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ABSTRACT

In 1990, the National Education Goals were established by the President and the 50 state governors. Great attention has been given to Goal 1, dubbed the "readiness" goal: By the year 2000, all children in America will start school ready to learn. The Goal 1 Resource Technical Planning Groups were asked to suggest ways in which Goal 1 could be measured. The purpose of this document is to further amplify the dimensions of early learning and development used by the National Educational Goals Panel to measure progress toward Goal 1. The following five dimensions are discussed: (1) "Physical Well-Being and Motor Development"; (2) "Social and Emotional Development," serving as the foundation for relationships which give meaning to school experience; (3) "Approaches toward Learning," referring to the inclinations, dispositions, or styles that reflect ways children become involved with learning; (4) "Language Development"; and (5) "Cognition and General Knowledge." For each of the dimensions, a rationale; general definition; the relationship to individual, cultural, and contextual variation; and a summary are given. The report concludes with a discussion of underlying issues, implications, and action steps. (Contains 83 references.) (BGC)

RECONSIDERING CHILDREN'S EARLY DEVELOPMENT AND LEARNING:

TOWARD COMMON VIEWS AND VOCABULARY

NATIONAL
EDUCATION
GOALS
PANEL

GOAL 1 TECHNICAL PLANNING GROUP

Sharon Lynn Kagan, Evelyn Moore, and Sue Bredekamp, Editors

JUNE, 1995

95-03

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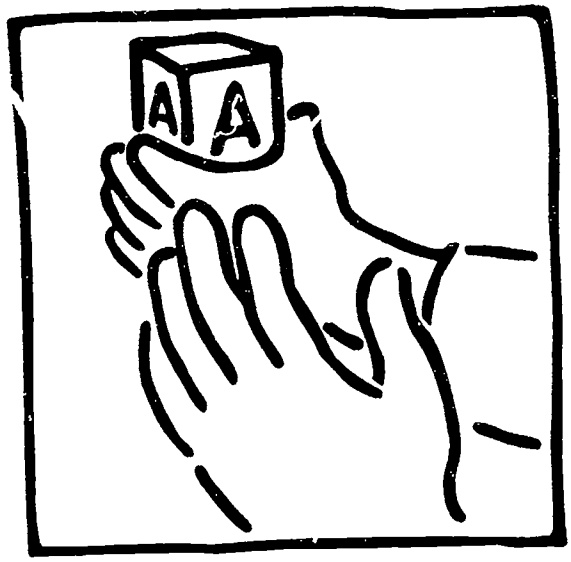

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RECONSIDERING CHILDREN'S EARLY DEVELOPMENT AND LEARNING:

TOWARD COMMON VIEWS AND VOCABULARY

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BACKGROUND

In 1990 the President and 50 state Governors established National Education Goals, the first of which is that "by the year 2000 all children in America will start school ready to learn." In the ensuing years, this Goal has been colloquially dubbed the "readiness" Goal and has generated public policy debate at the federal, state, and local levels; in the public and private sectors; and in the media, schools, and homes.

Much attention has been focused both on the Goal itself and on the three objectives accompanying the Goal statement that reflect a broad concern with children's early development and learning. The objectives, concerned with the conditions of the institutions that affect such development — families, preschool programs, health care systems, schools — are as follows:

- "All children will have access to high quality and developmentally appropriate preschool programs that help prepare children for school;
- "Every parent in the United States will be a child's first teacher and devote time each day helping his or her preschool child learn, and parents will have access to the training and support parents need;
- "Children will receive the nutrition, physical activity experiences, and health care needed to arrive at school with healthy minds and bodies, and to maintain the mental alertness necessary to be prepared to learn, and the number of low-birthweight babies will be significantly reduced through enhanced prenatal health systems."

Taken together, the Goal and the objectives represent an important departure from past thinking about "readiness" in several ways. First, they publicly acknowledge that the well-being of America's young children is a *shared* responsibility of family and society, and that only by working collaboratively across sectors and institutions will America be able to realize its "readiness" vision.

Second, the Goal and its attendant objectives acknowledge that *all* children — not simply some — are entitled to early experiences that will foster their optimal development.

Third, the Goal and objectives tacitly acknowledge that narrowly constructed, academically-driven definitions of readiness — heretofore widely accepted — need to be broadened to incorporate physical, social, and emotional well-being. Finally, the Goal and its objectives affirm the connection between early development and learning, and children's later success in school and in life.

As could be expected, such a landmark statement — which carries Presidential and gubernatorial sanction — has also provoked considerable activity. Some efforts have been devoted to the improvement of direct services for young children and their families, including initiatives undertaken by the National Governors' Association, executive branches of federal and state governments, schools, communities, professional associations, and parent groups. Other efforts have attempted to improve and integrate the systems that affect children's early development. Still others have sought to delineate more clearly what is meant by optimal outcomes for children. And finally, some have sought new approaches to chronicle children's development appropriately and inventively.

Although committed to fostering all four approaches (improving direct services, improving systems, delineating optimal outcomes, and chronicling progress), the work of the National Education Goals Panel has been focused on the third and fourth approaches. In fact, the National Education Goals Panel has been charged with chronicling the nation's progress toward meeting all of the Goals over a ten-year period, from 1990 to 2000. To that end, the National Education Goals Panel has established a Resource Group and at least one Technical Planning Group for each Goal.

Working with these Groups, the Goals Panel publishes an annual report that provides a picture of the nation's status in meeting the Goals. More a snapshot than a completed portrait, the report, specifically, and the work of the Goals Panel and its groups, generally, are designed to generate political will and stress the urgency for action. Data in the Panel's first four reports (1991, 1992, 1993, 1994) regarding the well-being of young children sounded a call for action. Although no direct outcome indicators of children's well-being were reported, direct indicators of children's access to services reflected glaring deficiencies and inequities in our nation's service delivery to its young.

Goal 1 — RESOURCE AND TECHNICAL PLANNING GROUPS' WORK TO DATE

The Goal 1 Resource and Technical Planning Groups were asked to suggest data by which progress towards Goal 1 could be measured. Two kinds of information were recommended: first, direct indicators of the Goal, reflecting how children are doing, and capturing their welfare and resiliency in the face of risk; and second, direct indicators of the objectives, reflecting the quality of services afforded young children. The Groups recognize the importance of both kinds of information and have been working to put mechanisms in place that will collect such information at three points in time: before school, upon entry to school, and in school. To hasten the realization of these efforts, the Technical Planning Group was asked

by the Goals Panel to focus its work on conceptualizing an in-school assessment that focused on child outcomes.

In preparing its initial report for the Panel, the Technical Planning Group was guided by several assumptions that framed its recommendations. First, because the purpose of the in-school assessment was to provide information regarding the *collective* state of young children that would help guide public policy — *not* to assess or make decisions regarding individual children or specific programs — a sampling strategy was recommended. Such an approach is not only appropriate to the purposes of the assessment, but also safeguards against the misuse of information, so as not to label, stigmatize, or place any child.

Second, recognizing that development and learning are highly episodic, multi-faceted, and influenced by diverse contextual factors, the Technical Planning Group recommended the development of an assessment system that would collect data (1) at multiple points in time; (2) from multiple sources, including parents, teachers, and children themselves; and (3) using multiple strategies that are respectful of, and appropriate to, children's development.

Third, recognizing the wide range of abilities and experiences upon which early learning and development rests, the Technical Planning Group suggested that early development and learning embrace five dimensions: (1) physical well-being and motor development; (2) social and emotional development; (3) approaches toward learning; (4) language development; and (5) cognition and general knowledge. Preliminary conceptualizations of the dimensions were offered in the Goal 1 Technical Planning Subgroup Report on School Readiness (National Education Goals Panel, 1991b, pp. 10-11):

1. **Physical Well-Being and Motor Development** — A strong body of research links maternal and child health to performance in school. We know that conditions such as very low birthweight and poor nutrition may have long-term effects on a child's preparedness for school. Basic information about the child's health history is vital for understanding the condition in which children come to school. In addition, early childhood educators emphasize the importance of optimal motor development in children, from large motor movements that occur on the playground to small motor work required for holding a crayon or putting together puzzles.

2. **Social and Emotional Development** — This dimension serves as the foundation for relationships that give meaning to school experience. It involves a sense of personal well-being that comes from stable interactions in children's early lives and interactions that enable children to participate in classroom activities that are positive for themselves, their classmates, and their teachers. Critically important conditions of social and

emotional development include emotional support and secure relationships that engender the child's acquisition of such characteristics as self-confidence and the ability to function as a member of a group.

3. **Approaches Toward Learning** — Approaches toward learning refer to the inclinations, dispositions, or styles — rather than skills — that reflect the myriad ways that children become involved in learning and develop their inclinations to pursue it. Approaches to learning that vary within and between cultures must be respected, making a uniform or "cookie cutter" approach to early childhood education — with the Goal of all children coming out the same — undesirable. A child can be successful in school in many ways, and families and teachers should understand the various ways that children become engaged in learning in order to know how to enhance and not discourage their engagement. Curiosity, creativity, independence, cooperativeness, and persistence are some of the approaches that enhance early learning and development.

4. **Language Development** — Language empowers children to participate in both the cognitive and affective components of the educational program. Experience with language, in both written and oral form, provides children with the tools to interact with others and to represent their thoughts, feelings, and experiences. Communicating effectively with other children and adults and having emergent literacy experiences with diverse forms of language are fundamental elements of this dimension.

5. **Cognition and General Knowledge** — A foundation for later learning is provided when children have opportunities to interact with individuals and materials and, as a result, are encouraged to learn from their surroundings. Children's transitions to formal schooling are eased when children have been provided with a variety of play-oriented, exploratory activities, and when their early school experiences continue these activities. Cognition and general knowledge represent the accumulation and reorganization of experiences that result from participating in a rich learning setting with skilled and appropriate adult intervention. From these experiences children construct knowledge of patterns and relations, cause and effect, and methods of solving problems in everyday life.

THE PURPOSE OF THIS DOCUMENT

Admittedly brief, the above statements were designed to convey the flavor of the dimensions presented. They were intended to be suggestive, not definitive. Acclaimed for their intent by a national review process and later adopted by the Goals Panel, these dimensions

require elaboration if they are to describe more fully the elements of readiness and to capture what programs and policies should strive to nurture.

The purpose of this document, then, is to lend greater specificity to each of the dimensions with the goal of ultimately achieving a common vocabulary that expresses current knowledge and common views about the needs of children and the nature of their development. It is hoped that such amplified definitions will further the dialogue regarding how best to foster children's healthy development. This paper uses as points of departure the available research (though the document is not intended to be a review of the research), a series of commissioned papers, and synthesis of the Technical Planning Group's work. Where research is incomplete, this paper reflects the collective best judgment of the members of the Group.

