiness for school and the school's readiness for children. It also describes the impact of the interaction between these two factors on a child's school enrollment, progress, and performance.

Readiness of Children for School

A growing body of research supports the idea that health, nutrition, and psychosocial processes interact to affect survival and development in the early years of life. The outcomes of these interactions condition the readiness of the child for school, which in turn influences the child's chances of enrollment and success.

Poor health negatively affects the level and quality of a child's activity in school, and also the child's school attendance patterns (Moock and Leslie 1984; Popkin and Lim-Ybanez 1982). Berg (1981) reports that in some Latin American countries, children miss as much as a third of scheduled school days a year because of illness and poor health. The result may be repetition of a school year and/or early drop-out. Thus, the child with a history of illness is not as ready for school as a healthy child is, and subsequent progress and performance in school is at risk.

Nutritional status also affects activity levels. Malnourished children, suffering from protein-energy malnutrition or vitamin and mineral deficiencies, are less active, less able to concentrate on learning activities and less interested in the environment than their well-nourished peers are. (Pollitt and Thompson 1977). The irritability, listlessness, and distractibility of the hungry, malnourished school child have been widely noted.

More specific recent research clearly identifies a causal relationship between iron deficiency and school performance and concludes that programmes to provide iron can have a positive effect. Soemantri, Pollitt, and Kim (1985), working with children in economically deprived rural areas of central Java, Indonesia have shown that a 3-month iron-supplementation intervention was associated with significant changes in performance on school achievement and concentration tests. Similar results are now available for programmes in India (Seshadri and Gopaldas 1989), and Thailand (Pollitt and Metallinos-Katsaras 1989).

The effect within the school environment of the variables under discussion is not as clear. The same principle may apply to the teacher-child relationship that applies to the caregiver-child relationship. Teachers in primary school may be more inclined to work with children who are alert and demanding than with those who are listless and socially withdrawn. However, there is a great deal of anecdotal evidence suggesting that teachers often perceive active, curious young students as behavior problems who cause difficulties rather than present opportunities. In such cases, the improved activity levels could have a negative effect. Here is a good example of the interaction between the readiness of children for school and the readiness of schools, in particular of teachers, for children.

Readiness for school also includes the child's acquisition of social and cognitive competencies. The cognitive skills that parents and various preschool inculcate in children are not always consonant with those skills required by schools. For example, parents may promote primarily concrete language and classification skills, whereas schools demand relatively more abstract and representational use of language and classification skills that are based on more abstract qualities of objects (Haglund 1982).

There is evidence that explicit literacy-nurturing activities are not a part of most poor children's early childhood experience in the developing countries. (Pollitt 1984) To the extent that this is true, the transition to abstract and disembodied learning, which typifies the majority of schools in Third World settings, is further complicated.

A family's knowledge, attitudes, beliefs, and practices will have important effects on the nutrition, health, and psychosocial condition of their children. Constricted by economic factors, parents make decisions about feeding and diet, about preventive and curative health care, and about the frequency and quality of psychosocial interactions they will have with their children. These decisions can lead to enhanced or impaired school readiness.

In summary, the readiness of children for school reflects the child's condition as well as the family's knowledge, attitudes, beliefs, and practices.

The Readiness of Schools for Children

The readiness of schools for children is determined by a combination of factors, including availability and accessibility, quality, and recognition of and adaptation to local needs and circumstances. The mechanisms by which these factors influence the readiness of schools for children will be discussed.

Availability and accessibility. When schools are unavailable because they have not been built, clearly they are not ready for children, no matter how alert and ready the children might be. However, the simple existence of schools is not always enough. Even when schools have been built and children are enrolled, the accessibility of schooling may be low because the schools are not open on a regular basis. Examples abound of teachers who have other jobs, who arrive on Tuesday and leave on Thursday, or who are out because they are on strike, all situations which leave the child with a drastically reduced number of school days per year.

Timing, distance, and cost factors also affect a child's access to schooling. The school that operates during harvesting and sowing seasons curtails accessibility for children actively engaged in agricultural activities. Schools located at great distances or on the opposite side of streams that swell in rainy season may prohibit children from taking advantage of what is theoretically available. Although most primary schools do not require tuition or formal fees, there are many hidden costs, including, for example, the need to purchase a slate or shoes and clothes. If a family cannot afford the hidden costs, for all practical purposes the school is not accessible.

Quality. Regardless of the physical, cognitive, and social characteristics of a given child, little knowledge will be acquired in a classroom that has 50 children, no textbooks, a leaky roof, and an uninspired teacher with little more than basic literacy—a situation found all too often in developing countries. To no one's surprise, research indicates that the quality of schooling will also have a significant effect on children's primary school progress and performance. (Heyneman and Loxey 1983; Haddad 1979; Schiefelbein and Farrell 1978)

A primary factor associated with school quality is the teacher. The ability of the teacher to take advantage of existing materials and to create others, to respond to children's needs, and to maintain enthusiasm and hope in unfavorable conditions can create a quality learning environment. It would be a digression to enter into a discussion of the various factors affecting the quality of the teacher, but it is clear that the personal qualities, technical skills, and motivation of the teacher are central elements in determining the readiness of the school for the child. In addition to teachers, another important component of school quality is the availability of books and materials. Many children never have a book to call their own. Quality is, of course, a relative concept. What is considered quality schooling in one setting may not be classified as such in another.

Responsiveness to local needs and circumstances. A school may be available, accessible, reasonably well equipped, and staffed by certified teachers and yet remain unresponsive to local conditions. Potential problems result from such factors as poor scheduling or a language of instruction that differs from students' mother-tongue. Although some examples of curricula

adjusted to local circumstances are available, examples abound of children using materials foreign to them.

Perhaps the most difficult task of all is to improve the responsiveness of teachers to the unique needs of children, families, and communities. The selection and assignment of teaching jobs often results in hiring people from outside the local area who are not familiar with local language, customs, and traditions. Moreover, the concept of the teacher as a "facilitator", who uses locally available experiences and materials to help children construct their own knowledge, is a foreign idea to many cultures. Rather, the accepted image of the teacher, an image that applies as much to the primary school as to the university level, is that of custodian and dispenser of knowledge. Teacher-training programmes reflect this view and provide a centrally controlled curriculum, which in turn inhibits adjustments to local conditions and styles of learning. Moreover, low salaries provide little incentive for teachers to take responsibility for making needed curriculum adjustments. Under these circumstances, it is not surprising that teachers are not "ready" for the children they will receive.

