Kindergarten Readiness

A Review of the Literature and Recommendations for Educational Outreach Program Designs

PREPARED FOR

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Preface

The concept of school readiness has been discussed among parents, educators, and policy makers since the 1800's (Gillespie-Silver & Scarpti, 1992). Traditionally, a child's readiness for school was determined by the child's age and his/her readiness for formal academic instruction. Today, readiness is viewed as a broader construct. We now know that school readiness is far more than academic knowledge and skills. It includes children's physical health, self-confidence, and social competence. We also recognize that preparing children for school is not solely the responsibility of individual parents or early childhood programs it also depends on the communities' ability to provide families with the necessary resources to care for their children and on elementary schools' expectations for kindergartners.

In the past, kindergarten was considered to be an 'adjustment' year—a year where children learned about the school environment, learned to participate in group activities, and prepared for more formal academic instruction. This is no longer the case. The kindergarten curriculum now includes standards of performance that all children should master and requires children to participate in formal instruction in reading and mathematics, among other subjects. Therefore, a child's readiness for kindergarten depends in large part on the community support systems designed to assist parents and early childhood educators in their efforts to provide preschool children with supportive relationships, educational experiences, and healthy environments that will prepare them to participate fully in kindergarten.

Research points to the importance of the family in shaping young children's social and emotional well-being and readiness for school. What is experienced within the family is transferred to the social relationships beyond the family and affects children's success at school. Because 67% of three year olds and 77% of four year olds attend some type of out of home care each day, the same may be said for children's experiences in child care (Hofferth, Shauman, Henke, & West, 1998). When families lack access to social, health, educational and economic resources they are unable to provide their children with the relationships, knowledge, skills, and abilities to succeed successfully in kindergarten and beyond. When early childhood educators are not prepared to assist families in accessing necessary resources, and are unfamiliar with the expectations of kindergarten programs, the effectiveness of their work with children is compromised. To prepare young children for kindergarten, communities, parents, early childhood educators, and elementary schools must work together to create home/school environments that support children's physical and mental health, social competence, language and literacy, general cognition and approaches toward learning (National Educational Goals Panel, 1997).

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Introduction

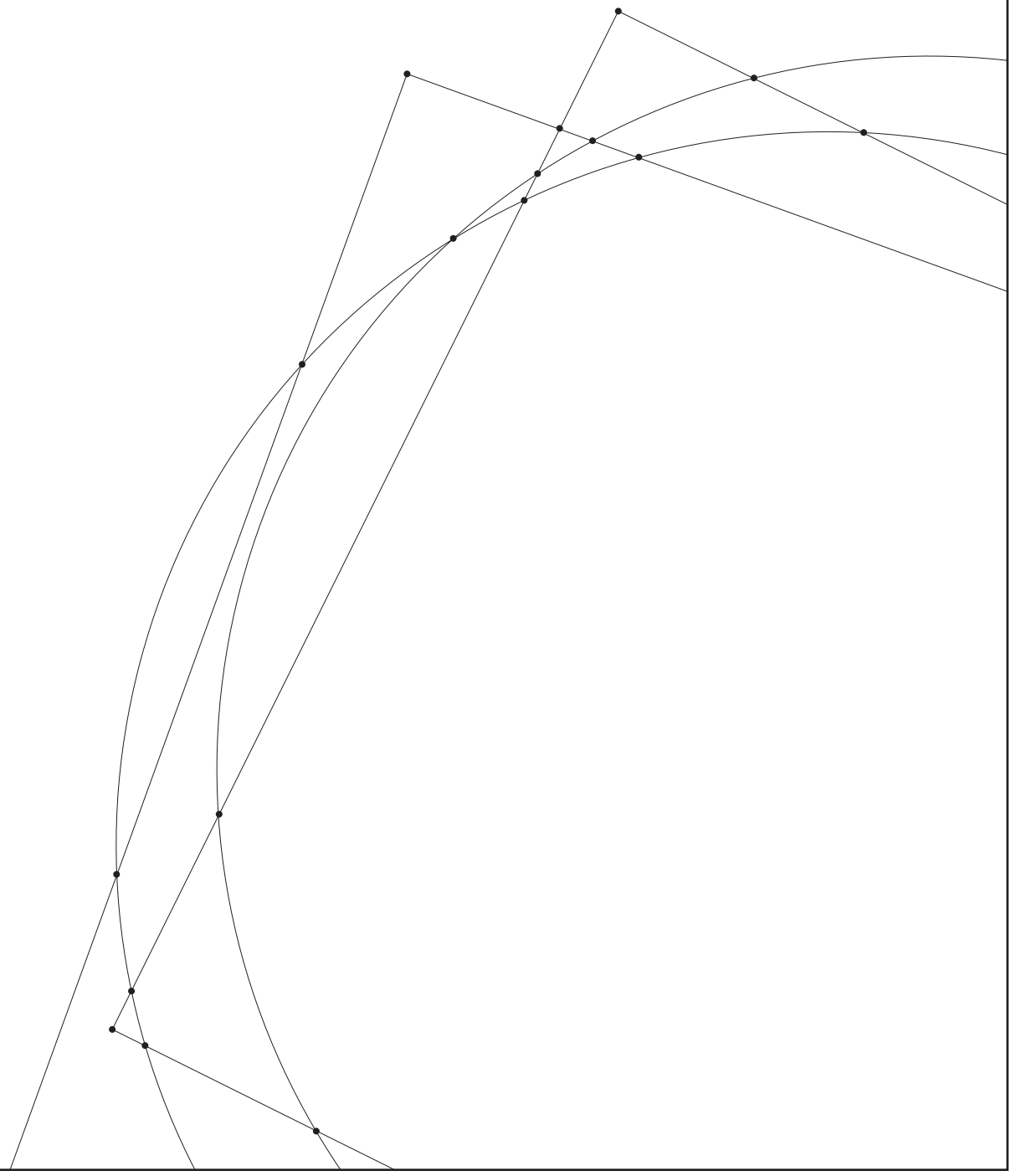
Research consistently shows that the level of preschool children's social competence, early language and literacy, and early mathematical skills at kindergarten entry are good predictors of later school success or difficulty. Although the majority of young children enter kindergarten "ready to learn", Kindergarten teachers report that 48% of all children do not come to school with the essential skills, dispositions and supportive relationships that will allow them to succeed in school (National Center for Early Development and Learning, 1998). Much of the discrepancy in children's preparedness for school can be attributed to their social economic status, minority status, levels of parent education, parents' sense of efficacy about their parenting abilities, the educational aspirations parents hold for their children and limited English proficiency of parents and children.