This document represents not only the work of the Goal 1 Technical Planning Group, but the input of hundreds of individuals who took the time to comment on the original draft. Many of their comments have been incorporated, and the Technical Planning Group wishes to acknowledge the thoughtful input of the reviewers of this document.

CONSIDERATIONS REGARDING THE DOCUMENT

The Interrelatedness of the Dimensions

Though presented separately for the sake of clarity, the five dimensions are inextricably linked. Attempts to clarify distinctions in the dimensions underscore their interrelatedness. For example, the reader will note that several defining variables (e.g., temperament) appear under more than one dimension, and that development in one dimension often influences and/or is contingent upon development in other dimensions. It is therefore imperative that the dimensions be considered as a totality, with no single dimension acting as a proxy for the complex interconnectedness of early development and learning.

Variation in Information Available Regarding the Dimensions

The availability of scholarly work to assist in amplifying the dimensions varies tremendously by dimension. For example, and not unexpectedly, much work has been done on specifying variables related to cognition and general knowledge, enabling us to render a greater level of precision in this dimension than in some others. Where data are relatively sparse, the limitations of the knowledge base are acknowledged, and the information provided is based on the best judgment of those advising the Technical Planning Group.

Defining Versus Measuring the Dimensions

Offering amplified definitions of the dimensions of early development and learning should not be equated with assessing the dimensions. Though both efforts are linked, *defining* involves the specification of attributes, variables, and criteria; *assessing* involves, in part, consideration of the tasks, observational methods, and conditions that lead to quantification of each dimension.

While the primary challenge of this document is to further the specification and discussion of variables associated with children's early development and learning, the Technical Planning Group is also concerned about the assessment of early learning and development. The Group does not believe that there is a single magic threshold above which children are deemed developmentally fit (ready) and below which they are deemed unfit (unready) for school entrance. It is for this reason that this report assiduously avoids use of the term "readiness" — a word that often implies a single dimension and single standard of development and learning. To the contrary, because individual child performance is multi-dimensional, highly variable across the dimensions, episodic, and culturally and contextually influenced, the establishment of any single "readiness" threshold is misleading and dangerous. Rather than advocating any such developmental threshold or a uni-dimensional approach to assessment, this effort must be understood as one that attempts to amplify the range of variables associated with early development and learning. It offers universal domains pertinent to all children during their early years, recognizing that healthy development on all of these dimensions is heavily contingent upon the services and supports to which children and families have access.

The Importance of Families and Communities

No document considering children's early learning and development can overlook the critical importance of families and communities in that development. Families and communities shape the context in which children grow, framing children's most important early experiences and encounters with their environments. Because of the transcendent importance of families and communities to children's development, families are discussed throughout the document, with emphasis on the rich variation in family attitudes, beliefs, cultures, child-rearing practices, and resources. The document also underscores the profound importance the community plays in supporting children and in supporting parents as they engage in their demanding roles as nurturers and providers.

Individual, Cultural, and Contextual Variation

It is widely recognized that children vary on every measurable characteristic. Youngsters demonstrate individuality related to genetic, cultural, and contextual factors. Despite the rhetorical acceptance of such variability, conventional definitions of early development and learning have been more attentive to genetic and/or developmental variation than to cultural or contextual variation.

Such a focus on genetic and developmental variability has had important and often negative consequences. In some cases, access to differing educational opportunities has been determined by assessments that ignore cultural competence and that use majority-culture norms to determine competence on a single dimension. For example, a cognitively normal but physically disabled or non-English-dominant child might be consigned to special education as a result of such assessments. Conversely, a gifted preschooler who comes from a low-income neighborhood might not have his or her talents recognized. Indeed, normative definitions of competence have prevailed, with cultural and contextual differences often misinterpreted as deficiencies (Garcia & Figueroa, 1993). Developmental equivalencies are often not understood, and variation within cultures is often neglected.

Individual, cultural, and contextual variables influence how children present themselves, understand the world, process information, and interpret experiences. As such, individual, cultural, and contextual variables cannot be attributed to any single dimension. Because of their pervasiveness and their centrality to a new understanding of each dimension, they are discussed within each dimension and not treated separately.

Societal Willingness to Accept Responsibility for Children's Well-Being

Focused on dimensions of children's well-being, this report would be incomplete if the Technical Planning Group did not make explicit its commitment not only to assuring more robust definitions of the dimensions, but also to fostering the implementation of services and supports known to increase the chances of children's full development. Though outside the specific purview of this document, the Goals Panel and the Technical Planning Group are working to foster broader societal commitment to all young children. Both Groups recognize that responsibility for children's early development and learning entails not only academic analyses, but must also pervade societal institutions, including government, corporate America, the media, schools, and families. For America to achieve its first Education Goal, its schools must be ready for diverse children; its families aware of — and able to support — youngsters in their first critical years of life; and its political, communication, and corporate sectors poised to meet the challenge that such commitment demands. As we turn to amplify the dimensions of

children's early development and learning, let this effort be recognized as one step in a long series of efforts (1) to elevate children to their rightful place on the American social agenda, and (2) to foster society's willingness to accept responsibility for children's well-being.

Introduction to the Dimensions

Building on the initial report of the Technical Planning Group, five dimensions are discussed below: (1) physical well-being and motor development; (2) social and emotional development; (3) approaches toward learning; (4) language development; and (5) cognition and general knowledge. The discussion of each specific dimension begins with an introduction that is followed by a rationale and general definition. Each section also includes a discussion of individual, cultural, and contextual variation, and ends with a summary statement that highlights the major points addressed. Following discussion of the five dimensions, the document ends with a conclusion section that delineates issues underlying the discussion, implications, and action steps.

DIMENSION I — PHYSICAL WELL-BEING AND MOTOR DEVELOPMENT

Introduction

Long-acknowledged as a cornerstone of early development and learning, the physical well-being and motor development of young children has received substantial attention in medical, educational, and developmental literature. Much of this literature has focused on discerning developmental milestones, often manifest as specific behaviors or capacities that indicate whether a child's growth is "on target" with normal development. While a normative focus is helpful under certain conditions, the Technical Planning Group has sought to amplify the definition of physical well-being and motor development by adopting a more inclusive approach — one that does not define ability or disability in terms of deviation from given norms. Rather, in the following definition, the Group has tried to address the various conditions that affect the trajectory of development and to broaden the conception of what is considered in addressing the well-being of the nation's young children.

Rationale

Healthy children enjoy a freedom that allows them to focus on or actively engage in experiences crucial to the learning process. Conversely, children with significant physical or developmental problems are forced to accommodate to discomfort, dependence, or special arrangements. They may develop a sense of being "different" from other children — which can lead to problems in adapting to the school environment — and their special circumstances or restrictions may inhibit their ability to develop an appropriate level of independence (Shonkoff, 1992). Ill health may also lead to increased absenteeism from school due to physical symptoms or medical appointments, and this can exacerbate the problems associated with the universal challenges faced by all children and the further obstacles encountered by socially or economically disadvantaged children. For these reasons, any amplification of early development and learning should commence with attention to physical health and motor development.

General Definition

Numerous researchers have attempted to identify the major characteristics of health. By assimilating the overlapping variables presented, as well as making accommodations for the wide range of "normal" individual differences, physical well-being can be assessed in children using three categories of criteria. The first category addresses children's physical development, and includes: (1) overall rate of growth; (2) level of physical fitness; and (3) body physiology. The second category addresses children's physical abilities, including: (1) gross motor skills; (2) fine motor skills; (3) oral motor skills; (4) sensorimotor skills; and (5) functional performance. The third category addresses background and contextual factors, focusing on the conditions under

which development takes place and including: (1) perinatal context; (2) caregiving environment; and (3) health care utilization (Shonkoff, 1992).

I. Physical Development

Children's physical development can be measured against the following continua:

Rate of Growth

A child's rate of physical growth is comprised of three measures: height (linear growth), weight gain, and physical maturation. Normal growth in these areas varies from individual to individual and covers a wide spectrum. Growth abnormalities do exist, sometimes resulting from a significant chronic illness, severe malnutrition, or a severe impairment in the early caregiver-infant relationship (Dawson, 1992). Children with growth abnormalities may feel or be perceived as different from other children, which can lead to problems in adapting to the school environment. Furthermore, growth deficits that are associated with chronic health problems can interfere with children's ability to participate in physical activities, form appropriate peer relationships, develop an appropriate level of independence, and attend school regularly.

Physical Fitness

Stamina, energy, strength, flexibility, and percentage of body fat are the major elements of physical fitness. As in adults, fitness among children is affected by nutrition, illness, and lifestyle factors such as sleeping patterns and level and types of physical activity. In this regard, a major emerging concern is the lack of activity in many children's lives due to over-reliance on television, video games, and other passive activities as entertainment. Poor fitness resulting in reduced stamina and energy can prevent children from participating in group activities and maintaining attention to and interest in tasks necessary to the learning process. Though few studies of the physical fitness of preschoolers have been conducted (Poest, Williams, Witt, & Atwood, 1990), some research indicates that today's children are less physically fit than were children twenty years ago (Gallahue, 1987).

Body Physiology

Another aspect of health and well-being is the optimal functioning of the body and its organ systems. For example, a healthy respiratory system supplies oxygen to and removes carbon dioxide from the blood in an efficient manner; a healthy urinary system effectively extracts chemical wastes and excess water from the blood; and a healthy musculoskeletal system supports and protects the internal organs and makes possible appropriate voluntary and involuntary movements. These and the other organs and organ systems may function at a less

than optimal level if affected by injuries, toxic substances, infections, degeneration, or structural defects.

Adverse conditions, including disease and disability, can inhibit children's ability to take full advantage of the classroom experience. The early prevention and identification of these conditions and the provision of appropriate services are critical to minimizing deleterious effects on development.

Diseases. There are myriad common diseases — such as diabetes, asthma, ear infections, and respiratory allergies — that can be debilitating for children if untreated. Furthermore, long-term use of medications with mood-altering properties by children with chronic health problems can interfere with their ability to learn. For example, corticosteroids, commonly prescribed for chronic inflammatory conditions such as asthma, possess known mood-altering properties (Shonkoff, 1992). Malnutrition, anemia, or toxic insults such as lead poisoning can also result in greater fatigue, increased irritability, decreased motivation, shortened attention span, and deficits in intellectual performance (Dienard, List, Lindgren, Hunt, & Chang, 1986; Lozoff, Wolf, Urrutia, & Viteri, 1985; Oski, Honig, Helu, & Howanitz, 1983). Similarly, these ailments can impede the development of motor skills if they deny children the opportunity to engage in the activities requisite to mastering a wide variety of physical movements.

Disabilities. The extent to which pain, discomfort, and/or functional limitations associated with adverse health conditions affect a child's daily functioning should be assessed. Hearing loss, poor vision, and disorders of the nervous system can impede children's ability to receive or process information. Neuro-motor disorders such as cerebral palsy can, among other things, interfere with a child's gross or fine motor skills or his or her oral motor skills. Persistent impairments can have a negative impact on children's self-concept, sense of autonomy, and peer relationships, as well as resulting in developmental and behavioral problems (Shonkoff, 1992).