Enrollment, Progress, and Performance

As indicated in Figure 1, the framework suggests that the readiness of children for schools and the readiness of schools for children interact to directly influence school enrollment, progress, and performance. The mechanisms by which this occurs are suggested in the following discussion.

School enrollment is influenced by the availability and accessibility of schooling and by parental decision. The decision to enroll and keep a child in school involves balancing a complex set of variables including non-school demands on time, perceptions of the child's readiness and ability, and parental beliefs and expectations about the value of schooling. Parental expectations may differ for boys and girls. Moreover, parental decisions may also be affected by their perception of the kind and quality of the schooling the child will receive.

In addition, parents make decisions about the age at which enrollment should occur. The child's age of entrance can be significant for three reasons. First, a child could enter school before the necessary learning competencies have been achieved, exposing the child to failure, repetition, and early drop-out. Second, entrance at an older age is often correlated with increased drop-out rates. This occurs in part because of the inability of the older child to catch up and because the school competes with the potential contribution of the child to the economic survival of the family. Third, variations in the age of school entrance result in classes of mixed age groupings, which creates in some ways, less-than-optimal teaching environments.

"Progress" in school, as used in this framework, refers to promotion from one grade to the next. From the standpoint of the child and the family, many of the same factors that influence enrollment will influence progress, including health, parental perceptions of perceived ability, and competing demands on time. Progress, however, also depends on enrollment quotas and promotion policies.

The ways in which school systems, schools, and individual teachers select some children for promotion and others for retention are not adequately understood. In some systems, children are routinely held back, even though automatic promotion is mandated. In others, the child's first year in first grade may be viewed as a preparatory year, and the second year in first grade as the "real" year, even though there are no changes in the curriculum content. (Myers 1985) This increases both repetition rates and the child's sense of incompetence and disinterest.

Apparently, neither parents nor teachers attribute high repetition rates or low achievement to the inability of schools to inspire and respond to the child's needs. (Toro and de Rosa 1983) Teachers may point to large class sizes or lack of materials, but not to deficiencies in their skills or teaching methods. Teachers also blame the home environment, and both teacher and parents blame the child's poor performance on the child's laziness or lack of interest. (Pozner 1983)

A child's performance as measured by formal testing presumably indicates how well the child has mastered the content of the school curriculum. The curriculum, however, may not have been adjusted to local circumstances, so grades may inadequately reflect the child's general knowledge or abilities. Moreover, as suggested with respect to promotion, a variety of factors can influence grading systems, further distorting their validity as an independent assessment of mastery. In spite of their inadequacies, these measures of performance are used to label the child's abilities and to determine likelihood of promotion. Unfortunately, little attention is paid to measuring social skills, such as the child's level of participation and cooperation.

The discussion will turn now to an examination of the evidence regarding the effects of various early child development programmes on readiness for school and on primary school enrollment, progress, and performance.

Effects of Early Childhood Programmes: A Review of the Evidence

The most broadly disseminated, systematic, and mature body of data regarding the effects of early childhood programmes on primary school progress and performance comes from longitudinal evaluations of "compensatory" programmes for children aged 3 to 5 from "disadvantaged" backgrounds in the United States, Europe, and Australia. As children in these studies moved through primary school, their progress and performance was evaluated. Data from the evaluations of children in early or late adolescence indicates that participation in well-implemented early childhood education programmes can have significant long-term effects on school progress as measured by increased promotion, decreased need for special education, and completion of high school. (Lazar 1982, 1989; Halpern and Myers 1985)

What are the implications of these findings from studies in industrialized countries for programming initiatives in Asia, Africa, and Latin America? The schools, families, and social institutions in Third World countries differ in many ways from those in industrialized countries where the programmes and studies described above were carried out. Accordingly, a simple generalization of results would be inappropriate. The causal mechanisms that seem to be at work in the United States or Europe may or may not work in the varied and distinct countries of the Third World. Comparative findings may be weaker or stronger.

For instance, one is more likely in sub-Saharan countries than in the United States to encounter large classes, scanty instructional resources, minimally-trained teachers, and an inadequate number of "places" in each grade. Because of such adverse conditions, the newly acquired skills preschool participants bring with them to primary school may be of less consequence than in the U.S. in shaping the course of children's school careers. When promotion policies are only loosely tied to children's abilities, when there is no special education to be "avoided", and when there are resources for only 10 to 20 percent of primary school participants to complete secondary school, the "positive long-term effects" found in the U.S. may not be relevant.

On the other hand, it is reasonable to expect that primary school systems in the Third World can be sensitive to the unique skills and characteristics of the children they inform and instruct. At the same time, it is reasonable to expect that children whose health and psychosocial development have improved will be better equipped to adapt to, cope with, and even change the realities of the school system that they confront.

One could argue that the severe nutritional and cognitive deficits characterizing the status of many children in the Third World raises the possibility that early interventions can exert an even more powerful effect than that found in the industrialized world. Thus, the results from industrialized countries do provide hope. Let us further explore that optimism, therefore, by turning to the research evidence available from early child development programmes implemented in the Third World.

Evidence from the Third World: Nutrition Intervention Programmes

In the 1970's, academic interest in the relationship between malnutrition and behavioral development led to a series of widely quoted studies in Latin America. At the time, emphasis was placed on protein-energy malnutrition and on supplementation, with little or no attention paid to the effect of vitamins or minerals on growth and development. Table 1 (pg 22) provides information on location, sample sizes, treatment, and design for 4 nutrition-related interventions as well as 13 education-related interventions which will be discussed in the next section. The following section describes the results from these two sets of investigations.

Guatemala. A team of researchers at the Nutrition Institute for Central America and Panama (INCAP) found that high supplemental intake had a significant effect on birth weight, physical growth up to age 7, and cognitive development up to age 3. The cognitive effects appeared to decrease in magnitude and generality beyond age 3.

Supplementation had no significant effect on the child's verbal performance at ages 5, 6, and 7 or on early school progress and performance. However, in three of the four participating villages in which parental education levels were moderately higher, the amount of supplemental intake predicted the likelihood of school enrollment. (Klein 1979; Balderston et al. 1981) Parents' perceptions of the children's early intellectual ability led to earlier enrollment for both boys and girls and to a greater likelihood of enrollment for girls.