Educational programs designed to strengthen families and support the ability of parents to provide the best possible environment for the healthy growth and development of their children can serve to reduce or eliminate some of the barriers that prevent young children from enjoying a successful kindergarten experience. This report is designed to inform readers of important aspects of preschool children's growth and development that contribute to their preparedness for school, and how to design educational programming to assist parents and child care practitioners in preparing children for kindergarten.

Section one of this report describes characteristics of children's development in social competence, language development, literacy development and mathematical development during the preschool years and outlines ways in which adults can support children's growth in each domain. Although the format of this report separates these developmental domains into distinct categories, it is important to remember that all areas of children's development are interconnected: development in one area influences development in all other areas. Most importantly, children's physical and mental health underlies development in each of these domains. Therefore, we remind readers that all children must be healthy and socially secure before they can benefit from any educational experience, regardless of whether these experiences are provided at home, day care, or the public school system.

Section two of this report discusses the relationship between parent and teacher education and children's outcomes, and reviews benefits of parent education programs. The final section of the report offers recommendations for program and curricular components of a kindergarten readiness outreach program that can be implemented with families and or child care providers.

Section One



School Readiness and Social Competence

Children's experiences with adults and peers at home provide the foundation for successful school experiences. When young children leave home and begin the process of socialization into school, they build and expand their knowledge of the world around them. Children use their developing social understanding to maneuver through the daily life in school, solve conflicts with peers, and build relationships with their teachers. As children attempt to learn the culture of schooling and build relationships with unfamiliar adults and peers, they are faced with many situations that require advanced social problem solving skills. What, how, and how much children learn in school will rely in large part on the social and emotional competence they develop as preschoolers, and how they use those skills to interact with others at school.

Developmental psychology has identified the ability to form and sustain reciprocal relations with adults and peers as a major milestone in the development of social competence (Odem, Mc Connell, & McEvoy, 1992; Katz &McClellan, 1997). A socially competent child can make friends, get along with his or her peers, and communicate with teachers. More specifically, socially competent children display the following characteristics (NEGP, 1999; FAN; 2000):

- Confidence
- Friendliness
- The ability to relate to peers without being too submissive or overbearing
- Being willing to give and receive support from peers and adults
- The ability to communicate frustrations, anger and joy
- The ability to concentrate on and persist at challenging tasks
- The ability and willingness to take ideas from others
- Attentiveness

Many studies link social competence to later success in school and society (Wentzel & Asher 1995; Prowless & Elliot 1993; Quay & Jarrett 1989; FAN, 2000). However, many kindergarten teachers indicate that increasing numbers of children are entering kindergarten without the social and emotional competence necessary to succeed in school (Cox, Rimm-Kaufman, & Pianta, 1999). Children who do not begin kindergarten socially and emotionally competent, are often not successful in the early years of school (Child Mental Health Foundation and Agencies Network (FAN), 2000).

To be ready to learn, children need a solid social and emotional foundation. Without that base, children may perform poorly during their first years of schooling. "Unhappy, fearful, or angry children are preoccupied, unable to give their full attention and engagement to learning experiences, and have difficulty engaging in relationships and learning from others" (The National Educational Goals Panel,1999). When combined, these dispositions increase the likelihood that children will experience academic difficulties in kindergarten and/or the primary grades. Children with low levels of social competence are often labeled "academically delayed", and in many cases are retained a grade. Once applied, these labels decrease the number of

social interactions children have with their peers, and communicate adults' low expectations to the child. Children with low levels of academic achievement during the pre-primary and primary grades are at greater risk for teen pregnancy, delinquent and antisocial behaviors (Huffman et al., 2000), and have higher high school drop out rates.

Children who are socially and emotionally ready for school generally have improved academic outcomes and vocational success, higher self images, and stronger relationships with peers and adults (Barnett, 1995). Academic and social success during the early years of schooling increases the likelihood that children will be productive citizens as measured by increased independence and social confidence, less reliance on social services, and higher earnings (Huffman et al., 2000).

Components of Social Competence

Children's ability to regulate their emotions, and interpret the feelings and behavior of others directly relates to their ability to participate in school activities. The development of these skills begins at birth is supported by interactions with adults and capable peers who "scaffold" children's learning and assist them in managing new and complex relationships (Vygotsky, 79). Being socially competent requires children to learn skills that foster smooth and satisfying relationships. Existing research shows that emotional regulatory skills, social cognitive abilities, and social interaction with peers and adults all contribute to children's developing social competence.

Emotional Regulatory Skills

Children gradually learn to regulate their emotions. The ability to transfer "competent patterns of adaptation" learned from the experience of secure attachments with family to new interpersonal environments requires learning specific strategies for dealing with difficult situations (Saarni et al., 1998). Adults help children learn to use these strategies by modeling appropriate behavior in difficult situations, and by supporting children when they encounter social conflicts. In turn children learn to seek out assistance when they need it and learn to offer encouragement to others when they are able. Children who can control emotions such as sadness, anger or frustration, and show empathy to others are most likely to be popular with their peers (Fabes et al, 1999).

Children who have not developed the social skills necessary for positive peer interaction by early elementary school have been observed to behave consistently in ways that lead toward peer rejection (Coie & Kupersmidt, 1983; Dodge, 1983; Dodge, Coie & Brackke, 1982). Four-year-olds who spend more time engaging in disruptive and/or aggressive behavior as preschoolers carry this approach into kindergarten and tend to be disliked and rejected by their classmates. Rejected peer status is associated with an increased probability of dropping out of school (Ladd & Price, 1987) and low self-esteem.

Social Cognition

Social cognition involves perspective taking; the ability to take another's point of view. However, young children are in the preoperational stage of development and have difficulty viewing things from another perspective. These difficulties are often evident when children are engaged in interactions with unfamiliar adults and peers. Learning to evaluate social situations from the perspective of another requires advanced social

and cognitive abilities. Children's thoughts, beliefs and attitudes about the social situation, and their relationship to those involved must all intersect at the same time. The ability to interpret others' feelings, generate possible solutions, and act upon those realizations requires children to draw upon abstract reasoning abilities and to be especially attuned to the feelings of others.

Children with higher levels of social competence are able to positively identify others' emotional states in complex situations, and therefore, tend to receive higher levels of acceptance from peers and adults. Children who are able to interpret abstract hypothetical social situations and develop solutions for these situations are also shown to have stronger relationships with others. When children come to understand and predict how others might feel in both positive and negative situations, they are better able to comfort themselves and/or their peers during stressful or unfamiliar situations. They are also more prepared to participate in group learning experiences.