II. Physical Abilities

Children's physical skills have traditionally been measured by four types of motor skills: gross, fine, sensorimotor, and oral. These four skill areas form the foundation for functional performance in a range of age-appropriate activities. These skills develop through the interaction of maturation and experience, and are influenced by level of parental encouragement and guidance and available opportunities to practice such skills.

Gross Motor Skills

Gross motor skills — movements of the entire body or large portions of the body — include the abilities to walk, run, jump, and climb. Lags in the development of gross motor skills can impact young children socially, emotionally, and physically. Children with significant deficits are more likely to be excluded from games which require these skills (Poest, et al., 1990), and are more likely to experience problems in peer relationships, self-esteem (Brown, 1982; Seefeldt, 1980), and physical fitness.

Fine Motor Skills

Fine motor skills require precision and manual dexterity (e.g., cutting with scissors or fastening buttons). Researchers have identified a sequence or progression of manual skills in infants and toddlers which begins with touching and holding objects, proceeds to coordinating the thumb and fingers in a pincer movement (Halverson, 1931; 1936), and progresses to more advanced skills such as turning the pages of a book or filling a cup with cubes (Landreth, 1967). Clearly, fine motor skills are essential to a successful classroom experience in kindergarten and the early grades. Motor development is known to proceed at varying and uneven rates, so young children should not be excluded from school or retained in grade because they have not yet mastered these skills.

Sensorimotor Skills

Vision, hearing, touch, and kinesthesis are crucial determinants of fine and gross motor coordination. Coordinated movement requires the ability to use sensory information to guide motions. For example, considerable visual, perceptual input is required in order for a child to kick a ball that is rolling in his or her direction. The child must be able to distinguish the ball from other stimuli, focus attention on it, determine his or her distance from the ball, and assess the speed at which the ball is moving. All of this information must then be coordinated to guide movement, and, as the movement progresses, must continue to be coordinated with incoming perceptual information. One of the key aspects of sensorimotor development for classroom achievement is the development of eye-hand coordination, necessary for writing and drawing.

Oral Motor Skills

The ability to suck — one of many oral motor skills — is the only well-developed motor skill with which a child is born (Comer & Poussaint, 1992). Over the first few years, however, the child develops and refines other oral skills -- involving the coordination of breathing with movements of the vocal cords, tongue, lips, jaw, and palate — to produce speech sounds necessary for verbal communication (Tittnich, Bloom, Schomburg, & Szekeres, 1990).

Functional Performance

Age-appropriate physical competencies (e.g., independent mobility and bowel and bladder control) and the ability to perform age-appropriate tasks which may involve a number of motor skills (e.g., dressing or feeding oneself) are the two major measures of functional performance. Just as there are variations in children's physical development at the time of school entry, normal ranges in functional performance are also broad, varying according to physical functioning as well as prior practice of specific skills. In the majority of children, by the age of six or seven years, basic motor skills are developed. However, children continue to improve the quality with which they perform these skills, and they gradually integrate basic movements into more complex sequences as they mature and practice executing various movement patterns (Epenschade & Eckert, 1974).

III. Background and Contextual Conditions of Development

Physical well-being and motor development are dramatically influenced by multiple individual, social, and environmental factors that can be divided into three major components: (1) perinatal context; (2) caregiving environment; and (3) health care utilization (Shonkoff, 1992).

Perinatal Context

Adverse conditions around the time of the birth of a child can point to increased vulnerability to physical problems. Children who have been prenatally exposed to alcohol, tobacco, or drugs are at greater risk for developmental and other health problems. Those born with low birthweight are nearly twice as likely as their peers to suffer severe developmental delays, congenital anomalies, cerebral palsy, autism, mental retardation, vision and hearing impairments, and other developmental disabilities (Public Health Service, 1990; Shapiro, McCormick, Starfield, Krischer, & Bross, 1980). Furthermore, premature children score significantly lower than full-term children on gross motor scales at age two and one-half years. This may be the result of delayed physical and neurological development as well as neurological damage due to complications of pregnancy or delivery (Cutler, Heimer, Wortis, & Freedman, 1965).

Caregiving Environment

There are numerous variables related to the child's environment which can impinge on his or her health and motor development. Environmental risks which deserve special attention include accident hazards, toxic wastes, pesticides, lead, and other pollutants, drug ingestion, inadequate or unhealthy water supplies, and violent crime. Many of these environmental risks are linked to societal problems that require community action.

Parental behavioral and lifestyle choices that have immediate effects on children's health as well as long-term implications for their developing habits include smoking, drinking, illegal drug use, diet, dental hygiene, exercise, and coping/stress management skills (United States Department of Health and Human Services, 1981). Other important factors include the internal cohesion and adaptability of the family unit, the availability of external supports, the health of parents and siblings, and the age and competence of parents.

Children from low-income families are particularly at risk for adverse health conditions because their parents' lack of resources can interfere with the ability to provide adequate food, clothing, and shelter. Such shortages can deny children opportunities to engage in activities that would enhance their motor development. Poor nutrition — another variable hindering healthy development — is a condition that disproportionately affects children from low-income families. United States survey data have measured factors including the percentages of food energy from protein, fat, and carbohydrates as well as nutrient intakes related to percentages of the Recommended Dietary Allowances (United States Department of Agriculture, 1993). These data indicate that most poor children are receiving adequate nutrition; however, "advocates contend that the federal surveys do not measure hunger, and that a substantial fraction of children in poor families go hungry fairly often. There are some data indicating that poor children under 6 are more likely than other children to exhibit signs of poor nutrition, such as growth retardation and anemia" (Klerman & Parker, 1990).

Health Care Utilization

Inadequate prenatal care and the unavailability of systematic health promotion and disease prevention services is another major risk factor. The lack of access to and utilization of primary care services such as immunizations and acute care services puts children at risk of developing preventable conditions or having existing conditions needlessly worsened. Underlying barriers to health care utilization include the inaccessibility of adequate and affordable health insurance coverage as well as deficiencies in the number, quality, type, culture, and language of health care providers in the community.

Health care utilization poses a considerable challenge for low-income families, who may not be able to afford services or secure transportation to health care facilities. Preventive care and early detection may be particularly inaccessible for poor families. "A substantial minority of young children in low-income families have undiagnosed conditions that are only discovered when they reach school . . . . Children with these conditions could well benefit from earlier diagnosis and treatment of their disorders" (Zill, 1991).

Relationship to Individual, Cultural, and Contextual Variation

The above definition refers to multiple contributors to variability in the physical well-being and motor development dimension, among individuals, cultures, and contexts. Indeed, similar health conditions and barriers to physical development may have opposite effects on different children. Many children with health problems are able to do well, and conversely, some children with excellent health do not progress as rapidly in their development. It has even been postulated that routine childhood illness may have certain "benefits" for children — facilitating emotional and intellectual development, prosocial behavior, and the capacity for empathy (Parmelee, 1986). Shonkoff (1992) summarizes the diverse effects of health problems as follows:

> "Ultimately, the extent to which a child's developing competence and readiness for school is influenced by health factors depends upon a complex interplay among inherent adaptive capacities, the presence and severity of adverse symptoms, and the quality of his or her caregiving and social supports. For some children, ill health may be a major risk factor for poor school adjustment. For others, the process of coping with the stresses associated with illness may be a growth-promoting experience that serves as a source of resilience and translates into positive adaptation."

The definitions of physical well-being and motor development offered herein suggest the need to gather information from a wide variety of sources in order to assess aspects of both developmental progress and the context for development. It has become clear that both "objective" and "subjective" data or perceptions are useful in developing a complete assessment of a child's health. Objective data are relatively easy to collect but not necessarily very informative. Subjective or descriptive data are informative — especially in determining the relationship between perceived health and the impact on development — but it is difficult to quantify, particularly due to the individual's knowledge, interpretation, and cultural values. A variety of methods can be employed to collect these data, including children's self reports, parental reports, physicians' reports, administrative records, laboratory tests, and others' reports of observed behavior.

While it is important to recognize that children fall into various risk categories, the damage often associated with labeling children may be one of the greatest risks to their education and development. Educators should seek to optimize each child's growth and development, with high expectations for all children regardless of prenatal conditions, family characteristics, and socioeconomic status.

In the area of motor skills and functional performance, there is a critical need to move away from inappropriate assessment and labeling. "Although norms help us to understand the

approximate rate and nature of human development, it cannot be emphasized too strongly that it is unwise to apply group averages uncritically to any one individual case" (Liebert & Wicks-Nelson, 1981). Not only is the development of children's motor skills highly individualized, but it is often uneven. Therefore, it is imperative that young children's progress within the school system not be unnecessarily delayed because of a temporary lag in motor development or functional performance.

Summary

The physical well-being and motor development of young children are central to their entire early learning experience. Variation in rates of development exist and are subject to environmental and biological influences. Given individual variation and considerable work in this dimension, assessment has taken many forms, including a wide variety of sources and eliciting both objective and subjective information regarding children's health. Children who deviate significantly from normative patterns of physical development may possess strengths in other areas and demand close attention from schools and other social institutions to maximize their learning potential.

DIMENSION II — SOCIAL AND EMOTIONAL DEVELOPMENT

Introduction

More elusive than variables related to physical well-being and motor development, those related to social and emotional development have interested scholars for decades. For example, in seeking to define social and emotional development, the Head Start Measures Project noted first, that there is no agreement on the particular characteristics that constitute desirable social and emotional development, and second, that "any definition of the construct and dimensions of Social-Emotional domains — even more than with the other domains — entails selective judgments that are less guided by prevailing theory or patterns of practice" (Mediax Associates, 1980, p. 66).

This difficulty exists for several reasons. First, attempts to define social and emotional development require the delineation of characteristics that are related both to social *concept* development and to social *behavior* development (Carew, 1978) — those characteristics that are comprised of knowing and understanding social concepts, as well as those that are actually manifest as behaviors or actions. Lacking appropriate measures to gauge children's internal emotional states, social and emotional behavior has become a proxy for social and emotional knowledge. We attribute social and emotional states to what children do, not to what they know. The second difficulty is that such attribution is made without sufficient regard for the demands of the social and cultural environment in which the child lives. Bowman & Zvetina (1992) note that competence is contextualized and highly variegated, depending upon the individual's appreciation of the social setting and the behavior called for in that setting. Understandings of the social and emotional dimension, then, must include not simply what the child does, but what the child knows and does with respect to cultural and situational variables (McLoyd, 1990).