Although nutritional supplementation seemed to have no effect on school performance, the quality of home stimulation during the early years was strongly associated with primary school performance, especially for boys. (Irwin et al. 1978) It was found in these generally poor villages that even slight differences in economic status affected family ability to cope with the costs of children's education. For the same group, Barrett and Radke-Yarrow (1981) found effects of the nutritional supplementation on the social development of children as indicated by their adjustment and behavior in school. The results suggest that a more comprehensive assessment of the effects, rather than assessment by traditional IQ or cognitive tests, is required to determine the impact of early intervention programmes.

Cali, Colombia. An investigation in Colombia (McKay 1982) found that children in all of the experimental groups, when compared to a low-income comparison group, demonstrated significantly increased physical growth and enhanced cognitive ability during and immediately after the treatment periods. These cognitive gains were related to age of entry into the programme as well as to duration of treatment. Increases in IQ scores were maintained until at least 8 years of age, when the last measurement was made.

Results of the follow-up study of these children into primary school were complicated by the fact that the children attended 93 different primary schools, many switching schools more than once. Thus, only some of the children in the treatment group received a special programme. In addition, many children, particularly the low-status control group children, attended private "backyard" or "bench" schools, and were unable to enroll or stay in the public system. Children in these settings are more likely than those in public settings to be "promoted", regardless of academic ability.

In spite of these constraints, results indicate that the low-income children in the treatment-group were slightly more likely than low-income children in the control group to be promoted through the first three grades. Thus, at the beginning of the fourth year, the average grade-level for each of the groups improved, in accordance with the length of time spent in the preschool. Whereas for the control group, the average grade-level was 2.9 years, for those who were exposed to 4 years of preschool the average grade level was 3.2 years, a 10 percent improvement.

Bogota, Colombia. In this investigation, maternal and child supplementation and maternal tutoring in different combinations were associated with improved cognitive abilities at 18 months and 3 years. The strongest effects, however, were found when the intervention consisted of maternal and child supplementation as well as home visiting. Maternal supplementation had a very modest (60 gram) effect on birth weight and was also associated with improved physical growth at 3 years. The home visiting programme had significant positive effects on the quality of mother-infant interaction in both supplemented and unsupplemented groups. Behavioral effects were greatest for supplemented infants.

A school readiness test including reading readiness, math, and basic knowledge was administered to 174 children, 5-9 years of age. Results indicated that nutritional supplementation had a significant positive effect on readiness test scores, with or without maternal tutoring. Effects were

greater at low levels of father's education. Maternal tutoring had no independent effects on test scores.

However, maternal tutoring was found to have an important effect on age of initial primary school enrollment. Mean age of entry was 5 years for the maternal tutoring group, 5.6 years for the maternal-tutoring/nutritional-supplement group, 5.9 years for the supplementation group, and 6 years for the control group. There were also significant positive effects of supplementation and tutoring, alone and combined, on first grade repetition rates. Children in all three intervention groups repeated at about a 4 percent rate, compared with a control group repetition rate of 13 percent.

Reviewing the developmental pattern of results during the first 6 years, the investigators speculate that nutritional supplementation has long-term effects on such factors as children's level of activity, alertness and social cooperation. Maternal tutoring has indirect effects, perhaps through effects on maternal-child interaction, on children's "familiarity with a school-like learning paradigm of interaction with adults." The largest effects are greatest for the most disadvantaged children.

Puebla, Mexico. This follow-up study, carried out over a 10-year period, reported that supplemented children whose mothers received supplementation during pregnancy walked at an earlier age, exerted early sphincter control, and demonstrated language superiority when compared to an unsupplemented control group. (Chavez and Martinez 1983)

Using direct observation, open field tests, and time sampling to quantify behaviors, the authors found that after 6 months of age the undernourished children had lower activity levels when compared with the supplemented children. This difference increased with time and was evident in the amount of time spent sleeping, number of steps per hour, and quantity of time playing. In the second year, supplemented children smiled significantly more and cried significantly less than did undernourished children in the control group.

Moreover, supplemented children were not only better nourished, they also received more attention. Mothers responded more readily to children's demands. Fathers were more likely to participate in feeding. These differences appeared in the early months, as supplemented children were given toys, clothing, and rewards for good behavior. It is suggested that in the sequence of events leading to these differences, the demand for care by the child is as important as the offer of care from the caregiver, since better-nourished children demand more. The investigators also indicate that these differences can be transitory and that stimulation of malnourished children can have a positive impact on developmental outcomes.

Early Childhood Education Programmes

The second group of studies focuses more directly on preschool and early education programmes and provides evidence regarding the potential effects of early interventions on enrollment, progress, and performance in primary schools. Table 1 summarizes the information on 13 studies carried out in Asia, Latin America, and the Middle East. These 13 studies differ along several

dimensions, including rigor of experimental design setting and type of intervention. However, they all have attempted to compare, over time, children who have received the programme with those who have not. Several of the studies may be characterized as research projects, others as evaluations of small-scale demonstration projects, and others as evaluations of larger-scale programmes. Generally, the designs of these 13 studies are weaker methodologically than those of the 4 nutrition studies described earlier. For instance, in only one study are children randomly assigned to treatment and control groups. (Kagitcibasi, Sunar, and Bekman 1987) Comparison groups comprised of children with similar characteristics are not always appropriately or effectively identified.

Several of the studies followed preschool aged-children with and without participation in specific preschool programmes into primary school. These children attend a variety of schools, meaning that criteria used to judge promotion and progress will vary, bringing uncertainty into the comparisons. In other studies, preschool antecedents of selected primary school children are identified retrospectively in order to define the comparison groups. When working retrospectively, a possible bias is introduced by the nature of the particular primary schools chosen for study and by the possibility that some children will not have enrolled in primary school.

In spite of these limitations and in spite of some need for caution in interpreting the results, this group of studies sheds light on factors that influence children's early school careers in developing countries. As a whole, the studies clearly demonstrate the positive effects of early intervention on children's progress through the educational system.

Early Intervention Programmes: Impact on School Enrollment, Progress, and Performance

Tables 2-A and 2-B (pg. 26) present a summary of the evidence regarding the effects of both nutrition and education intervention programmes on enrollment, progress, and performance in school. As indicated in the Tables, the nutritional studies showed a definite advantage in terms of children's readiness for school. Better-nourished children had an advantage physically, mentally, and socially. A similar result emerges from the several studies of education interventions. Each study involved a different indicator or set of indicators defining school readiness, usually focussing on cognitive development as it had been affected by the particular intervention in which the child participated.

Of the studies summarized in Tables 2-A and 2-B, 10 provide comparative information about children's enrollment, 12 about school progress, and 12 about performance. The following discussion summarizes the impact of these programmes on children's enrollment, progress, and performance in primary school. (Detailed programme descriptions can be found in Halpern and Myers 1985, and Myers 1988.)