Social Interaction with Peers and Adults

Researchers suggest that young children develop standard routines of interactive behavior from interactions with family and caregivers, and then apply these routines to interactions with social groups outside of the home (Parke & Ladd, 1992; Black & Logan, 1995). Because families and schools differ on a number of structural dimensions that have implications for the kind of behaviors and attitudes that young children must integrate if they are to behave appropriately in both settings (Asp & Garbarion, 1988), being able to initiate and sustain positive interactions with unfamiliar adults and peers is an important precursor to kindergarten readiness. Adults who label children's emotional responses, guide children through conflicts situations and model strategies for positive interactions, such as how to enter into play situations, assist in the development of children's social competence. Familiar peers also serve as resources to enhance children's development of social competence (Ladd & Kochenderfer, 1998). Young children support each others' social competence by rejecting aggressive interactions and "coaching" one another to act is socially acceptable ways. Children who demonstrate positive interactive play behaviors are sure to be more actively engaged in learning activities (Coolahan, Fantuzzon, Mendez and Mc Dermott, 2000).

Factors that Influence Social Competence

According to Thompson (2002), supportive relationships are the core ingredient of positive early social and emotional development. However, recent research suggests that several "risk factors" undermine these relationships and result in an increased likelihood that young children will have difficulties in transitioning from home or preschool to kindergarten (FAN, 2000).

Risk Factors

According to FAN, there are three types of risk factors that have a negative effect on children's readiness for kindergarten and their transition from home to school. "Fixed" risk factors, such as minority status, low birth weight, and family composition, negatively affect children's success in school, but cannot be changed. "Variable marker" risk factors, such as maternal possession of a high school diploma and problematic maternal relationship history, can be changed, but when changed, child outcomes remain the same. "Causal" risk factors, such as poor familial resources, poor parenting practices, and difficulties with peer relationships,

are of particular interest to researchers because they can be changed through early intervention, and when changed, they improve child outcomes.

Causal risk factors associated with difficulties in school include early cognitive deficits, early behavior and adjustment problems (e.g., aggressive behavior), and parental psychological problems (e.g., depression in mothers). Others include difficulties in maintaining early important relationships with parents, peers, and teachers. Huffman et al. (2000) list several other risk factors that contribute to poor experiences in school:

- Low birth weight and neurodevelopmental delays and other medical problems
- Difficult temperament and personality (e.g., hyperactivity or aggressive behavior)
- Family composition (e.g., divorce and remarriage)
- Low level of maternal education
- Parental substance abuse
- Maltreatment
- Problematic maternal relationship history
- Psychophysiological markers (e.g., indicators of changes in the brain or other organs that limit child's cognitive and regulatory capacities)
- Insecure attachment with primary caregiver
- Child care by someone other than the mother (e.g., child care facility)
- Characteristics of kindergarten and first grade classes (e.g., large class sizes, fewer parent-teacher meetings)
- Immigrant and/or Minority status
- Low socioeconomic status

These risk factors contribute to adverse early school outcomes in some ways, but it is uncertain exactly how. Some studies show that children exposed to cumulative risks (more than two) display increased likelihood of subsequent emotional and behavior problems. Other studies have indicated that risk is additive, not cumulative over time, meaning that individuals can move in and out of various levels of risk at different points in their lives (FAN, 2000). Research efforts are now focused on investigating the relationships among risk factors and protective factors to better understand how to design more effective early intervention programs.

Protective Factors

Understanding the relationship between risk and protective factors will clarify the process by which poor early school outcomes are either generated or alleviated. Helping parents and teachers to identify and alleviate risk factors, while developing interventions which support the protective factors associated with positive child outcomes will improve children's overall well-being, hence their success in school. The following protective factors are seen to counteract the negative effects of accumulated risk that contribute to undesirable social and academic outcomes (Huffman et al., 2000).

- A secure attachment in infancy and early history of positive family functioning
- Cooperative parental coping (maintaining positive relationships with child)
- Stable, organized, and predictable home environment
- Residence with both parents or remarriage after divorce
- Higher level of maternal education
- High-quality daycare at an early age (for children who have insecure attachments to a primary caregiver)
- Warm and open relationships with kindergarten teachers
- Emotional support from alternative caregiver
- Higher cognitive functioning of the child
- Child's easy temperament
- Large number of classroom friends
- Social support and internal perceptions of control (for girls only)

Although limited research has been conducted to determine how these protective factors negate future academic difficulties, research suggests that they do in fact support the development of children's social competence and success in school. Positive teacher-child relationships play a pivotal role in the alleviation of risks that children may confront in their early lives. In the context of warm, secure relationships with their caregivers, children's eagerness to learn is magnified. When adults provide children with predictable environments, engage children in meaningful conversation and activities, and are sensitive to children's changing developmental needs, children's curiosity and desire to learn are strengthened. Therefore, supporting positive adult-child relationships may be the most important factor in preparing young children for success in school.

Supporting Children's Social Competence

Enhancing the Quality of Parent-Child Relationships

Strengthening parent-child relationships is crucial to children's later social and academic success. The security (or insecurity) of children's early relationships influences how children see themselves, how they view other people, and the world around them. Parents guide children's early forms of self-understanding and self-concept which provide children with the confidence necessary to explore new environments, and to learn from others. They also help children develop positive relationships, strategies for self-management, and emotional regulation through support, instruction, and leading by example. Providing adults with information on how to assist children in building and sustaining relationships, and solving conflicts with others will help children learn to manage the new and different social structures they will encounter in kindergarten. Because young children thrive when provided with unhurried, focused time with responsive adults, providing parents with support systems that help them capitalize on the time they spend with their children will ensure that children have the solid social foundation necessary for success in school.

Enhancing the Quality of Teacher-Child Relationships

The quality of children's early care and education also influences children's later social and academic achievement. Both positive and negative classroom practices in preschool programs correlate to the quality of children's later peer relationships, and/or positive or negative behaviors in the primary grades (Peisner-Feinberg et al., 2000). The relationship between child care providers and young children plays a significant role in children's ability to participate successfully in kindergarten. Just as at home, the warmth and sensitivity of the child care provider enhances children's social competence and improves outcomes in kindergarten and the early primary grades (Lamb, 1998; Pianta et al., 1997). Several studies (Caughey, Dipietro, & Strobino, 1994; Peisner-Feinberg et al., 2000) suggest that children from socioeconomically disadvantaged backgrounds benefit more than their middle class peers from participation in high quality preschool programs. However, the reverse is also true. When children with more "risk factors" encounter less secure relationships with their preschool teachers, they appear to have more problems adjusting to kindergarten, and show higher rates of aggression and disruptive behavior (FAN, 2000). Helping teachers to be more responsive to the children in their classrooms, and to make their classrooms more child-centered, will serve to assure children's readiness for school.