Rationale

Despite the historic difficulty and the challenges associated with codifying definitions of social and emotional development, scholars, teachers, and practitioners recognize the intimate relationship between children's social and emotional competence and overall achievement in school and in later life. Moreover, they recognize that these domains, while understudied, may be quite malleable and receptive to intervention. To that end, scholars have turned their attention to examining social-emotional development, and although still elusive, a consensual definition and potential markers are emerging.

General Definition

Emotional and social development, though entwined conceptually and practically, can and need to be separated for this discussion. Thus, this report shall regard emotional characteristics as those that involve the individual's feeling states regarding the self and others. In contrast, social characteristics are those that involve the interaction of two or more people, especially interactions with peers and adults. Social functioning, then, refers to the interpersonal relationships and behavior that the individual establishes with others.

I. Emotional Development

Scholars agree that the cornerstone of both social and emotional development is children's self-concept. We consider self-concept as a part of emotional development, because it involves the internal feeling state of the child, though such a state is framed by children's social interactions. Self-concept consists of the traits, habits, abilities, motives, social roles, goals, and values that define how we perceive ourselves. Unlike self-esteem — which can be determined to be positive or negative (e.g., a positive sense of self-confidence, a negative sense of self-worth) — self-concept is regarded as complete or incomplete, clear or diffuse.

For everyone, some parts of the self are more central and other parts more peripheral, so self-concept also entails how we "weight" or attribute value to the various dimensions that constitute the self. Further, dimensions of self may be highly integrated or somewhat dissonant, suggesting that self-concept may also be integrated or fractured. Finally, there is a temporal dimension to self-concept, with some variables fluctuating over time and others being more stable.

Emotions do not exist in isolation; indeed, emotional development is contoured by a variety of situations that frame our affective responses and our sense of self. Primary emotions include joy, fear, anger, and grief; emotions pertaining to sensory stimulation include disgust, delight, and horror; and emotions that pertain to self-appraisal include shame, pride, and guilt.

Early parent-child interactions are an important influence on children's emotional development. Children initially learn to express and interpret emotions through interactions with primary caregivers. In infancy, caregivers influence emotional development by the extent to which they provide emotionally arousing stimuli at appropriate times, reinforce and encourage emotional displays, and respond to subtle variations in the child's expressions. As children mature, positive regard, love and support without strings attached are key for healthy emotional development (Rogers, 1961).

Self-efficacy — the belief that one can successfully accomplish what one sets out to do — is another important aspect of the emotional well-being central to the confidence to undertake learning at home and school (Bandura, 1977). Where young children are concerned, positive emotions and feelings of self-efficacy are evidenced even among low-performing children. Young children tend to optimistically over-estimate their abilities (Stipek & Tannatt, 1984). Such unrealistically positive self-esteem tends to shield the very young as the realities of the external world are integrated into the child's emerging self-concept.

Children's ability to express their feelings appropriately is considered crucial to their overall health, behavior, and well-being. Such expression may manifest itself as the ability to communicate one's attitudes and feelings effectively, which involves possession of the knowledge and skills to communicate verbally and non-verbally.

Beyond expression of their own feelings, children's sensitivity to the feelings of others also characterizes emotional well-being. Inherent in this characteristic is the ability to comprehend the feelings of others and the ability to communicate sensitively to others. Factors related to such sensitivity include children's understanding that their actions affect others, the ability to praise others, their acceptance of others' differences, their avoidance of ridiculing behaviors, and demonstrations of empathy toward children in pain. Empathy is the ability to participate in the feelings or ideas of others, to feel bad about their unhappiness and good about their joy. In order to develop empathy, a child must be able to feel attachment to another person and must care if that person is hurting. The development of empathy, and corresponding guilt and shame when one harms or fails to help another ensures prosocial behavior and altruism, even and preferably in the absence of external rewards and punishments.

II. Social Development

The ability to form and sustain social relationships with adults and friends is central to children's preparedness for school. Such ties are grounded in children's earliest relationships with parents and families, and are strengthened by the social supports experienced by the child and family dyad (Howes, 1992). In general, where perceived social support is higher, behavior problems are lower and social adjustment greater. For example, children who report a warm relationship with at least one parent are less likely to act out than children who do not have such a relationship (Rutter, 1979). Parent-child relationships also socialize children's orientation toward school. Parents who have had positive orientations toward school are more likely to socialize their children to expect a positive school experience than those who have not (Howes, 1992).

While such experiences may frame children's social behaviors, their interactions with adults including teachers are usually malleable over time. Understanding the nature of children's

social relationship with adults involves chronicling their ability to communicate with adults and their ability to understand and identify adult roles.

Children's social interactions with peers are another crucial component of their social development. Indeed, children who at the end of the kindergarten year were considered to have made a positive adjustment to school also had more friends in the classroom, were able to maintain these friendships, and had established new friendships over the course of the year (Ladd, 1990). Conversely, poor peer relationships correlate with child aggression, poor social skills, and lack of empathy for the thoughts and feelings of other children. Problematic peer relationships in the early years also are related to later emotional and mental health problems, school dropout, and delinquency (Harter, 1983; Marshall, 1989).

Moreover, peer socialization influences children's attitudes toward school and learning. Studies of older children, for example, suggest that children's attitudes regarding school achievement change to match those of friends (Brown, 1989). Ladd and Price (1987) note that children who enter classrooms with familiar peers experience more positive attitudes toward school and lower levels of school avoidance. Howes (1988) found that preschool children who changed child care centers with familiar peers as opposed to moving alone were more socially competent.

Social competence with peers is considered to have two aspects (Howes, 1988): (1) the social skills necessary to cooperate with peers, and (2) the ability to form and sustain reciprocal friendships. Establishing the social skills to cooperate with peers implies understanding the rights of others, the ability to interact with others without being overly submissive or directive, the ability to distinguish between incidental and intentional actions, the willingness to give and receive support, and the ability to treat other children as one would like to be treated. It involves the ability to balance one's own needs with those of others in group activity (National Center for Clinical Infant Programs, 1992). Such characteristics emerge when the child is emotionally secure with parents and teachers and is open to approach others with expectations of positive and prosocial interactions.

The formation and maintenance of reciprocal friendships — the second component — is characterized by mutual acceptance and preference. Such relationships serve multiple functions for children, including the provision of opportunities for affection, intimacy, companionship, and instrumental support and help. According to Vygotsky (1978), the social context provides the base for the construction of social and cognitive knowledge.

Behaviors associated with the formation and maintenance of reciprocal friendships include those required for the establishment of cooperative relationships, as well as the ability to listen to others' points of view, the ability to provide help and support for friends, the desire to make friends, and the willingness to solicit and act upon others' points of view.

Relationship to Individual, Cultural, and Contextual Variation

Social and emotional development, while always entailing the characteristics mentioned above, cannot be understood as the mere amalgamation of variables that pertain to the individual as an isolated entity. Individuals vary by their cultural and situational backgrounds and by an array of constitutional characteristics such as affect, attention, motor activity, and temperament. We know that temperament among normally developing youngsters varies dramatically and that children demonstrate markedly different resiliencies. Some children are able to avoid stressful outcomes from circumstances that negatively and profoundly affect others. Internal, biologically-driven forces and external, cultural, and contextual forces collide to buffer and mediate the development and mix of social and emotional characteristics.

Social and emotional development must be understood as cumulative, contextually driven, and based on the interaction of the multiple characteristics or variables discussed above. Social and emotional development is contingent upon the *match* between: (1) children's feeling states and their social knowledge; and (2) the expectations of the social situation in which they find themselves (Bowman & Zvetina, 1992). Mismatches occur when developmental criteria and expectations for individual performance are overly narrow, too prescriptive, or devoid of understanding of culture and context. A failure to consider the meaning of a child's actions or emotional responses in the context in which they developed may lead to profound misunderstandings.

Summary

Variables associated with emotional and social development can be defined; the report has asserted that, for example, various emotions — joy, fear, anger, grief, disgust, delight, horror, shame, pride, guilt — are framed as a result of the individual's interactions in various situations over time. Patterns of emotion help to shape a youngster's self-concept — the aggregation of traits, habits, abilities, motives, social roles, goals, values, and status that define how humans perceive themselves. Children's emotional development is also related to how youngsters express their own feelings (verbally and non-verbally) and how they manifest sensitivity and empathy to the feelings of others (i.e., their understanding of how their actions affect others, their ability to praise others, and their acceptance of others' differences). The development of empathy, leading to guilt and shame when one's actions harm others, is a crucial aspect of emotional development.

Social development is the ability to form and sustain social relationships with peers and adults. Variables associated with social development include cooperation, understanding the rights of others, the ability to treat others equitably, the ability to distinguish between incidental and intentional actions, the willingness to give and receive support, and the ability to balance one's own needs with those of others. Social development also includes the creation of

opportunities for affection, intimacy, and companionship, as well as the ability to solicit and listen to others' points of view. Indeed, according to some, the adequacy with which a child gets along with other children may well be the single best predictor of adult adaptation (Hartup, 1991).

DIMENSION III — APPROACHES TOWARD LEARNING

Introduction

Closely aligned with, but less well-defined than physical, social, or emotional development is the dimension associated with how children approach learning. Gaining currency in recent years, "approaches toward learning" is an umbrella term covering a range of attitudes, habits, and learning styles. Although the research base of this dimension is small, imprecise, and less codified than that of the other dimensions presented, this report offers an amplification of thinking about the term in an attempt to engender discussion and encourage dialogue around the dimension.

Rationale

It is important to consider approaches toward learning, because first, the mere acquisition of knowledge, skills, and capacities is an insufficient criterion of developmental success and an insufficient measure of program accomplishments. Children must be *inclined* to marshall such skills and capacities. For example, possession of a capacity does not necessarily mean that it will be used; children have the capacity to listen, but may or may not have the disposition to be listeners. Second, a narrow focus on skills as the end-product of education may undermine the disposition to use the skills. Katz (1992) notes that early drills in reading — while potentially imbuing certain reading skills — may actually quash children's desire to be readers.

General Definition

Our analysis suggests that approaches to learning are influenced by *predispositions* that may be inborn or may be inculcated very early in the child's life. Such predispositions may reflect: gender, temperament, and cultural patterns and values. These predispositions may be present at birth and set the stage for how children approach learning situations — their *learning styles*. Learning styles are composed of aggregated variables that characterize ways of responding across situations. Learning styles, in contrast to predispositions, are malleable and include variables that affect how children attitudinally address the learning process: their openness to and curiosity about new tasks and challenges; their initiative, task persistence and attentiveness; their approach to reflection and interpretation; their capacity for invention and imagination; and their cognitive approaches to tasks.

I. Predispositions

Gender, temperament, and cultural patterns and values all predispose children to different approaches toward learning.