School enrollment. Are children who participate in early childhood programmes more likely to enroll in primary school? Relatively little information could be found to answer this question. In

one of the Indian studies, enrollment was higher for children who had passed through the Integrated Child Development Service programme than for those who did not. An interesting finding of this increased enrollment is that it was significant for girls, but not for boys, who already had a high enrollment rate. In Guatemala, the programme also showed an effect on enrollment for girls but not for boys. The early childhood programmes seemed to have an equalizing effect. The Colombian (PROMESA) study also showed a (slightly) higher enrollment level for children participating in the programme.

Can one assume that participation in an early childhood programme is associated with enrollment at an earlier age? In six of the studies reviewed, the average age of enrollment was younger for those who had been in an early childhood development programme. We do not know from the studies whether an earlier age of enrollment led to improved school progress and performance. It seems reasonable to assume that the earlier age of entry regularizes the child's passage through the system.

School promotion, repetition, and drop-out. Of the 4 nutrition studies, 2 showed an improvement in school progress for programme children, but 1 failed to find a difference. Of the 13 education studies, 6 showed a difference in promotion rates, and 3 showed no effect (one of these was carried out in a system with automatic promotion so no difference would be noted). Four studies did not contain information on repetition or drop-out.

In some cases, the differences in promotion were rather dramatic. For instance, in the Brazilian (PROAPE) the PROAPE children had a first-grade repetition rate of 9 percent as compared with a 33 percent rate for children who did not participate in the programme. The study from Fortaleza, Brazil found a first grade repetition rate of 36 percent for children who had received the intervention. This figure was significantly lower than the 66 percent first grade repetition rate reported for children who did not receive the intervention.

The four studies from Colombia all show significant differences in progress through the educational system. The strongest effect was associated with a programme in the extremely impoverished area of the Choco, where 60 percent of the programme children reached the fourth grade of primary school, compared with only 30 percent of the comparison group. In Argentina, 36 percent of the rural children from low socioeconomic backgrounds repeated if they had a preschool experience, as compared with 77 percent for those without preschool experience. Moreover, these results consistently suggest that differences are more pronounced for children from the most disadvantaged environments.

Performance. In two of the three nutrition studies for which information was available, no differences in academic performance were found between the programme children and the comparison children. In six of the ten education studies with available information, children from early intervention programmes performed better; in two, the effect was negligible; and in one, there was no difference between the two groups. In Morocco, positive effects were found in a rural but not in an urban context.

There was less information regarding differences in social behavior of school children as a result of their participation in an intervention during the preschool years. The Guatemalan nutrition study found that programme children who received high caloric supplementation from birth to age 2 years had higher levels of social involvement than unsupplemented children had. Both Indian studies indicated better behavior among ICDS than non-ICDS children. The Turkish study found that adjustment was better among children whose mothers had participated in a parental training programme, but there was no difference in adjustment according to whether or not a child had been in a preschool centre or not.

Readiness of Schools for Children

As one may have expected, this body of evaluation research provides little insight into the readiness of schools for children. No analyses are available of what happens to children of similar backgrounds who go to primary schools of different quality. The unspoken assumption, in more than one of the studies, is that children who go to poorer quality schools will not make the same progress in spite of their involvement in the early intervention programmes.

The affect of "availability" seems to come into play in the four-country Latin American study. In Colombia and Bolivia, no differences were found between preschool and non-preschool children in their readiness at the time of entry into first grade. In these two countries, there was often a lag of 1 to 3 years between preschool attendance and entry into primary school. In the Moroccan example, promotion quotas come into play. In the Peruvian study, the poor quality of the primary schools was suggested as being the reason why improved readiness for school did not seem to have an effect on progress or performance.

It is interesting that only in the cases where school readiness did seem to improve as a result of being in an early childhood programme that the "readiness of the school" was looked to as a possible explanation why the preschool result did not continue. But it is logical to think that, to some degree, the readiness of schools for children was operating in all cases, for good or for ill. What did not occur to researchers was the need to examine the interaction between early interventions in the preschool years (as they affect the readiness of children) and the differential availability and quality of primary schools.

Programme Review

■ INDIA: INTEGRATED CHILD DEVELOPMENT SERVICES

ICDS was started by the Indian government in 1975 to improve the quality of life of poor children aged 0 to 6 and their mothers in urban-slum, rural, and tribal areas. In 1989, approximately 40 percent of the targeted areas were reached, accounting for approximately 11.2 million children.

The Service functions primarily through Anganwadi centres (literally, courtyards) run by Anganwadi Workers (AWW) who gather together 20 to 40 children for approximately 3 hours

each weekday for supplementary feeding and preschool educational activities. Anganwadi workers are selected according to uniform criteria by the Central Government, based on education and experience, and are given pre-service training by existing academic institutions and non-governmental organizations. In addition to providing the early education and supervising the supplementary feeding, the AWW are responsible for a wider variety of tasks including growth monitoring, vitamin distribution, record keeping and maternal education.

Two relatively simple studies show effects of the ICDS programme on enrollment, progress, and performance of children in primary school. Each of these will be summarized.

Chaturvedi and colleagues (1987) randomly selected three villages from adjoining ICDS and non-ICDS areas, and studied all children aged 6 to 8 in those villages. These two groups of children were " well-matched according to the parental education and occupation, number of educated members in the household, socio-economic status, period of parental company and some other bio-social characteristics which have an association with child's mental and social development."

The researchers found that children who had participated in the ICDS preschool programme scored significantly higher on the Ravens Progressive Color Matrices than those who did not. School attendance, academic performance, and general behavior in school were all significantly superior for ICDS participants.

Lal and Wati (1986) compared ICDS and non-ICDS children from 14 rural villages with respect to enrollment, drop-out, and school performance. When drop-out figures were examined by caste group, results indicate that drop-out was much higher by grade 3 for non-ICDS children than for ICDS children in the lower and middle castes. Such differences were not observed for children in the higher castes, as indicated below:

DROP-OUT RATES (GRADE 3)

	ICDS	NON-ICDS
lower castes	19%	35%
middle castes	5%	25%
higher castes	7%	8%

■ PERU: PROGRAMAS NO-FORMAL DE EDUCACION INICIAL

The Programs No-Formal de Education Inicial is a centre-based program for 3-to 5-year-old children. Children attend the centre for 3 hours, four or five mornings per week. Education and care is provided by a minimally trained community volunteer. A snack and/or noontime meal is also provided by mothers, on a rotating basis. In some villages, this nonformal preschool programme was associated with income-generating projects.