Parents are viewed as the child's first and most important teacher, but child care providers are playing an increasing role in the development of children's overall development. Any program designed to increase children's readiness for school must focus on supporting these important adult-child relationships, which in turn will support children's social and academic competence. Without supportive relationships, effective communication strategies, and numerous opportunities to 'test' newly developed social skills, young children will struggle to manage the complexity of a new school environment. The effects of a negative early school experience can have far reaching implications for young children: effects that can be avoided by assuring that they have secure relationships and the social competence that they need to succeed in school.

School Readiness and Language Development

Children are active participants in learning language, and their families are expert teachers. How does this development occur so rapidly and without any seeming effort on the part of children? This question has fascinated scholars and parents for hundreds of years and is the subject of this paper.

Language Acquisition Theories

A cogent theory must account for all the facts of how children acquire language-the development of both language use and language behaviors. There are three major linguistic theories: behaviorism, nativism, and social interactionism. A brief description of each theory is presented. In addition to these theories, the neurological perspective is discussed. This information provides interesting insights into the biology of language acquisition.

Behaviorist Perspective

Behaviorist theory suggests that nurture, the way a child is taught or molded by his parents and the environment, plays a dominant role in language development. Through the first half of the twentieth century, the prevalent view was that all learning (language included) is the result of two basic processes, classical and operant conditioning (Skinner, 1957).

1. Behaviorists attribute receptive language to associations that result from classical conditioning. For example, every time the baby is offered a bottle, the mother names the object, "Here's the bottle." After numerous repetitions with the adult presenting the action/object and phrase, the baby learns that the clear cylinder, filled with food, is called a "bottle."
2. Behaviorists suggest that through operant conditioning, infants gradually learn expressive language by being rewarded for imitating the sounds and speech they hear. For instance, a baby spontaneously babbles and accidentally says or repeats the sound "mama." The mother responds joyfully, hugging and kissing the baby, saying "Yes, Mama!" The baby, given this reward, is reinforced and attempts to repeat the behavior. Once the behavior is repeated and rewarded often enough, the child connects the word sound to the object or event.

Linguistic Nativists Perspective

The nativist theory of learning and development, with its emphasis on nature, is at the opposite end of the continuum. According to this view, a person's behavior and capabilities are largely predetermined. Nativists believe every child has an inborn capacity to learn language. Noam Chomsky (1965) called this innate capacity a language acquisition device (LAD). Nativists posit that the LAD allows children to interpret phoneme patterns, word meanings, and the rules that govern language. For example, when children first begin to use past tenses, they often over-generalize certain words, such as 'goed' for went, or 'thinked' for thought. Since 'goed' and 'thinked' are not words that children would hear adults say, these examples illustrate that children are using some type of internal rule system instead of simple imitation to govern their acquisition of language.

Nativists also believe that this innate language structure facilitates the child's own attempts to communicate. Nativists believe that language learning differs from all other human learning in that a child learns to communicate even without support from parents or caregivers. They view the environment's role in language acquisition as largely a function of activating the innate, physiologically-based system rather than the major force in shaping a child's language development.

Social-Interactionist Perspective

Social Interactionists do not come down on either side of the nature vs. nurture debate; rather, they acknowledge the influence of genetics and parental teaching. They share with behaviorists the belief that environment plays a central role in children's language development. Likewise, along with nativists, they share the belief that children possess an innate predisposition to learn language. In addition, social interactionists stress the child's own intentional participation in language learning and the construction of meaning. The social interactionist's point of view emphasizes the importance of the infant's verbal negotiations or "verbal bouts" (Golinkoff, 1983) with caregivers. Lev Vygotsky (1962) described this type of adult support, or scaffolding, as facilitating the child's language growth within the zone of proximal development, the distance between a child's current level of development and the level at which the child can function with adult assistance.

A Neuro-Biological Perspective

The psychologists, linguists and anthropologists who developed the three preceding theories of language acquisition had to infer the origins of language and brain activity from careful, long-term observations of external behavior. Over the past two decades, technological innovations have enabled neuroscientists to study the brain at a cellular level. Brain imaging techniques are non-invasive procedures that allow researchers to graphically record and simultaneously display three-dimensional, color-enhanced images of a living brain as it processes information (Sochurek, 1987). These data provide researchers with a better way to understand the organization and functional operations of the brain.

The recent discoveries in neuro-biology closely reflect elements of the nativist, behaviorist, and social interactionists' views of language development. These biological findings reveal that language learning is a reciprocal dialogue between genetics (nature) and environment (nurture). Clearly, infants are born with key brain areas genetically dedicated to language functions. Yet, for children to learn the language of their culture, it is necessary that they have consistent, frequent opportunities to interact with a persistent caregiver who models the language with the child. Likewise, neuro-scientists agree that a child's language capacity is dependent on the quality of language input. Parents and caregivers who consistently engage in conversation with their infants actually help their children develop neural networks that lead to language fluency and proficiency (Healy, 1997; Kotulak, 1997; Sprenger, 1999).

Normal Language Development Sequence

While the process of learning to talk follows a predictable sequence, the age children say their first word may vary widely from one child to another. The following section briefly summarizes this sequence and the age most children demonstrate specific language skills.

Pre-Birth

Language development begins when sounds of speech activate neural networks in the infant's brain. This process actually begins during the last three months of prenatal development as babies are able to hear intonation patterns of their mother's voice. Thus, within hours of birth, infants can distinguish their mother's voice from the sound of other female voices.

Birth to Six Months

Although the mechanical aspects of the auditory system are in place at birth, the neural-network that supports language acquisition is just beginning to develop. Caregivers send multi-layered sensory messages as they feed, bath and play with their babies. As babies and caregivers engage in these daily routines, the babies' brains perceive the sensory messages. These everyday routines stimulate, strengthen, and expand the many neural-networks that build visual acuity, muscle control and expressive and receptive language.

When family members engage in the daily routines of feeding, bathing and playing with their babies, they instinctively use an exaggerated speech pattern called parentese. Recent studies have demonstrated that this slowed-down, high-pitched, exaggerated, repetitious speech actually facilitates a child's language development. This is because:

- The rate and pitch of parentese perfectly matches the infants' auditory processing speed. As babies mature their brain eventually reaches normal speech rates.
- Parentese also allows babies many opportunities to see and hear how sounds are made.