Gender

There seem to be differences in opinion regarding how much the role of gender affects how children approach learning. On the one hand, much data affirm that there are few significant differences in the cognitive development of young males and females, although there are different maturation and developmental rates. However, parental and teacher expectations frequently vary by gender, and, in practice, stereotyping by gender is prevalent. Gender has been shown to influence both attitudes toward subjects (e.g., mathematics) and attitudes about one's own abilities, which can influence how one approaches a task. For example, boys and girls differ in achievement motivation and in their attributions for success and failure. While it is difficult to separate innate differences from those caused by socialization, it is clear that gender is an important influence on predispositions toward learning.

Temperament

Current work on temperament suggests that it may be a predisposition for learning, because temperamental variations can influence the way individuals think, perceive, understand, judge, and solve problems. Indeed, temperament influences the manner in which individuals exhibit their competencies and understandings. Like gender, temperament has a genetic dimension, but how the influence of temperament functions as a predisposition to learning is culturally and contextually influenced. The effect of temperament depends on how parents respond to the child, the nature of the child's larger environment and culture, and the child's unique set of experiences (Thomas & Chess, 1986). For example, shyness — though a temperament — has been regarded in some cultures as a disability, rather than a stylistic variation of normal behavior. As a result, expectations for shy children may vary, causing them, in turn, to approach learning and social situations in ways that are shaped by their shyness and the cultural and contextual expectations attendant to it. Clearly, some temperamental characteristics influence how children approach and are predisposed to learning.

Cultural Patterns and Values

Cultural patterns and values predispose children to learn in different ways. For example, in some cultures children are encouraged to learn by engaging actively in dialogue with their parents; in other traditions, children play a more receptive role, listening quietly to parents' instructions and guidance; in still other cultures, children learn through observation, imitation, and non-verbal communication (Chang & Sakai, in press). Cultural variation may affect

children's work styles, including their comfort working independently or socially (Little Soldier, 1992); it may affect the way children approach immediate experience and the nature of the interpretations (imaginative versus realistic) they render; and it may affect children's distractibility or ability to focus, and their action — versus reflection — orientation. Such stylistic variations must not be perceived as deficiencies, but as equivalent strategies.

Culture also influences children's predispositions for different learning modalities — the way they prefer to approach learning tasks — with some youngsters learning more easily by manipulating concrete materials, others by talking through a problem, and others by using visual representations to comprehend its nuances; indeed, some children work best when presented with a changing array of problem-solving formats (Boykin, 1977). Such affinities (Wolf, 1992) or predispositions are associated with differences in the way individuals process information.

II. Learning Styles

Gender, temperament, and culture combine with other variables to affect children's learning styles, or the manner in which children go about the process of learning. Although children may be predisposed to one style or another, based on temperament, gender, and cultural background, learning styles are malleable and may change with time or vary depending on the context. The term *learning styles* has been used to encompass both motivational, attitudinal variables and cognitive styles in approaching problems. These learning styles include: (1) openness to and curiosity about new tasks and challenges; (2) initiative, task persistence and attentiveness; (3) a tendency for reflection and interpretation; (4) imagination and invention; and (5) cognitive styles.

Openness to and Curiosity about New Tasks and Challenges

Wolf (1992) notes that in infancy, thought and exploration are social, but largely dyadic. That is, children gain and extract information from limited sources and use knowledge in limited ways. But as children mature, they extend their capacities to plan, to imagine, and to wonder; they move from the immediate worlds of the here and now, to the worlds of what might be. Some children approach knowledge acquisition and learning tasks with an eagerness to know, a sense of inquisitiveness, an interest in pursuing the novel or unknown. They gain information by persistent examination of facts or by verbal inquiry, usually characterized by a playfulness of spirit. In contrast, others approach learning with no special keenness to know, with an uncritical and unquestioning acceptance of knowledge as a constant. How children approach learning — whether they are inquisitive or accepting, exuberant or passive — is a style of learning.

Initiative, Task Persistence, and Attentiveness

Initiative is the ability to develop and follow through on plans. In order to complete a task successfully once initiated, task persistence and attentiveness are required. One must be able to attend to a task over time and to concentrate attention on an issue or a question across time and across obstacles. As children mature and face the demands of formal learning environments, the need to adhere to a task despite interruption grows. Children who are not distractible and are attentive to tasks, to adults, and to peers and who are inclined toward diligence of purpose generally fare better in the formal school setting.

Reflection and Interpretation

Reflection on events and experiences and the propensity to draw out lessons for future use are important qualities for the developing child. More precisely, diagnosing difficulties, teasing out alternate solutions, and discerning agreements and disagreements are components of children's widening set of reflective strategies. The ability to step back, to "repair" one's meaning when the message gets scrambled, to understand mistakes, to have theories about them, and to distinguish accidents from mistakes are components of learning to learn. Such reflection and interpretation, sometimes referred to as the "socialization of thought" (Wolf, 1992), includes the capacity to seek models, absorb information, and work through alternate possibilities.

Imagination and Invention

Closely aligned with curiosity, imagination, and invention are learning styles associated with the ability to form images of what is not actually present, to extend conventional thinking beyond the known, and to combine previous experiences to form new ideas. Various cultures accord different weight to the ability to imagine and invent, with some cultures elevating and others denigrating the value. Such differences also frame American education. On the one hand, the nation's educational system rhetorically accords value to imagination and inventive learning styles; on the other hand, such creativity is often constrained by the realities of daily classroom regimes. Wolf (1992) appropriately notes that cultural variation demands that we develop our indices of symbolic activity and imagination with extreme care. She suggests that in a world where diversity (including classroom cultures) is often masked, conceptual distinctions fail to recognize that idealized pictures of what should be often accompany notions of normalcy.

Cognitive Styles

Cognitive style refers to *why* children approach learning. For example, some children are more field-independent than field-dependent and vice versa. A field-independent style, as proposed by Witkin (1962), involves a tendency to separate details from background and to analyze information. Such a style has been shown to be an important predictor of success in

schools in the United States. Field dependence, although negatively related to school performance in the United States, appears to be positively related to interpersonal competencies. Other cognitive styles relate to how children process information. Some youngsters learn better by listening and repeating information orally, while others learn by observing and processing written language.

Further stylistic distinctions include: using broad versus narrow categories for information; tending to evaluate alternative solutions versus responding quickly to the first reasonable answer; and trying to see a task in the widest possible perspective versus beginning with a narrow focus. Perhaps the most important finding from the large body of research on cognitive learning styles is that children are most likely to achieve when tasks and teaching styles match their learning styles. This leads to the conclusion that a variety of teaching styles and tasks are necessary to meet children's needs.

Relationship to Individual, Cultural, and Contextual Variation

Perhaps no other dimension is so subject to individual variation as approaches toward learning. In part, such variation owes itself to differences in parental child-rearing practices. It is from parents — through instruction, guidance, modeling, and responses to children's initiatives — that children learn how to confront tasks. For example, parental child-rearing practices influence children's perceived locus of control — that is, whether they believe that they have control over events in their lives or that they are helpless, with other sources controlling their fates. Perceived locus of control can be an important determinant of how children confront difficult tasks in the classroom and other settings. Parental practices, including nurturance, showing protective concern, using predictable discipline, and setting predictable standards, have been shown to be related to the development of a sense of internal control (Marquis & Detweiler, 1985).

Despite rhetorical acknowledgement of the importance of individual variation, however, approaches toward learning have traditionally been examined within the context of "averages" and middle-class samples. Such interpretations have had the undesired consequence of legitimizing conformist behaviors and dispositions, and condoning "preferred" learning styles. For example, rather than appreciating a variety of styles, some conventional curricula continue to favor visual rather than auditory learning styles. By advancing approaches to learning as an essential dimension, this report underscores the need to accord importance to individualization and the value of diversity.

Summary

Approaches toward learning comprise the least understood, the least researched, and perhaps the most important dimension. Because approaches toward learning frame the child's entire being and are at the core of social/emotional and cognitive interactions, the dimension warrants more serious attention. This report suggests that predispositions and learning styles influence the way the child both thinks about and acts upon learning opportunities. Predispositions are genetically and culturally embedded early on and are linked to gender, temperament, and cultural patterns and values. Learning styles include both cognitive variables and variables that reveal how children approach the learning process — their openness to and curiosity about new tasks and challenges; their task persistence and attentiveness; their approach to reflections and interpretation; and their capacity for invention and imagination. Historically, American education has valued certain learning styles over others, without fully recognizing the way in which culture affects learning style. Future work in this dimension will need to identify a continuum of learning styles where all are accorded value and all are given opportunity for development.

DIMENSION IV — LANGUAGE DEVELOPMENT

Introduction

In comparison with the other dimensions, language development and the dimension that follows — cognition and general knowledge — are more often associated with conventional definitions of early learning and school success in general. Therefore, it could be assumed that these dimensions of early learning and development should be the easiest to define. Two problems arise from this assumption, however. Too often, these important dimensions are too narrowly and simplistically defined and measured, with too little attention given to the range of variation in manifestations of language development and cognitive development. In addition, previous definitions of language development have not sufficiently addressed the way in which English language competence is acquired by children whose primary language is other than English. Rapidly changing demographics demand that this issue become an integral part of any discussion of language development as a dimension of early learning and development in the United States.

Rationale

Language ability is a highly valued dimension of early development and learning as demonstrated by a survey of kindergarten teachers (Boyer, 1991) who identified language as the area where most "unready" children had difficulty. The ability to communicate competently with other people is essential to function effectively within and across the broad range of activities that characterize everyday life. Children need to be able to use language as a tool for communication — to express their own thoughts and feelings to others and to receive and interpret communications from other people. Language plays an equally crucial role in providing symbols for concepts — a role fundamental for cognitive development.

General Definition

By definition, language development is the acquisition of linguistic forms and procedures, and social rules and customs for acts of expression and interpretation. Such knowledge has three essential components: content (meaning), form (structure), and use (function). These components of language are formally called semantics, syntax, and pragmatics (Bloom & Lahey, 1978; Crystal, 1987; Lahey, 1988). In acquiring language, children learn words and structures that articulate ideas to be shared with others in their community and ways of using those words and structures to influence the ideas and actions of other people. Both the forms of language and the ways of using them are mutually agreed upon by the community of language users — that is, they are "conventional." As such, the language development dimension is closely tied to development in the social-emotional dimension.

The outward manifestations of expressive and receptive language — speaking and listening — are only a part of the process of language development. To interpret the communications of others involves the cognitive dimension of language in which the message received is evaluated in relation to the knowledge that is already stored in memory. This means that children use their language for accessing the knowledge they already have in order to gain new knowledge. Most people understand this cognitive dimension of language when they realize that they have little memory for events that occurred before their third or fourth year of life — that is, before their language ability was sufficiently developed. In short, language is crucial for conceptual development and thinking.

Such rich language development (for expression and interpretation) requires much more than the acquisition of vocabulary and grammar. Listening, remembering, following directions, noting details, understanding the main idea, and other skills associated with success in school are ways children use language for interpretation — figuring out what someone else (often the teacher) has in mind. Explaining and describing are what children do when they use language for expression, to communicate their own thoughts to others.