An evaluation by Myers et al., 1985, examined the impact of the programme on school readiness in terms of a criterion-referenced test that was linked specifically to the behaviors that the PRONOEI nonformal preschool curriculum guide defined as desirable. The test had intellectual, motor, and social sub-scales. Results differed among the 3 geographic regions in which the programme was applied. In Puno, which had the most extensive programme, PRONOEI children performed significantly better than non-PRONOEI children did on all three of the sub-scales. This occurred in spite of evaluation reports indicating the low quality of the PRONOEI programme—quality as judged by "promoters" teaching skills, time devoted to educational activities, availability and use of materials, and quality of supervision.

Although school readiness seemed to be positively affected, no effects of PRONOEI participation were found on promotion from 1st to 2nd grade or from 2nd to 3rd grade. Effects favoring PRONOEI participants were found on age of enrollment. A high rate of repetition in the 1st grade (over 50 percent) seemed to be linked to structural conditions inherent in the local school situation, minimizing the role of individual characteristics or abilities in determining children's promotion.

Summary and Policy Recommendations

What are the implications of this evidence from programmes implemented in Third World settings? The following section highlights several conclusions which can be drawn from this review and suggests actions for programme implementation.

- The data clearly indicate that early intervention programmes can have a positive effect on the probability of enrollment, progress, and performance in the early years of primary school.
- The mechanisms that produce these improvements appear to reflect a combination of factors, including earlier age of enrollment, improved school readiness related to enhanced health and nutritional condition, improved cognitive skills, and changes in parental expectations and perceptions of their child's potential.
- This review also suggests that structural conditions and the quality of primary schooling can moderate the potential effects of improved school readiness on school progress or performance.
- Poor children and children from socially discriminated groups may benefit more than their more privileged peers from multifaceted early intervention programmes. It is also apparent that in contexts where gender differences are operating, preschool programmes can raise the primary school entrance rates of girls, making them more similar to those of boys. It is difficult to determine from the existing data, however, whether the gains achieved are maintained over time. Moreover, the durability of these effects and the conditions under which they persist or deteriorate remains to be documented.

In summary, these conclusions are encouraging and provide a sense of hope that should stimulate additional programme design, development and evaluation. When compared against results from the United States and Europe, these data reinforce the assumption that not only are similarly positive effects of early interventions possible but that the potential for bringing about

improvements is greatest where social or economic conditions prejudice a child's entrance, continuation, or performance in primary school. When placed against the potential cost savings of reduced repetition rates, these results provide an important argument in support of investing in early childhood care and development programmes.

Implications for Policy and Programming

The personal and social costs of a poor transition from home to school are such that improving the transitions should be a central policy goal of developing countries' governments and of international donors, particularly in countries where primary school repetition and drop-out rates are still high. The evidence reviewed indicates that early childhood interventions can improve this transition.

Policy-makers need not wait, therefore, for more refined and detailed studies. On the basis of available evidence, this review suggests several important policy implications regarding programming integration, operations, and evaluation. The following are some recommendations for each of these three areas.

Programme integration. The importance of combining health, nutrition, and education interventions is highlighted by the evidence presented in this review. It is clear that in Third World settings, programmes must place greater emphasis on the health and nutrition needs of children than is required in the industrialized world. That emphasis must go beyond simple "food supplementation" to incorporate solutions to the problems of micro-nutrient deficiencies.

To improve the transition, and thereby have a positive effect on schooling, programmes must focus jointly on improving children's readiness for school as well as on improving the school's readiness for children. There is a need, therefore, to integrate early childhood programmes within existing primary school systems.

Programming integration requires a reorientation of the programming process. It means bridging the artificial separation between preschool and primary school children which occurs when children enter school. Combining programmes requires accepting the responsibility that schools must also adjust to the needs of children rather than only requiring children to adapt to the system. As concluded by Halpern and Myers:

An integrated early childhood-primary programme could serve as a vehicle for including family and community interests and strengthen to the formal school system; for example, fusing the values and content of the local culture into the curriculum, at first at the pre-primary then at the primary level, serving as a focus of community development energies that, once organized, could be focused on other issues involving teachers in the solution of community problems linked to child development but not obviously part of the formal schools system's mandate, and reaching parents and their children with educational services before the perceived costs of children's participation in a process with ill-defined returns becomes too high. (1985)

Organization. An integrated programming approach raises a series of questions regarding the organizational structure and operational mechanisms required for its survival. If early childhood programmes become the exclusive responsibility of Education Ministries, there is the danger that the formal primary school system may be extended downward to children between the ages of 3

to 6. This would reinforce the apparent inflexibility of primary schools while also creating programmes for younger children that are inappropriate to their needs.

One organizational alternative would be to create a semi-autonomous unit within the Ministry of Education with responsibility for programming related to children from age 3 to age 8 or even from birth to age 8. This multi-disciplinary unit might include individuals with expertise in health, nutrition, education, psychology, and community development. Under the auspices of an inter-ministerial committee, this unit could be staffed with personnel "loaned" from other ministries, with the understanding that each of these persons would serve as a liaison with the loaning ministry. The activities of this unit could include, for example:

- The development of "Parental Education" programmes that could be linked to preschool and/or primary school through parents' committees or other organizations.
- The integration of childrearing content in ongoing adult literacy and post-literacy programmes.
- The placement of preschools and primary schools near each other, enabling primary school children to bring siblings to the preschool and to return home with them at the end of the day. In addition, the primary school curriculum might incorporate a Child-to-Child component in which older primary school children were not only encouraged to take child care messages home but were also required to participate as helpers in the attached preschool as part of their school activities.
- In communities that expect a preschool environment to provide formal learning, arrangements could be made to have a primary school teacher affiliated with each preschool to work in particular with the 4- and 5-year-olds on formal learning activities. This arrangement could be facilitated through joint working groups of pre-school and primary school teachers. These working groups could also discuss ways to ease and monitor the transition of preschool children into the primary school setting.
- Radio, television, and video programmes for both preschool centres and early primary grades could be created. The content could include health and nutrition and play activities relevant for children between 3 and 8 years of age. A series of booklets, with suggested activities to reinforce the concepts transmitted through the audiovisual channels, could also be developed.

Undoubtedly there will be reasons why the suggested activities will not be appropriate in a particular location, and the need to adjust to local circumstances is obvious. The intention here is to provide examples of ways in which the programming process might be conceptualized to create and facilitate opportunities for integrating preschool activities into the primary school setting.