Simultaneously, as babies babble, they gain motor control of their vocal and breathing apparatus. Interactions with caregivers allow babies an opportunity to listen, observe and attempt to mimic sounds they hear and the mouth and tongue movements they see. Through this process, babies begin to specialize in the sounds of their native language(s). The developmental window of opportunity (sometimes called the critical period) for mastering sound discrimination occurs within the first six months of an infant's life. By this time, babies' brains are already pruning out sensitivity to sounds that are not heard in their environment (Kuhl, 1993). This pruning is so efficient that children actually lose the ability to hear phonemes that are not used in their "mother-tongue." Children who consistently hear more than one language during this time may also become native bi- or tri-linguals, as they retain the ability to hear the subtle and discrete sounds.

Six to Twelve Months

By this time the brain has already created permanent neural networks that recognize the sounds of a child's native language. At about nine months most babies begin to hear phonemic boundaries (syllables). The ability to distinguish the auditory boundaries of words is critical to the child's ability to acquire both expressive and receptive language. At this stage of development, babies usually recognize and have cognitive meaning for words such as bottle, momma and daddy. Their receptive or listening vocabulary grows rapidly though it will take a few more months before their spoken language to catch up.

Clearly, hearing well is an essential part of this process. The ability to hear the distinct sounds in each word is the starting point for phonemic awareness, which is a pre-requisite for reading. In other words, if the sense of

hearing is damaged for a significant period of time, language and subsequent literacy development may be impaired.

One to Two Years

During this time frame, neural synapses have increased, strengthened and are beginning to transmit information quite efficiently. Thus most toddlers have begun to experience a language "explosion." Brain imaging technology clearly reveals that the full cortex is involved in processing language. Two important interconnected structures in that part of the brain are Wernicke's Area in the temporal lobe, which links language and thought (word comprehension), and Broca's Area in the frontal lobe, which processes grammatical structures and word production. A bundle of nerve fibers called the 'arcuate fasciculus' connects these two structures, and when it develops (at about age two) children are able to speak in sentences.

Two to Three Years

At this age, most children are unable to articulate perfectly the sounds of adult speech. Rather, they simplify the adult sounds to ones they can produce. Sometimes this means they pronounce the initial sound or syllable of a word (whee for wheel), and at other times, they pronounce only the final sound or syllable (ees for cheese). Another common feature is temporary regression, meaning that they may pronounce a word or phrase quite clearly, then later produce a shortened, less mature version. This, too, is a normal language developmental phase for all children. Thus, it is important that parents accept their child's language and not become overly concerned with correcting their pronunciation (Cowley, 1997).

Likewise, children's early attempts to use sentences need thoughtful support, not critical correction. Parents can best support their child's attempts to communicate through extensions and expansions. Extensions include responses that incorporate the essence of a child's sentence but transform it into a well-formed sentence. When parents and caregivers use extensions they model appropriate grammar, fluent speech and actually help to extend a child's vocabulary.

When parents use expansions, they gently reshape the child's efforts to reflect grammatical appropriate content. For example, when Sally said, "We goed to Grammies," instead of correcting her, ("We don't say goed we say went.") her mother expanded Sally's language by initially confirming the intent of Sally's statement while modeling the correct form, "Yes, we went to Grammies."

Table 2: Caregivers' Strategies for Supporting Children's Language Development

Expansions

The adult recasts the child's efforts to reflect appropriate grammar. When adults use expansions they help to introduce and build new vocabulary.

Child: Kitty eat.

Adult: Yes, the kitty is eating.

Extensions

The adult restates the child's telegraphic speech into a complete thought and may add new information in response to the child's comments.

Child: Kitty eat.

Adult: Kitty is eating his food.

Child: Kitty eat.

Adult: The kitty is hungry.

Repetitions

The adult facilitates the development of new sentence structure by repeating all or part of the child's comment.

Child: Kitty eat.

Adult: Time for kitty to eat. Time for kitty to eat.

Parallel talk

The adult describes the child's actions. Parallel talk is an effective way to model new vocabulary or grammatical structure.

Child: Kitty eat.

Adult: Jimmy is watching the kitty eat.

Self-talk

The adult describes their actions. Like parallel talk, self-talk effectively models new vocabulary and grammatical structures.

Adult: I'm feeding the kitty.

Vertical structuring

The adult uses questions to encourage the child to produce longer or more complex sentences.

Child: Kitty eat.

Adult: What is the kitty eating?

Child: Kitty eat cat food.

Fill-ins

Adult structures the conversation so the child must provide a word or phrase to complete the statement.

Adult: The kitty is eating because she is-

Child: Hungry!

Adapted from:

Manning-Kratcoski, A., & Bobkoff-Katz, M. (1998). Conversing with young language learners in the classroom. *Young Children*, 53(3). 30-33.

Vukelich, Enz, B., & Christie. (2001). *Teaching Language and Literacy from Birth through Kindergarten.* Addison, Wesley, Longman.

Factors Contributing to Variations in Rate of Language Acquisition

For most children, learning to communicate is a natural, predictable, developmental progression. Unfortunately, some children have congenital language disorders that impair their ability to learn language or use it effectively. Beyond medical problems, there are several factors that could modify the rate of normal language production, including:

Gender Differences

Observational research consistently reveals that a majority of girls talk earlier and talk more than the majority of boys. It is also true that the majority of late talkers are young boys (Healy, 1997; Kalb & Namuth, 1997). However, it is difficult to determine if differences in the rate of language acquisition is biological or if biological differences are exaggerated by social influences—there is evidence for both views. For example, neural-biological research offers graphic images which illustrates how men's and women's brains process language somewhat differently (Moir & Jessel, 1991; Corballis, 1991). Though this research appears to support nature as the dominant factor in language differences, it is also important to consider how powerful a role nurture plays. Experimental research consistently documents differential treatment of infants based on gender. In other words, men and women tend to cuddle, coo and engage in lengthy, face-to-face conversations with baby girls. Yet, with baby boys, adults are likely to exhibit "jiggling and bouncing" behaviors but are not as likely to engage in sustained face-to-face verbal interactions. Perhaps girls talk earlier and talk more because they receive more language stimulation (Huttenlocher, 1991).

Socioeconomic Level

Numerous studies have long documented the differences in the rate of language acquisition and the level of language proficiency between low and middle socioeconomic families (Hart & Risley, 1995; Morisset, 1995; Walker, Greenwood, Hart, & Carta, 1994). These studies found children, especially males, from low-income homes were usually somewhat slower to use expressive language than children from middle-income homes. These findings likely reflect social-class differences both in language use in general and in parent-child interaction patterns.