Researchers use the term "communicative competence" to describe the complex set of skills encompassed in human language use (Hymes, 1972). These skills include: (1) knowledge of the physical and sociocultural setting in which communication occurs; (2) knowledge about persons and their social roles within settings; (3) knowledge of the goals of interaction among persons; (4) skill in performing sequences of acts involving language to successfully communicate (achieve goals); (5) knowledge of the range of affective elements in communication (non-verbal communication, tone); (6) knowledge of the grammatical structure and meanings of words used in written or spoken language; (7) knowledge of the norms of communication — that is, the rules or standards for marking social relations in communication; and (8) knowledge of genre — the structures or forms that communication takes such as story, formal speech, or casual conversation. These components of language development are interrelated and overlapping; skill in one component influences and is influenced by ability in another as well as by past experience and development.

The broad area of language can be divided into many categories, but at least two are particularly highly valued: verbal language and literacy. Children develop both as they use them in interaction with other people in purposeful activities in their communities. Much of the development of verbal language and literacy occurs through interactions with more experienced language users who support the child's linguistic development. When children tell stories, parents frequently ask questions to help them structure the tale, and when parents read books with their children, they allow the child to participate increasingly until he or she is capable of carrying out the activity without support. More specific definitions of verbal language and literacy follow.

I. Verbal Language

Below is a summary of some of the commonly accepted behaviors that children develop and learn in the domain of spoken language. It is important to note that by age five, children have not mastered adult forms of language (Crystal, 1987). It is also important to note that these skills should not be viewed as prerequisites to school entry — the refinement of skills is to be seen as a shared task of schools, families, and communities.

Listening (e.g., increase the ability to discriminate and identify sounds; process sounds to formulate words and meanings; attend to and follow oral directions)

Speaking (e.g., increase the ability to produce a broad range of sounds; gradually develop and apply grammatical rules; increase clarity of pronunciation and speech)

Social Uses of Language — context-specific determinants of appropriate language (e.g., use language as a tool to get services and objects, express emotions, get and give information; use language pragmatically [functionally] and as part of social conventions and manners, saying, for example, "please," "excuse me," etc.)

Vocabulary and Meaning (e.g., increase the number of meaningful words understood and used; explore and discover meanings of words and sentences; know relational terms that refer to spatial [in, over], temporal [before, after], and other types of relationships; use complex sentences that link simple sentences, usually in terms of sequence [and, then] or causality [so, because])

Questioning (e.g., develop questioning ability, from what to where, when, why, and how)

Creative Uses of Language (e.g., listen attentively to stories, songs, and poetry; play with rhyming sounds and words; develop and tell a story)

II. Emerging Literacy

Closely related to the verbal language domain is the literacy domain, especially for young children. Literacy begins to develop before children are formally taught to read and includes the whole act of extracting meaning from printed symbols, not merely decoding printed words. Early storybook reading is important for the development of literacy, because it allows children to learn how to listen, remember, and ask and answer questions. It also teaches them that words have specific meanings, and they begin to develop an understanding of the structure of stories. Although early exposure to books and reading is beneficial, children are also exposed to the printed word and begin to develop an understanding when they encounter food product labels,

clothing labels, traffic signs, and television commercials. As they begin to explore the written system in a variety of social situations, they begin to discover its inner workings — how meaning and print connect. Children also engage in storytelling and sociodramatic play — in which stories and roles must be negotiated with others — thereby learning about the structure of stories and laying the groundwork for later literacy.

Some of the emergent literacy competencies that are developing in young children include:

Literature Awareness (e.g., show interest in various forms of literature; recall familiar stories)

Print Awareness (e.g., be aware of print permanency [text remains the same from one reading to next]; be aware of the connection between the text and the telling of the story; assign verbal labels to familiar letters; assign sounds to letter combinations; recognize own name in writing)

Story Sense (e.g., be aware of the sequence of a story [beginning, middle, end] and permanency of story sequence)

Writing Process (e.g., produce ordered scribbling [circular movements on paper]; produce writing configurations [a circle or an X])

Many such lists of language and literacy competencies could be produced to define language development. The length and diversity of such a sample list only partially reveals the complexity of the construct. Language abilities allow a child to participate in acts of expression and interpretation that are necessary for other areas of learning and cognition: to read, write, solve problems, and acquire the knowledge related to other school subjects. Language knowledge underlies children's growing ability to interpret and express new knowledge of the world and to exchange information that is increasingly decontextualized and explicit. These skills provide the foundation for participating successfully in activities and accumulating more abstract knowledge about the world.

Relationship to Individual, Cultural, and Contextual Variation

As mentioned above, two important aspects of children's language development are variation and complexity. In terms of variation, children differ in the language forms and structures they have acquired at any point in time and in the rate of mastery over time. One of the most influential findings in contemporary research on language acquisition has to do with the individual differences among children from very similar cultural and social backgrounds. For example, the rate of language acquisition varies considerably. Children can take from

several months to several years to master various aspects of language. Children learn words and the form of language not only to express their ideas about persons, objects, and events, but also to meet personal and cultural objectives as determined by the group within which they are socialized. Therefore, it is not surprising that considerable research can be cited to demonstrate that cultural differences exist in the way children acquire and use language (Blake & Bloom, 1992; Durán, 1992).

Within the United States, we have many varieties of English that share linguistic features with standard American English, but that also have distinctive features that set them apart — for example, different patterns for the use of language forms (Crystal, 1987; Sattler, 1992; Shuy & Staton, 1982) and different distributions of language functions as a result of their social uses (Brice-Heath, 1988; Hale-Benson, 1986; Miller, 1982; Potts, 1989.) Such a complex perspective on communication is very important in understanding and defining language development. For example, interacting with a teacher in an instructional activity at school requires a very different set of communicative competencies — and sometimes an entirely different language — than a child uses when interacting with a parent at bedtime or playing a game with another child at home. The same child's language development could look very different depending on the setting.

An expected outcome of different socialization experiences is discontinuity between the schooling experience and the everyday experiences of culturally diverse children, as is apparent from the examples cited above. However, language is contextually based and influenced. When five-year-old children were observed while they were engaged in neighborhood dialogues, no differences were found in the linguistic abilities of black low-income and white middle-income children. The structure of these children's dialogues; the quality, complexity, and functions of the language they used; and such things as concreteness and animacy of topics did not differ (Feagans & Haskins, 1986).

Much of what has been said so far also applies to children whose primary language is other than English. Yet the question of language development and learning among speakers of languages other than English needs careful consideration. Current research on second language acquisition emphasizes the importance of children developing competence in their primary language. A growing body of research demonstrates the dangers of introducing English before primary language skills have been developed. For example, Wong Fillmore (1992) documents cases of immigrant families in which children have lost the ability to speak to their own parents when English language instruction was imposed too soon. In addition, time is needed to acquire communicative competence in a second language. Cummins (1981) finds that while children with a primary language other than English may develop a basic proficiency in English within two years of entering school, it takes five to seven years to develop the kinds of decontextualized academic skills necessary for school success in English. The development of competence in a primary language is also important for cognitive development. Learning that takes place in a

child's primary language does not appear to impede the acquisition of English; rather, instruction by means of the primary language in preschool through the early grades promotes and develops the deeper cognitive and academic skills that predict future success in the mainstream (Cummins, 1981).

In the case of children whose primary language is not English, the challenge is to develop curricula and assessments that allow children to demonstrate their true communicative competence, usually by producing more extended segments of language. Concerning assessment, the research on language development suggests that permitting children to use language to explore meaning more freely in light of their experiences and interests (during story-telling or peer-talk) can lead to better information about their ability to perform in school. A truly sensitive assessment of any child's verbal language would be capable of interpreting how his or her communicative competence in activities at home and in the community match or mismatch (are continuous or discontinuous with) the communication demands of activities required in the school.

Summary

Children come to school as experienced users of language, but children's language has been acquired within the contexts of their home and community, within diverse cultural and linguistic environments. Children do not acquire language skills out of context or despite a cultural milieu; rather, language is embedded in that context. When the tasks, demands, and interactions of a young child's everyday experiences are similar to and continuous with those of the school, then the child's prior experiences facilitate success in school. But when the child's experiences differ from those encountered in school — when they are discontinuous — it is more difficult for children to apply previously acquired abilities in school and to acquire new ones. This means that educators need to be aware of and take into consideration cultural and linguistic factors which influence children's expression and interpretation when assessing young children's cognitive and linguistic abilities.

The research cited here and much more that could be cited raise serious questions about assessing children's language within narrowly defined contexts. Just as language is acquired because it is relevant to children's experiences, assessment of language ability must be conducted within relevant, meaningful conversational contexts. Existing language assessments are inadequate to perform this task; current tests indicate what children do not know about standard American English rather than what they do know about language. Obtaining child language samples in naturalistic contexts would broaden our understanding of how children learning various social dialects use language for expression and interpretation. This information could be used to build the connections needed between children's experiences and language, on the one hand, and school experiences and language, on the other hand.

DIMENSION V — COGNITION AND GENERAL KNOWLEDGE

Introduction

The last dimension of early learning and development is perhaps the one that is most frequently associated by the general public with schooling. Parents often assume that there is a set body of knowledge (e.g., names for letters and shapes) that children need to acquire before they can successfully negotiate early schooling. In this regard, parents intuit only one aspect of this complex dimension of early learning and development. The problem with talking about knowledge is that there are many different, although interrelated, kinds of knowledge that are acquired through similar, though not identical, processes. Cognitive psychologists have used several category systems to describe knowledge. For example, Piaget (1952, 1954, 1965) describes physical knowledge, logico-mathematical knowledge, and social-conventional knowledge. Vygotsky (1978) describes school-learned and spontaneous or socially-constructed knowledge. Gardner (1983) identifies multiple different ways that humans beings are capable of knowing about the world. The "human intelligences" or ways people know the world are through language, logical-mathematical analysis, spatial representation, musical thinking, the use of the body to solve problems or to make things, an understanding of other individuals, and an understanding of ourselves. Information-processing theorists, in addition to studying the processes necessary for acquiring and using knowledge, have identified other important categories of knowledge that are crucial for early schooling. These categories include knowledge of strategies for remembering information and solving problems and knowledge about the regulation of thought processes (e.g., knowing how and when to focus attention and ignore irrelevant information). The general public's expectation limits the cognition and general knowledge dimension to social-conventional knowledge — such as the names for colors and numbers — when what children need is far more complex and involves all types of knowledge.