Evaluation. Another implication of this review is that evaluation designs should be built into early child programmes, with opportunities for longitudinal follow-up studies of these children into the early years of primary school. In carrying out these studies, more attention must be placed on the development of indicators and instruments for measuring the process of child development.

In line with the framework described earlier, one could consider creating a Child Readiness Profile (CRP) and a School Readiness Profile (SRP). A Child Readiness Profile would provide a description of children at age 5 as they prepare to move beyond the confines of the family and face the new environment of the school. It is known that involvement and success in school as well as in later life is affected by the child's health and nutritional status, language competence, learning skills and facilities, self-esteem and confidence, as well as by the expectations for success held by the family and community. On the basis of these and other variables, it would be possible to construct a "Readiness Profile" that incorporates health and nutrition as well as cognitive and social dimensions of development. This profile, which should be simply constructed for easy administration, could measure, for instance, morbidity in terms of sickness during the last three months, nutritional status as indicated by iron deficiency, cognitive skills as indicated by the ability to manage pre-literacy and pre-numeric concepts and skills, and a social dimension as indicated by family expectations for the child. The validity of the profile could be measured by comparisons with other indicators of culturally accepted social behavior. The CRP could provide both programme developers and evaluators with an instrument to identify the school readiness of a population of children.

Finally, as the studies reviewed indicate, there is a need for systematic, well-designed longitudinal evaluation research that follows children exposed to an Early Child Development programme into primary school. In the Third World, there is an absence of the kind of rigorous longitudinal studies that apparently have had such an influence on policy development in the industrialized countries. If such studies were available, Third World decision-makers would not have to refer apologetically to research from the industrialized world to justify investing in Early Childhood Development interventions. Access to such a body of research would support the development, implementation, and evaluation of integrated programmes of early childhood development that cross bureaucratic demarcations and consider, in a holistic fashion, the first eight years of a child's life.

References

- Balderston, J., et. al., *Malnourished Children of the Rural Poor*. Boston: Auburn House, 1981.
- Barrett, D., and Radke-Yarrow, M., "Effects of Nutritional Supplementation on Children's Responses to the Novel, Frustrating, and Competitive Situations," *American Journal of Clinical Nutrition*, Vol. 42, No. 1, 1985, pp. 102-20.
- Berg, A. *Malnourished People: A Policy View*. Washington: The World Bank, 1981.
- Braithwaite, J., *Explorations in Early Childhood Education*. The Hague: Bernard van Leer Foundation, 1983.
- Chaturvedi, E., et. al., "Impact of Six Years Exposure to ICDS Scheme on Psycho-social Development," *Indian Pediatrics*. Vol. 24, February 1987, pp. 153-60.
- Chavez, A, and Martinez, C., *Growing Up in A Developing Community, A Bio-Ecological Study of the Development of Children from Poor Peasant Families in Mexico*. An English publication by INCAP of "Nutricion y Desarrollo, Infantil, Mexico: Nueva Editorial Interamericana, S.A. de CV., 1979.
- Chavez, A. and Martinez, C., "School Performance of Supplemented and Unsupplemented Children from a Poor Rural Area;" in A.E. Harper and G.K. Davis (eds.), *Nutrition in Health and Disease and International Development: Symposia from the XII International Congress on Nutrition*, Vol. 77, Progress in Clinical and Biological Research, New York: Alan R. Liss, Inc., 1981.
- Feijo, M., "Early Childhood Education Programs and Children's Subsequent Learning: A Brazilian Case, Unpublished Ph.D. Dissertation, Stanford University, Department of Education, 1984.
- Flip, J., et al., "Relationship between Pre-primary and Grade One Primary Education in State Schools in Chile, in K. King and R. Myers (eds.), *Preventing School Failure: The Relationship Between Preschool and Primary Education*. Ottawa: The International Development Research Centre, 1983.
- Haded, W., "Educational and Economic Effects of Promotion and Repetition Practices," Washington, D.C.: The World Bank, Staff Working Paper No. 319.
- Highland, E., "The Problem of the Match--Cognitive Transition Between Early and Primary School: Nigeria," *Journal of Developing Areas*. 17, 1982.
- Halpern, R. and Myers, R., "Effects of Early Childhood Intervention on Primary School Progress and Performance in the Developing Countries," A Paper prepared for the United States Agency for International Development, Ypsilanti, Mich.: The High/Scope Educational Research Foundation, April, 1985. (Mimeo)
- Herrera, M., and Super C. "School Performance and Physical Growth of Underprivileged Children: Results of the Bogota Project at Seven Years," Report to The World Bank. Cambridge: Harvard School of Public Health, 1983.
- Heyneman, S. and Loxley, W., "The Impact of Primary School Quality on Academic Achievement Across 29 High and Low Income Countries," *American Journal of Sociology*, 88, 1983, pp. 1,162-94.
- Irvin, M., et. al., "The Relationship of Prior Ability and Family Characteristics to School Attendance and School Achievement in Rural Guatemala," *Child Development*, 49, 1978.