Results of long-term observations of middle income and lower income families concluded all mothers spent a great deal of time nurturing their infants (e.g., touching, hugging, kissing, and holding), but there were differences in the way they verbally interacted with their children. Middle-income mothers spent a great deal more time initiating verbal interactions and usually responded to and praised their infants' vocal efforts. Middle-income mothers were also more likely to imitate their infants' vocalizations. These verbal interactions stimulate neural-synapse networks that foster expressive and receptive language. It is still unclear as to why lower-income mothers do not engage their children in verbal interactions at the same level as middle-income mothers.

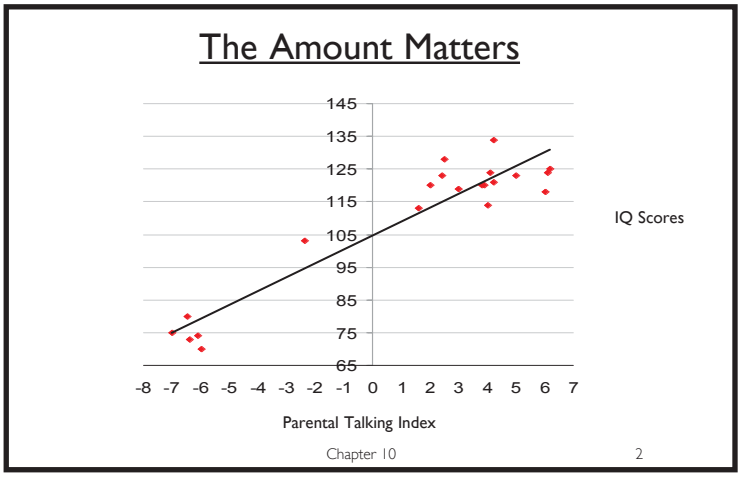
Cultural Influences

The rate of language acquisition may be somewhat different for children of different cultures. Since spoken language is a reflection of the culture from which it emerges, it is necessary to consider the needs verbal language serves in that culture. Communication may be accomplished in other meaningful ways, for

instance body language (Bhavnagri & Gonzalez-Mena, 1997). Likewise, some cultures do not view babies' vocal attempts as meaningful communication. Shirley Brice-Heath (1983) describes a community in which infants' early vocalizations are virtually ignored and adults do not generally address much of their talk directly to infants. Many cultures emphasize receptive language and children listen as adults speak.

Language in the Home: The Amount Matters….

Families provide the rich social context necessary for children's language development. While most children begin to use their expressive vocabulary in the second year of life, research has long documented that children differ in their ability to learn and use new words (Smith & Dickinson, 1994). In an effort to understand what accounts for these differences, researchers Betty Hart and Todd Risley (1995) documented parent and child interactions during the first three years of children's lives. The research team observed 42 families, from different socioeconomic and ethnic backgrounds, one-hour each month for 2½-years. Their data revealed vast differences in the amount of language spoken to children. On average, children from welfare homes heard an average of 616 words an hour, children from working-class families heard 1,251 words an hour, while children from professional homes heard 2,153 words per hour!



However, findings from this study also reveal another interesting fact – regardless of socioeconomic level, it was the amount of talk between parent and child that had the greatest influence on a child's IQ (See Table 3). Further, this long-term study revealed that early language differences had a lasting impact on the child's subsequent language accomplishments both at age 3 and at age 9. In other words, talk between adults and children early in life made a significant difference.

Contexts for Learning and Using Language

By the time most children enter preschool, they are capable of conversing with both adults and their peers. Language learning, however, is far from complete. Research has revealed that the semantic, syntactic, and pragmatic aspects of oral language continue to develop throughout the elementary school years (Chomsky, 1969; Karmiloff-Smith, 1979; Menyuk, 1988). Parents and teachers, therefore, have the responsibility to promote language learning by engaging in conversations with children and by encouraging children to converse with each other (Roser, 1998). Engaging children in reciprocal discussions and conversations set the general tone for stimulating language environments. Using children's routines at school and home for language centered activities increase children's opportunities for oral interactions, hence language development.

School Readiness and Literacy Development

Some years ago, children were not considered to be ready to begin learning to read and write until about age six years, and this learning was not believed to occur naturally (Durkin, 1987). This traditional view of literacy development can be traced to the maturational theories of the mid-1920s (Gesell, 1928). It was believed that children had to reach a certain level of intelligence and physical maturity before they could learn to read and write. Further this view posits that children needed to be explicitly taught, by specially trained teachers. Parents were cautioned not to try to encourage early reading or writing, for fear the children might learn incorrect concepts and skills, which would later have to be untaught by teachers.

However, over the last thirty years several new areas of research emerged, which eventually lead to a radically different conception of early literacy development. The emergent literacy perspective (Clay, 1966), posits that written language acquisition has much in common with oral language development. Children begin learning about reading and writing at a very early age by observing and interacting with readers and writers and through their attempts to read and write (Sulzby & Teale, 1991).

Early Readers

Interest in early literacy began with studies of early readers. Early readers are children who learn to read during the preschool years without receiving formal instruction from their parents or teachers. In the mid-1960's and early 1970's, researchers in the United States and Great Britain began to study these children (Clark, 1976; Durkin, 1966). Results showed that many early readers were of normal intelligence, contradicting the commonly assumed link between early reading and giftedness. Parental interviews revealed that these children shared several characteristics in common:

1. They were curious about written language at a very young age, asking many questions about letters, words, and print.
2. They showed an early interest in writing and liked to scribble, write their names, send notes, and so forth.
3. They loved to have favorite stories read to them over and over again.
4. They had a parent, older sibling, or other adult who answered their questions about written language and who read to them on a regular basis.

This research led to investigations of what preschool-age children typically learn about print. Although many of these research studies link acquisition of knowledge or skills with specific ages, it is important to note that there are large individual differences in literacy development and that the ages at which particular knowledge or skills appear varies widely for specific children. In fact, it is not unusual to find up to a five-year range in children's literacy development within a kindergarten classroom (IRA/NAEYC, 1998). Considerable diversity also exists in children's experiences with oral and written language during the early years (IRA/NAEYC, 1998). That is, some children live in homes with adults who provide the kind of resources and support that optimize literacy acquisition, others do not.

Emergent Literacy

In addition to oral language/vocabulary development, research has revealed key skills and dispositions that are most predictive of reading achievement in the elementary grades: understanding the connections, purpose and structure of print, graphic awareness, letter recognition, and phonological awareness (Burns, Griffin, & Snow, 1999; Neuman & Dickinson, 2001; Roskos, Clements, Vukelich, & Christie, 2002; Whitehurst & Lonigan, 1998).

Children's Concepts About Print

One of the first concepts about literacy that children learn is the distinction between print and pictures. Most children discover the print/picture distinction quite early, often by age three. If you ask a three-year-old to draw a picture and to write their name, their markings when asked to draw a picture likely will be quite different from those made when asked to write their name. This distinction is important because it establishes a separate identity for print and allows children to begin learning about its functions and structure.