Rationale

Two influential theoretical perspectives on cognition are the landmark works of Jean Piaget (1952; 1954; 1965) and Lev Vygotsky (1978). Each of these theories assumes that knowledge results, at least in part, from children's construction of their own understanding through their natural ability to think about their actions and through their interactions with other people, adults, and children. Piaget's theory emphasizes the construction of knowledge from within the child as a result of an interaction between children's own thought processes and their experiences in the physical and social worlds. Vygotsky emphasizes the process of social construction of knowledge with the interpersonal (language-related) dimension preceding the intrapersonal — competence is developed through language and through interaction with adults and other children in everyday problem-solving activities. Adults and capable peers provide a child with guidance and "scaffolding," as well as support calibrated to the child's abilities,

decreasing as the child is increasingly able to take on more of the burden. With such support, a child is able to perform tasks he or she would be incapable of completing alone. According to Vygotsky (1978), the development of higher order mental functions such as conceptualization begins in social interaction — that is, language use. This kind of learning is important throughout life, but essential for children who need to test the mental hypotheses they construct against the thinking of other people. Although traditional assessments have focused on evaluating what a child can achieve in isolation, this theoretical perspective suggests that a more effective approach might be to examine what a child can achieve when performance is supported by others, and to consider the types of support necessary for the child to complete the task successfully.

Vygotsky and Piaget propose similar methods for classifying knowledge. Vygotsky (1978) distinguishes spontaneous concepts from school-learned concepts. Spontaneous concepts are those that the child discovers through direct experience; these are the concepts that the child constructs mentally without need of instruction from adults. On the other hand, school-related or scientific concepts originate in the culture and represent the body of knowledge from past generations. Vygotsky's school-learned concepts are analogous to Piaget's socio-conventional knowledge, just as Vygotsky's notion of spontaneous concepts parallels Piaget's view of construction of social knowledge. Piaget describes three categories of knowledge: physical, logico-mathematical, and social-conventional. They are defined here to delineate this dimension of early development and learning.

General Definition

The cognitive and general knowledge dimension of early development and learning includes at least three different kinds of knowledge. The first is physical knowledge, the second is logico-mathematical knowledge, and the third is social-conventional knowledge.

I. Physical Knowledge

This is the knowledge of objects in external reality. The color and weight of a ball and the fact that the ball rolls down an incline are examples of physical properties that are in objects in external reality and are learned by observation and experience with the objects.

II. Logico-Mathematical Knowledge

Logico-Mathematical knowledge consists of the relationships created by individuals within their minds between objects, events, or people. This knowledge extends beyond physical knowledge to establishing similarities, differences, and associations. For instance, when a child sees a red bead and a blue one and judges them to be different, the difference is an example of logico-mathematical knowledge. The difference is not a part of the physical properties of the

beads themselves but is a product of the relationship which the individual has created between the beads. Likewise, the individual could construct a relationship of similarity between the beads if the variable under consideration were size or weight. Logico-mathematical knowledge is the most complex kind of knowledge and therefore the most difficult to describe and assess. However, logico-mathematical knowledge is essential for children to be able to perform mathematical operations and also to solve problems of all kinds. As was indicated above in the discussion of language development, understanding relationships is key to understanding the world and solving problems.

III. Social-Conventional Knowledge

Social-conventional knowledge reflects the agreed-upon conventions of society and the school-learned knowledge that could not be reinvented by every generation of learners. For example, the conventions of the English language are that there are 26 letters, including five vowels and 21 consonants, while the Hawaiian language consists of 12 letters with five vowels. Other examples of social-conventional knowledge are that December 25 is Christmas and that we use the numerals 1, 2, and 3 and the words one, two, and three. The numeric concepts necessary to make sense of these numerals, however, are examples of logico-mathematical knowledge.

These three types of knowledge are interrelated. For example, in order to "read" the physical properties of objects such as color, the child must have first constructed a classification system that discriminates objects along this dimension (an example of logico-mathematical knowledge). Similarly, we could not understand the statement about Christmas without categorizing Christmas day in relation to all other days of the year.

The distinction between types of knowledge is essential for understanding how children learn and how they demonstrate their learning in various contexts. For example, many young children will break a cookie into little pieces and proudly announce that they have more cookie than their classmates. This is an example of the child's reliance on physical knowledge (the cookie pieces look like more) in the absence of the construction of logico-mathematical knowledge (the relationship stays the same because nothing was added or taken away). As children mature, they acquire the ability through repeated experiences to apply logico-mathematical knowledge to this problem.

Likewise, children may be able to demonstrate social-conventional knowledge of numbers by rotely counting up to 30 or higher, but not be able to accurately count a set of objects if they do not have the logico-mathematical understanding that each object must be counted in order and only once (i.e., understand one-to-one correspondence). Piaget describes the child's construction of number concepts as the process of synthesizing two kinds of relationships — order and hierarchical inclusion. The concept of order is necessary so that children do not count the same

object over and over or skip any objects. Hierarchical inclusion enables children to quantify a set, realizing that "three" includes "two" and "one," or that "eight" encompasses all the objects rather than the eighth object in a series. Sometimes children who have not fully developed an understanding of numbers will count a set of eight and when asked to "show me eight" will point to the last object in the set. This behavior demonstrates that, for this child, the words "one, two, three" are names of individual elements in a series like "January, February, and March" rather than a numerical set. In short, a child may demonstrate social-conventional knowledge of numbers without demonstrating logico-mathematical understanding. (A complete description of children's development of number concepts is available in Kamii, 1982; 1985; 1989.)

Similarly, as Gelman & Meck (1983) have shown, just as a child may demonstrate a social-conventional knowledge of numbers without demonstrating logico-mathematical understanding, a child may have an implicit logico-mathematical understanding of numbers and counting without necessarily being able to demonstrate this understanding. For example, under certain circumstances (e.g., when watching a puppet count), children as young as three recognize that each item in a set must be matched with a different number name, that number names must be used in a constant order, and that the last number in a count is special, because it indicates the number of items in the set. Yet these children are unable to count appropriately on their own. Such findings force us to recognize that the level of logico-mathematical understanding children demonstrate is dependent on the type of task used to assess this knowledge.

These examples illustrate the challenge of assessing children's cognition. As in the area of language development, defining and assessing cognition is often oversimplified. First, the cognitive domain is usually measured as narrowly defined social-conventional knowledge: what number is this? what shape is this? Second, an assumption is made that the culturally defined social-conventional knowledge of one group is or should be reflective of the knowledge and experiences of all cultural groups. Social-conventional knowledge is perhaps the most variant across cultural groups because it is the most determined by exposure to specific cultural information. It is also the most easily acquired form of knowledge (usually through direct instruction). *Lack of specific social-conventional knowledge should not be construed as lack of ability to learn.* Also, it is clear from the previous discussion, that at least two dimensions of learning — language and cognition — cannot be separated, because language is crucial for conceptual development and thinking.

Below are some of the cognitive competencies that young children develop through interaction of the different types of knowledge:

Representational Thought (e.g., the ability to think about things not present; to distinguish between real and pretend)

Problem-solving (e.g., the ability to experiment using different strategies; relate cause to effect; interpret and generalize)

Mathematical Knowledge (e.g., the ability to put objects, events, actions into all kinds of relationships; explore sequence, cardinal and ordinal number properties; perceive sequenced events in time)

Social Knowledge (e.g., to be aware of self, family, and community; be aware of physical environment and natural world)

Imagination (e.g., the ability to "formulate rich and varied mental images, see beyond the obvious, or draw upon experience in inventive and effective ways" [Jalongo, 1990, p. 195])

Such a list as the above immediately reveals the importance as well as the interrelatedness of different kinds of knowledge.

Relationship to Individual, Cultural, and Contextual Variation

The above categorizations of knowledge and ways of learning are stated generally as though all children learn in the same way. While it is true that there are certain aspects of learning that can be generalized, recent cognitive research is equally clear that there are considerable differences in not only the rate at which children acquire knowledge, but in the ways in which children learn, remember, and understand. Gardner's (1983) work demonstrates that individuals differ in the strength of various abilities and in the ways different intelligences are combined to complete different tasks, solve various problems, and progress in various domains. Gardner's complex view of intelligence, considered in light of the growing body of knowledge on approaches to learning described earlier, begins to explain some of the enormous variation that is observed in children's early learning.

In addition, as noted above, knowledge — particularly social-conventional knowledge — is extremely dependent on cultural context, and thus is subject to strong intercultural variation. Culture contributes to the variance in children's development: (1) by providing specific contexts for learning; (2) by determining how different contexts are related; and (3) by regulating the difficulty of the child's role and the level of support given to a child in performing a task (Laboratory of Comparative Human Cognition, 1983). Culture determines not only the knowledge that is valued and transmitted in children's communities, but also how children perceive events and stimuli.

Caregiver beliefs and child-rearing practices are influenced by cultural practices and have important consequences for children's cognitive development. Caregivers shape the

environments in which children grow up, and the level of guidance and support provided for children at different ages as they engage in different activities varies widely among families.

In addition, although widely ignored in most current assessments, it is clear that children's abilities and understandings are frequently highly context-dependent. Slight variations in a task may produce large differences in the level of understanding demonstrated. Children's performance on new tasks will depend on their familiarity with the context, which is highly influenced by their cultural backgrounds. In contexts that are familiar, where they can properly interpret the requirements of the situation, children will demonstrate a high level of knowledge and understanding. When the contexts are unfamiliar, however, children may respond in ways that adults deem developmentally inappropriate and illogical. For example, Carraher, Schliemann, & Carraher (1988) found that Brazilian street children who work as vendors are able to perform relatively complex calculations in calculating total costs of purchases and change due to customers, but cannot perform written calculations for the exact same arithmetic problems in school.

Summary

Even a cursory comparison of the list of cognitive competencies delineated above with the identified intelligences explains why those children whose styles and ways of knowing more closely approximate the challenges of school will appear to be more cognitively competent. Less obvious is the fact that cultural preferences and patterns are reflected in these cognitive tasks. For example, it is often assumed that the appearance of a strong fantasy-reality distinction is a developmental task of the preschool period, but in fact these behaviors are heavily culturally influenced (Wolf, 1992). As we learn more about cultural patterns in approaches to learning, styles of learning, and individual variation, we will gain greater understanding of the ways that cognition and general knowledge are manifested by different children. In the meantime, the operating premise should be that all children can learn and that schools need to adapt to the individual needs, interests, and learning styles of different children if all are to succeed.

CONCLUSION

The purpose of this paper has been to amplify the dimensions of early learning and development used by the National Education Goals Panel to measure progress towards Goal 1. In developing this definition, the Technical Planning Group has responded to widespread concerns regarding the narrowness of current definitions of "readiness," inappropriate methods of testing, and the misuse of data that can cause unintentional harm to individual children. By expanding the awareness and understanding of the multiple domains of early development and learning and of the variability caused by individual, cultural, and contextual influences, the Group hopes to stimulate a reappraisal of our current methods of assessment, as well as our current policies and practices concerning young children and their families.