- Kagiticbasi, C., Diane Sunar, and Sevda Bekman, "Comprehensive Preschool Education Project: Final Report," Istanbul, Turkey, Bogazici University, November, 1987. A Report prepared for the International Development Research Centre.
- Klein, R., "Malnutrition and Human Behavior: A Backward Glance at an Ongoing Longitudinal Study," in D. Levitsky (ed.), Malnutrition. Environment and Behavior. Ithaca: Cornell University Press, 1979.
- Lal, S., and Wati, R., "Non-Formal Preschool Education--An Effort to Enhance School Enrollment," A paper presented for the National Conference on Research on ICDS, February 25-29, 1986. New Delhi, National Institute for Public Cooperation in Child Development (NIPCCD). (Mimeo)
- Lazar, I., and Darlington, R., "Lasting Effects of Early Education: A Report from the Consortium for Longitudinal Studies," Monographs of the Society for Research in Child Development, No. 195, 1982.
- Mckay, A., "Longitudinal Study of the Long-term Effects of the Duration of Early Childhood Intervention on Cognitive Ability and Primary School Performance, Unpublished PhD. Dissertation, Northwestern University, Evanston, Illinois, 1982.
- Ministerio da Saude, y Instituto Nacional de Alimentacao e Nutricao, "Analicao do PROAPE/Alagoas com Enforque na Area Economica, Brasilia, MS/INAN, 1983. (Mimeo.)
- Moock, P., and Leslie, J., "Childhood Malnutrition and Schooling in the Terai Region of Nepal," *Journal of Development Economics*. 1986, pp. 33-52. Myers, R., et. al," Preschool Education as a Catalyst Community Development" A Report prepared for the U.S. Agency for International Development, Lima, Peru, 1985. (Mimeo)
- Myers, R., "Effects of Early Childhood Intervention on Primary School Progress and Performance in Developing Countries: An Update, 1985. Ypsilanti, Mich.: The High/Scope Educational Research Foundation, 1988. (Mimeo)
- Nimnicht, G., with Patricia Elena Posada, "The Intellectual Development of Children in Project Promesa," Medellin, Colombia, Centro Internacional de Educacion y Desarrollo Humane (CINDER), Research and Evaluation Reports. A report prepared for the Bernard van Leer Foundation, No.1, October, 1986.
- Pollitt, E., and Metallinos-Katsaras, "Iron Deficiency and Behavior: Constructs, Methods and Validity of the Findings," Wurtman and Wurtman (eds.), *Nutrition and the Brain: Vol. 8 Behavioral Effects of Metals, and their Biochemical Mechanisms*. (In Press).
- Pollitt, E., "Child Development Reference Document: (I) Risk Factors in the Mental Development of Young children in the Developing Countries. (II) Early Childhood Intervention Programs for the Young Child in the Developing World," Prepared for UNICEF, Houston, Texas Health Science Center, 1984. (Mimeo)
- Pollitt, E., and Tompson, C., "Protein-calorie Malnutrition and Behavior: A View from Psychology" in Wortman, R. and Wortman, J. (ed.), *Nutrition and the Brain*. Vol. 2, New York: Raven Press, 1977.
- Popkin, B. and Lim-Ybanex, M., "Nutrition and School Achievement" Social Science and Medicine, 16, 1982.
- Fouler, P., "Relationship between Preschool Education and First Grade in Argentina," In K. King and R. Myers (eds.) *Preventing School Failure: The Relationship between Preschool and Primary Education*. Ottawa: The International Development Research Centre, 1983.
- Richards, H., *The Evaluation of Cultural Action*. London: The Macmillan Press, Ltd., 1985.

- Schiefelbein, E. and Farrell, J., "Causas de la Desercion en la Ensenanza Media," Revista de Educacion. 68, 1978, pp. 43-REF 99.
- Seshadri, S. and Gopaldas, T., "Impact of Iron Supplementation on Cognitive Functions in Pre-School and School-aged Children: The Indian Experience," American Journal of Clinical Nutrition. Supplement, 1989, pp. REF 99.
- Soematri, A. G., Pollitt, E. and Kim, L., "Iron Deficiency Anemia and Educational Achievement," The American Journal of Clinical Nutrition, Vol. 42, December 1985.
- Toro, B. and de Rosa, I., "Papito, Yo Porque Tengo que Repitir el Ano?" Toronto: Ontario Institute for Studies in Education, 2983. (Mimeo)
- Wagner, D., and J. Spratt, "Modern vs. Quranic Preschools in Morocco, Who Attends and Who Achieves?" Paper presented at the American Anthropological Meetings, Denver, 1984. (Mimeo.)

Tables

TABLE I. LONGITUDINAL STUDIES OF NUTRITION AND EDUCATIONAL INTERVENTIONS AS RELATED TO SCHOOLING

<i>A. NUTRITION INTERVENTIONS</i>					
<i>Country/ Intervention</i>	<i>Urban/ Rural</i>	<i>Age of children</i>	<i>Study Population</i>	<i>Intervention Components</i>	<i>Comparison Groups</i>
Columbia, Bogota (Herrera, 1983)	Urban/ Margi nal	Pre-natal 3 months at outset followed to age 7	443 families	All groups received health care. Nutrition supplementation, different ages. Home visits for sub-groups.	Random assignment to treatment groups: Suppl. nutr.- mother Suppl. nutr. child- 3mo. to 3 years Early stim-birth to 3 years Early stim. and nutrition combine 2+ 3
Colombia, Cali (McKay, 1982)	Urban Margi nal	3-7	333 Children malnourished low income	Pre-schooled. Nutrition supplementation. Health surveillance/care H/N education.	Random assignments to: 4 yrs. begin age 3 3 yrs. begin age 4 2 yrs. begin age 5 1 yr. begin age 6 No treatment low income group with normal wt/ht No treatment, high income

Guatemala INCAP (Klein, 1979)	Rural Four village s	Pre-natal 6 mo. at outset	671 children (450 followed longitudinally)	Nutritional supplementation (6 mo. to 7 years)	Two villages: High protein and high calorie supplementation. Two villages: No protein, modest calorie supplementation.
<i>Country/ Intervention</i>	<i>Urban/ Rural</i>	<i>Age of children</i>	<i>Study Population</i>	<i>Intervention Components</i>	<i>Comparison Groups</i>
Mexico (Chevez and Martinez, 1983)	Rural One village	Pre-natal (followed for 10 years)	34 children	Nutritional supplementation to mother during pregnancy and lactation. Supplementary feeding of baby from approximately 3 rd month.	Control (N= 17): Pregnant women who were well, normal ht., and between 18-36; and selection of children born with 2.5 kg or more and APGAR or 8. Interv (N= 17): Matched group, a year later.
Peru, Non- formal Programme of Initial Education (PRONOEI) (Meyers, 1985)	Urban and rural	3-5	334 Children	Non-formal pre- school. Nutritional supplementation Community improvement projects.	Children in non- pronoiei villages, with partial attempt to match on SES status.
Chile, Osorno Parents and Children Project (PPH) (Richards, 1985)	Rural	4-6	Children in 52 commun.	Health/nutrition education. Child development education. Community development.	Children in same class who did not participate in PPH

Colombia PROMESA (Nimnicht, 1986)	rural	0-7	4 commun.	Health/nutrition/ child dev. education; early stimulation programme; community improvement projects.	Children in same communities who did not participate in PROMESA
Brazil, Alosaos PROAPE (min. Sande, 1983)	Urban	4-6	184-PROAPE 556-Casulo 320-Kinder 334-No pre- school	Health surveillance. Nutritional supplementation pre-school.	Comparisons among children from different pre- school with non- preschoolers in first grade.
<i>Country/ Intervention</i>	<i>Urban/ Rural</i>	<i>Age of children</i>	<i>Study Population</i>	<i>Intervention Components</i>	<i>Comparison Groups</i>
B. EDUCATION INTERVENTION					
Turkey Comprehensive Pre-school Education Research Project (Kogitcibasi, 1987)	Urban	3-5	251 Children	Maternal Education using Turkish adaptation of HIPPI. Pre-school Education vs. custodial care vs. home care.	Children in same neighborhoods matched on age, economic and family criteria who did not attend preschool. Trained vs. untrained mothers.
India, Integrated Child Development Service (ICDS): Dalmau project (Chaturve, 1987)	Rural	0-6	Children ages 6-8 in primary school 214-ICDS 205-non ICDS	Nutrition supplementation, immunization, health check-ups, health/nutrition education, non formal pre-school education.	Children in adjoining areas not participating in ICDS but similar in socio-culture, geographic, anthropological features. Villages within area selected randomly.