1. Conventions of Print

Conventions of print refer to the social rules (left-to-right/top-to-bottom sequence, words have spaces between them, first letter of each sentence is capitalized) and terminology (letter, word, page, etc.) that surround written language. Knowledge of these conventions tends to grow slowly. For example, knowledge of the left-to-right and top-to-bottom sequence of print is often not acquired until age five or six years, and metalinguistic terms such as letter and word continue to confuse many children during the primary grades (Clay, 1972).

2. Purpose and Functions of Print

One of the earliest discoveries that children make about written language is that print has meaning. Jerry Harste, Virginia Woodward, and Carolyn Burke (1984) found that many three-year-olds expect print to be meaningful. This understanding becomes evident when children point to words on signs, cereal boxes, or menus and ask, "What does that say?" Alternatively, after making marks on a piece of paper, children make comments such as, "What did I write?" or "This says, . . ."

A related discovery is that print is functional — it can be used to get things done in daily life. Children's knowledge of the practical uses of print grows substantially during the preschool years. Elfrieda Heibert (1981) found that three-year-olds demonstrated limited knowledge of the purposes of several types of print, such as labels on Christmas presents, street signs, and store signs. Five-year-olds showed much greater knowledge of these functions. Other researchers have reported numerous incidents of preschoolers engaging in a variety of functional literacy activities while engaging in dramatic play, including jotting down phone messages, writing checks to pay for purchases, looking up recipes in cookbooks, and making shopping lists (Neuman & Roskos, 1991, 1997; Vukelich, 1992).

3. Graphic Awareness

Children begin to recognize environmental print — print that occurs in real-life contexts —at a very early age. Several researchers' (e.g., Goodman, 1986; Lomas & McGee, 1987; Mason, 1980) findings show that many three and four-year-olds can recognize and know the meanings of product labels (Colgate, Cheerios, Pepsi), restaurant signs (McDonald's, Pizza Hut), and street signs (Stop). Even if children do not say the

correct word when attempting to read such print, they usually will come up with a related term. For example, when presented with a Coke can, the child might say "Pepsi."

In recognizing environmental print, children attend to the entire context rather than just the print (Masonheimer, Drum, & Ehri, 1984). This logographic reading begins quite early. Yetta Goodman (1986) found that 80 percent of the four-year-olds in her study could recognize environmental print in full context - they knew that a can of Pepsi Cola said Pepsi. Typically, by mid-kindergarten, many children learn to recognize a limited set of whole words, using incidental cues such as shape, length, and pictures (Ehri, 1991).

4. Alphabet Recognition

Children often begin to recognize the letters of the alphabet at about the same time as they "read" environmental print. This ability varies considerably among children, with some children recognizing one third of the alphabet by age three years (Heibert, 1981), and others not learning any letters until they enter kindergarten (Morgan, 1987). The ability to recognize letters is an important step in early literacy development. Children's letter recognition ability has been repeatedly shown to be a powerful predictor of later reading achievement (Adams, 1990).

5. Phonological Awareness

Phonological awareness is the general understanding of the sound structure of words, including rhymes, syllables and phonemes. Phonological awareness includes, but is not the same concept as phonemic awareness - the ability to focus on and manipulate sounds (phonemes) in spoken words. Most children come to understand the phonological structure of speech gradually during their preschool years. Children exhibit broad phonological awareness when they recognize and use rhyming words, (e.g., bunny, sunny, funny), can segment syllables in words (e.g., clapping two times when they say fun/ny) and begin to notice words that begin with the same sound – alliteration (Snow, 1998).

Children exhibit an understanding of more specific phonological awareness or phonemic awareness when they can manipulate onsets and rimes (h/at, b/at, c/at), blend orally pronounced phonemes into a word (b/a/g/ is bag), recognize what word is remaining when a phoneme is removed (cat without the /c/ is at) and identify what new word is created when one phoneme is substituted for another (changing the /b/ in bug to /r/ makes rug), and finally identify each individual sound in words. .

On entering school, children's level of phonemic awareness is one of the strongest predictors of success in learning to read (Adams, 1990). In fact, phonemic awareness has been shown to account for 50 percent of the variance in children's reading proficiency at the end of first grade (Adams, Foorman, Lundberg, & Beeler, 1998). Unfortunately, phonemic awareness is difficult for many young children to acquire. One reason that phonemic awareness is difficult to learn is that there are few clues in speech to signal the separate phonemes that make up words (Ehri, 1997). Instead, phonemes overlap with each other and fuse together into syllabic units. Adams and her colleagues (1998) give the example of bark. They point out that this word is not pronounced /b/, /a/, /r/, /k/. Instead, the pronunciation of the medial vowel a is influenced by the consonants that precede and follow it. Because phonemes are not discrete units of sound, they are very abstract and are difficult for children to recognize and manipulate (Yopp, 1992).

6. Letter-Sound Relationships (Phonics)

Once children have acquired phonemic awareness, they can begin to make connections between letters in written words and the phonemes in speech. This sentence carries an important message: Phonemic awareness precedes phonics. Children who cannot hear, identify and manipulate the sounds of language will have difficulty relating phonemes to graphemes (letters or letter combinations that represent a phoneme) when they see them in written words. Young children's knowledge of letter-sound relationships becomes evident when they begin using invented spellings in their early writing.

Early Forms of Reading and Writing

During the 1970's researchers began focusing their attention on children's initial attempts at reading and writing (Clay, 1975; Read, 1971). It soon became clear that these early forms appeared to be purposeful and rule governed. Children appeared to construct, test, and perfect hypotheses about written language. Research began to reveal general developmental sequences, with the early forms of reading and writing gradually becoming more conventional with age and experience (Ferreiro & Teberosky, 1982; Sulzby, Barnhart, & Hieshima, 1989).

Emergent Writing

Building on the earlier work of Marie Clay (1975), Elizabeth Sulzby asked preschool children to write stories and then to read what they had written (Sulzby, 1985b, 1990). Based on this research, Sulzby (1990) has identified seven broad categories of early writing: drawing as writing, scribble writing, letter-like units, non-phonetic letter strings, copying from environmental print, invented spelling, and conventional writing. Sulzby believes that these categories do not form a strict developmental hierarchy. While there is a general movement from less mature forms toward conventional forms, children move back and forth across these forms when composing texts, and they often combine several different types in the same composition. Children also appear to adjust their form of writing to the task at hand. Kindergartners tend to use invented or conventional spellings when writing single words. When writing longer pieces of text, they often shift to less mature forms, such as non-phonetic letter strings or scribbles, which require less time and effort (Sulzby & Teale, 1991).