This section examines issues that underlie this definitional analysis and that must be addressed as a prelude to any reappraisal of our current approach to early care and education. Then, the section identifies preliminary implications of the Technical Planning Group's work for assessment, practice, and policy. Finally, the section suggests specific action steps based on these implications for future work in early development and learning.

Underlying Issues

Throughout this report, two underlying issues have repeatedly emerged. First, though the immediate task at hand was to amplify the dimensions of children's early development and learning with an eye toward the future development of specifications that might be suitable for assessing the construct, the Technical Planning Group strongly believes that child outcomes should not and cannot be the sole measure of America's progress toward the first Education Goal. While specifying desired child outcomes is a necessary step, it is an insufficient approach. It must be coupled with a commitment to examining social and institutional readiness to support children's early development and learning.

To that end, the Technical Planning Group strongly urges that energy be devoted to examining the readiness and capacity of the nation's schools to receive young children. Moreover, the nation must examine the nature and quality of America's health and mental health services to assure that adequate pre- and post-natal care is available to all, that all children have access not simply to immunizations but to on-going health care and adequate nutrition, and that child abuse and neglect are eliminated. We should examine what it will take for our education system to assure that young people receive parenting education and support routinely, and that preschool children have access to high quality programs. Family resource and support programs should be widely available, offering parenting education, support groups, and outreach to improve families' capacities to support their children's development. America should examine its employment practices to assure that all who are able have access to gainful, durable employment, and that corporate policies support a nation attempting to enrich its commitment

to child and family life. In short, the Technical Planning Group is wrestling with tension created by a nation that wants to be able to measure child outcomes without according sufficient attention to the inputs necessary to yield those outcomes.

The second issue permeating this report is related to both the drive for standardization that is implicit in Goal 1 and the need for and appreciation of the significance of individual, familial, cultural, and contextual diversity. The report has called for a rethinking — a restandardization, of sorts — of the essential domains of early development and learning. Specifically, the report has encouraged a shift from a primarily cognitive orientation to one that embraces multiple dimensions. Simultaneously, the Technical Planning Group's work strongly underscores the need to respect individual, cultural, and contextual variability — a stance that demands flexibility, rather than standardization, in the interpretation and utilization of the definitions. In short, the Technical Planning Group, while understanding the complexity of the technical challenges associated with defining and assessing early development and learning before us, is convinced that new assessments are doomed to repeat past problems unless such efforts are permeated by a conceptual orientation that accommodates cultural and contextual variability in *what* is being measured and in *how* measurements are constructed. Within the broad parameters of standardization, then, flexibility and inventiveness must be brought to bear on the content and the process of assessment.

Implications

Recognizing the above issues and the limitations of this report, what are the implications that can be drawn to inform the approaches toward early development and learning that are necessary if we are to undertake responsibly the challenge of the nation's first Education Goal? The Technical Planning Group offers suggestions — bearing in mind that much fruitful work is already underway — in three categories: assessment, practice, and policy.

Assessment

For decades, the use of norm-referenced standardized tests to assess young children has been commonplace. In the late 1980s, however, through the efforts of individual scholars, advocates, and teachers, along with support from professional organizations, the liabilities of such practices were uncovered. To modify the situation, alternative assessment practices were promulgated, and efforts were made to distinguish between "assessment" and standardized "testing."

Given the amplification of children's early development and learning discussed here, plus the shortcomings of established testing methods, it is essential that any assessment strategy take into consideration a number of issues, such as the incorporation of multiple dimensions as well as cultural and individual variability issues. In addition to abandoning testing strategies that rely

on single administrations, that are uni-dimensional, and that fail to capture cultural variability, assessment strategies must clearly distinguish the purposes of assessment. It is not possible for a single assessment system or a single assessment instrument to do all things. Instruments used to determine eligibility for services should be different from both those used to collect national accountability data and those used to make clinical judgments; moreover, data derived from assessments and observations that will be useful for the improvement of pedagogical practices are likely to be different from all three. Furthermore, rather than the automatic administration of instruments that may be inexpensive and readily available, more thoughtful data collection plans that include input from families, teachers, and the children themselves must be constructed. And rather than administering all assessments to all children, such plans need to be developed with the understanding that, for the purposes of monitoring national changes over time, sampling is sufficient.

In addition, greater attention must be given to addressing unresolved conceptual issues, suggested above. First, amplification of the variables associated with children's early development and learning actually poses serious challenges for assessment. As we have seen, information is not equally robust regarding all dimensions; indeed, in some areas it is woefully weak. Consequently, far more scholarly work is needed to tease out variables in certain domains.

Second, this analysis suggests that far more work is needed if we are to make assessments responsive to the cultural variation that characterizes all early development and learning. Heretofore, "cultural" sensitivity has been expressed by simplistically making assessments available in children's own languages or by showing sensitivity in the types of questions asked and the nature of information solicited. While these factors are important, we are now aware, for example, that cognitive processing is different for bilingual children than it is for monolingual youngsters. We have seen that culture profoundly affects *how* children approach learning, *how* they learn, *how* they process information, and *how* they interpret ideas and behaviors to such a degree that assessment procedures and instruments must not merely be *calibrated* to accommodate such differences, but must be *constructed* from the very core to embrace variation. There is a need for new ways of thinking about multiple outcomes, and for the development of outcome continua that fully recognize alternative expressions of valued outcomes.

Third, and despite the first two concerns, so much knowledge is already available that if one were to construct an assessment that incorporated all the variables presented and that represented sound principles of assessment (e.g., periodic assessment by multiple parties), the time committed to assessment would be enormous. Although the Technical Planning Group supports the value of assessment, particularly as a tool for enhancing quality classroom practice, the Group also demands sensitivity to the burden placed on teachers, children, and families by assessment. Efforts must be undertaken to collapse variables and to frame specific performance

assessments so that multiple information can be extracted from common or everyday experiences.

Practice

This analysis suggests that early development and learning must no longer be regarded solely, or even primarily, as a cognitive issue. Knowledge must nest within the full range of dimensions discussed, and must be understood as a fully integrated component of early development. Understanding that early development and learning consists of physical and motor development, social and emotional development, approaches toward learning, and language development — in addition to cognition and general knowledge — has implications for the content of curriculum and for the goals of early education (i.e., for what is taught, for how it is taught, and for how knowledge is constructed).

Moreover, the discussion suggests that those who work with young children should know the dimensions and understand how to translate that knowledge into classroom practice. Achieving this sounds far simpler than it is. Certification standards that drive college course offerings often do not acknowledge the multiple dimensions of early development and learning. Certification processes consistently devalue understandings of human development (child and adult). In short, if practice is to be altered to genuinely accord weight to the five dimensions, teacher preparation programs must also do so. Further, new approaches to in-service training need to be developed so that teachers and those who work with young children have access to specialized training. Individuals who work with young children must be well-versed in parent engagement and family support, as well as in the nuances of pedagogy and its application.

The analysis suggests that to optimize early development and learning, there must be a match between the nature of the child's learning environment and the child. Contextual variables dramatically alter the trajectory of children's early development and learning, suggesting that in order for children to thrive, they must be in environments that foster rich developmental experiences. In the most simple manifestation of this point, classrooms where young children congregate may therefore feel and look different from those of older youngsters. Constructing knowledge from experience must be accorded value. Variation in the learning environment must reflect cultural values and modes of interaction.

Policy

It is quite clear that the multidimensional nature of early development and learning has serious implications for the enactment of policy, which has so long been characterized by categorical funding and distinct programs. The dimensions and the need for them to be integrated means that partnerships among agencies in health and education, not to mention social services, need to be fostered. In some cases, programs are already designed to be

multi-disciplinary; where they are not, linkages for referrals, for combined planning, and for collaborative work can be developed.

Taking hold in local communities throughout the nation, such integrative efforts also need support at the federal level. In some cases, supports that enable cross-program linkages and service integration take the form of waivers or exemptions from extant policy. In other cases, incentives for collaboration are being incorporated into legislation. Whatever the strategy, to attain the multi-dimensional outcomes presented herein, more collaboration is needed at various levels.

By implication, the focus on children's early development and learning suggests that policy emphases must begin well before the early years of school. The challenge is that such activity needs coordination at the federal and state levels. Currently, responsibility is dispersed among many agencies, and between the public and private sectors. If the nation is serious about meeting its first Education Goal, delivery mechanisms beyond what currently exist will need to be considered. It is not simply the development of new policies that must be accorded attention; it is the development of new structures and new public will. It is to that end that this report is dedicated.

Action Steps

Given the expanded definition of early development and learning proposed in this report and the above implications for assessment, practice, and policy, concrete action steps are proposed below to guide the development and implementation of a revised approach to serving young children.

- First, to nurture these five dimensions will require additional work by researchers and local districts to observe, describe, measure, and understand the dimensions. Far more scholarly work needs to be done to tease out variables where current information is not adequate.

- Second, assessments of the strengths and needs of young children entering school need to reflect the five dimensions explained in this paper. Currently, many local systems assess children's "readiness" by the use of inappropriate testing methods that focus too narrowly on children's knowledge of pre-literacy and pre-academic information.

- Third, to help schools and teachers recognize the five dimensions accurately, work is needed to develop ways to assess them in children whose cultural backgrounds vary from that of the teacher. Children's early development and learning always occur in a specific cultural context. That context influences the ways in which the child learns to use language, the specific knowledge he or she is most likely to acquire, and the ways in

which he or she approaches learning and other social situations. In the past, individual and cultural variations in the expression of these dimensions have been mistaken for deficiencies in the children. Important work needs to be done to develop methods to recognize these dimensions accurately in children from varying social and cultural contexts. Assessment procedures and instruments must both be calibrated to accommodate such differences and constructed to recognize and illuminate multiple expressions of outcomes on these dimensions.

- Fourth, attention is needed in both policy and practice in order to recognize that preparing children for school means helping them become healthy, adjusted, curious, and expressive, as well as knowledgeable. As schools laudably seek to raise education standards, some will be tempted to begin academic instruction at younger and younger ages. In contrast, the best way to reach high standards may be to attend to children's general well-being and encourage teachers to provide learning environments and experiences rich in opportunities to explore, rather than providing earlier formal academic instruction. Increasing recognition that children learn by actively constructing knowledge complements the understanding of the importance of all five dimensions.

- Fifth, regarding the issue of teacher training and certification, teachers need training to understand, recognize and nurture the five dimensions of early development and learning and the variety of ways in which different children may demonstrate them. Such training can help them to appreciate the educational strengths and needs of their students and to translate that knowledge into classroom practice. In addition, teachers need training in increasing parent involvement, educating parents, and in assisting parents in supporting their children's development.

- Sixth, to promote all five of these dimensions in children there is a policy need to coordinate human service delivery among health, education, and other social service agencies at the local, state, and federal levels. Such policy coordination needs to reflect a shared commitment of communities to support the efforts of families and schools to provide a supportive environment for children in the larger society.

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