India, ICDS Haryana state (Lal and Wati, 1986)	Rural	0-6	Primary school 1,271 ICDS 436 non ICDS	Same as above	Children from same area who did not participate in ICDS
<i>Country/ Intervention</i>	<i>Urban/ Rural</i>	<i>Age of children</i>	<i>Study Population</i>	<i>Intervention Components</i>	<i>Comparison Groups</i>
Morocco, Literacy Acquisition Research (Wagner, 1984)	Urban and Rural	5-7	378 Children	Quranic or "modern" Pre-schooling	Children in Quran pre-schools compared with children in "modern" pre- schools and non pre-school groups. Samples constructed to control for social class.
Latin America, 4-country study in Argentina, Bolivia, Chile, Colombia. (Filp, 1983)	Urban and rural	4-7	2,545 Children	Pre-school	First grade children who had participated in pre- school compared with those who had not (taken from same and other pre- school classes, same schools) analysis within SES grouping.
Brazil, Fortaleza Pre- school Research (Feigo, 1984)	Urban	6-7	127 Children	Public kindergarten participation	Children who tried to enroll in same kindergarten but could not for lack of space, matched by gender, birth order, sibs

TABLE 2A. IMPACT OF EARLY CHILD DEVELOPMENT PROGRAMMES ON SCHOOL
ENROLLMENT
AND PROGRESS

A. NUTRITIONAL INTERVENTIONS

<i>Country/ Programme</i>	<i>Enrollment</i>		<i>Progress</i>	
Columbia, Bogota	Average age of enrollment	Repetition	Treatment	
	5.6 years for supplemented/home visit		Yes	No
	6.0 years for control		4%	13%
Columbia, Cali	—	Average grade level in 4 th year		
		3.2 for experimental		
		2.9 for comparison		
Guatemala	Earlier for supplemented	No effect		
Mexico (Chevez)	All enrolled	Repetition (1 st grade)	Treatment	
			Yes	no
			0.0%	13%

B. EDUCATION STUDIES

Argentina	Lower age of enrollment (all social classes, urban and rural, especially low SES/rural)	Repetition 1st year	Preschool	
			yes	no
			low SES/Urban	12%
		low SES/rural	36%	77%
Bolivia	Negligible difference		—	
Chile	Lower age of enrollment (all social classes)	No difference		

<i>Country/ Programme</i>	<i>Enrollment</i>		<i>Progress</i>		
Columbia	Negligible difference		Repetition (1 st year) low SES/urban	Preschool yes 10%	no 22%
Brazil	—		Repetition 1 st year (girls benefited most)	Kindergarten yes 36%	no 66%
Peru	Lower age of enrollment		No difference in 1 st or 2 nd grade promotion rates		
Chile	—		—		
Columbia	Enrollment in 1 st grade	PROMESA yes 100% no 87%	Reached in 2 nd grade- Reached in 3 rd grade- Reached in 4 th grade-	PROMESA yes 83 73 60	no 77 44 30
Brazil Alagoas	—		—		
Turkey, Comp. Pre-school Research Project	—		—		
India, -(Dalman)	Entrance by ICDS at earlier age (85% vs. 74% by age 6). Only significant for girls.		Regular attendance higher for ICDS. (88% vs. 74% had average or above attendance record)		
India, -(Maryana state)	Right age for grade: lower caste mid caste high caste	ICDS yes 80 75 82 no 56 56 59	Drop out by 3 rd :	ICDS yes 19% 5 7	no 35 25 8
Morocco	--		No difference in promotion rates.		

TABLE 2B.

IMPACT OF EARLY CHILD DEVELOPMENT PROGRAMS ON SCHOOL PERFORMANCE

A. NUTRITION INTERVENTIONS

<i>Country/Programme</i>	<i>Performance</i>
Columbia, Bogota	Teacher assigned grades No difference (1 st grade) 6.0 years for control
Columbia, Cali	—
Guatemala	Academic performance—No effect Social interaction—positive effect
Mexico (Chavez)	Significant difference found in: –School Exam –National Exam –Detroit-Engle Test –Behaviour observations
Morocco	Achievement test (1 st grade) –for Quranic in rural areas –for "modern" in urban areas No difference for Quranic in urban areas 2. General abilities test
Argentina—4-country study	1. Reading/writing abilities significantly higher for preschoolers of all SES levels
Bolivia—4-country study	1. Reading/writing abilities significantly higher for preschoolers (except for urban marginal children)
Chile—4-country study	1. Reading/writing ability negligible effect.

Turkey Comp. Pre-school research project.		Performance in Grade 3	
		Maternal Custodial/Home	Maternal Ed. vs. Non Maternal Ed
	School Grades	+	+
	Behavior		+
	Achieve Test	+	+
	General Abilities		+
India, ICDS-Dalman	Scholastic performance, based on teacher ratings favored ICDS (90% vs. 76% rated average or above). Behavior: 96% vs. 81% rated average or above.		
India, ICDS-Maryana State	Teacher classifications: "Overwhelming majority of the children in top ten and 20% were those who had 2-3 years of exposure...to Anganwadi...Attention span and retention power was superior."		
<i>B. EDUCATIONAL STUDIES</i>			
Country/Programme	Performance		
Brazil (Fortaleza)	—		
Peru (PRONOEI)	No difference in grades or on results of special math/language ability test (Aliaga)		
Chile (Orsono, PPH)	First Grade:		
	Teacher Rating	+	(71 vs. 37 rated as good)
	Draw-a-man	+	
	Parental assessment	+	
Columbia (PROMESA)	—		
Brazil Alogoas (PROAPE)	—		

Copyright © 1989 Consultative Group on Early Childhood Care and Development

Early Childhood Counts: Programming Resources for Early Childhood Care and Development.
CD-ROM. The Consultative Group on ECCD. Washington D.C. : World Bank, 1999.