Sulzby cautions teachers against having unrealistic expectations of children's emergent writing capabilities. Case studies of early readers (Baghban, 1984; Bissex, 1980) might lead teachers to expect that invented spelling is a common occurrence among four- and five-year-olds. However, Sulzby's longitudinal research has revealed that children's writing development is typically much slower, with invented spelling not arriving until late kindergarten for some and not until the end of first grade for others (Sulzby & Teale, 1991). Both groups of children (the early and the late spellers) are normal.

Emergent Reading

Sulzby has also investigated the patterns in children's early attempts at reading familiar storybooks (Sulzby, 1985a). She found that children's storybook-reading behaviors appeared to follow a developmental pattern, with their attention gradually shifting from the pictures to the text and their vocalizations changing from sounding like oral storytelling to sounding like reading. The following is a condensed list of Sulzby's storybook-reading categories (Sulzby & Barnhart, 1990):

1. Attending to pictures, not forming stories - The child looks at the pictures in the book, labeling or making comments about them.
2. Attending to pictures, forming oral stories - The child looks at the pictures in the book and weaves a story across the pages. However, the child's intonation sounds like she is telling an oral story. The listener must be able to see the pictures to follow the story.
3. Attending to pictures, forming written stories - The child reads by looking at the pictures in the book, and the child's wording and intonation sound like reading. The listener does not usually have to see the pictures to follow the story.
4. Attending to Print - The child attends to the print rather than to the pictures when attempting to read the story. The child may refuse to read because of print awareness, may use only selected aspects of print (e.g., letter-sound relationships), or may read conventionally.

Other studies by Sulzby revealed that children's reading of their own emergent writing follows roughly the same pattern (Sulzby, Barnhart, & Hieshima, 1989). First, children refuse to read or claim that they did not write. Next, they label or describe what they have written. This is followed by making up stories to go along with their writing, with their voice shifting gradually from sounding like oral language to sounding like reading. Finally, children begin to actually attend to the print that they have written, reading "aspectually" (just attending to letter-sound relationships or to selected whole words that can be recognized by sight) at first and then conventionally.

Research has shown that young children's emergent readings can be influenced by the number of times a child has heard a book read (Pappas & Brown, 1989) and how many times the child has read the book independently (Pappas, 1993). Repeated readings of a book, either by the child or adult, increases the degree to which children's subsequent emergent reading approximates the actual text of the book. In addition, text features such as pictures and grammatical subordination, and narrative structure have been found to affect children's emergent reading, as measured by the Sulzby scale (Elster, 1998). Thus, children's emergent reading levels should be expected to vary, depending on the features and familiarity of the texts being read.

Interestingly, children's level of early reading does not always correspond to their early writing (Sulzby, Barnhart, & Hieshima, 1989). For example, a child might be able to write with invented spelling, using letter-sound relationships to encode words. However, the same child might not use letter-sound relationships when decoding words during reading. So children who begin to use invented spelling are not automatically able to read their own writing.

Early Writing

If given the opportunity, young children naturally incorporate writing into their play. Sometimes this play writing is exploratory in nature, with children experimenting with different letterforms and shapes. At other times, emergent writing occurs in the context of make-believe play. Sulzby (1985b) has described how children's early writing follows a loose developmental sequence, becoming more conventional over time (see Figure 1). Play provides children with highly pleasurable and meaningful opportunities to experiment with these early forms of writing. In addition, social interaction during play (such as when other players cannot read a shopping list written in scribble writing) may provide motivation for children to develop more conventional forms of script.

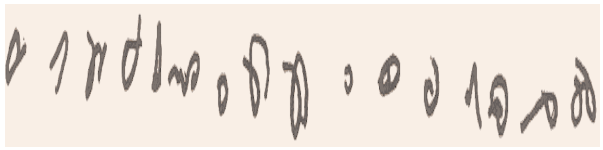
Figure 1

Summary of Children's Writing Progression

1. Drawing as Writing

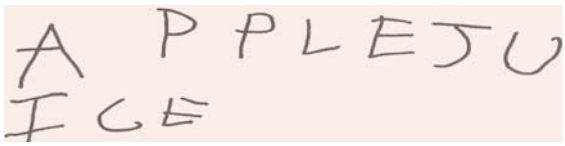
2. Scribble Writing

3. Letter-like Units

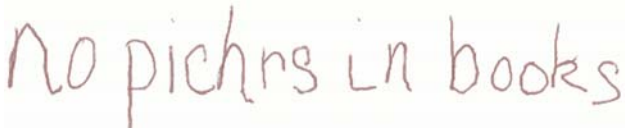


4. Nonphonetic Letter Strings

5. Copying from Environmental Print



6. Invented Spelling



7. Conventional

I like to read.

Home Literacy Experiences and Children's Emergent Literacy

Home-literacy research is concerned with how literacy learning takes place. Early studies in this area focused on umbrella characteristics such as family income and parents' levels of education (Sulzby & Teale, 1991) and their relationship to children's reading achievement. Results revealed positive relationships between these variables and in the early grades. For example, children from middle-income families tend to be better readers than those from low-income families. Unfortunately, such findings do little to explain how these variables directly affect children's literacy growth. More recent studies have narrowed their focus and have attempted to describe the actual literacy-related experiences that children have at home. These home-literacy studies have identified several factors that appear to have important roles in early literacy acquisition. These factors are described in the sections that follow.

Access to Print and Books

In order to learn about literacy, young children must have opportunities to see lots of print and must have easy access to books. Plentiful home supplies of children's books has been found to be associated with early reading (Durkin, 1966), interest in literature (Morrow, 1983), and positive orientation toward schooling (Feitelson & Goldstein, 1986).

Because of the literate nature of our society, all children are surrounded by large amounts of environmental print. For example, they see print on product containers (Cheerios, Pepsi) street signs (Stop), and store signs (McDonald's, Pizza Hut). Differences do occur, however, in children's exposure to books and other forms of reading materials. Bill Teale's (1986b) descriptive study of the home environments of 24 low-income preschoolers revealed that, while some of the homes had ample supplies of children's books, other homes contained none. This is not to suggest that all children from low-income families lack exposure to reading materials at home (see Taylor & Dorsey-Gaines, 1988). However, those children who do not have access to books at home are at a great disadvantage in acquiring literacy.

Adult Demonstrations of Literacy Behavior

Children also need to observe their parents, other adults, or older siblings using literacy in everyday situations (Smith, 1988). When children see their family members use print for various purposes - writing shopping lists, paying bills, looking up programs in the TV Guide, and writing notes to each other - they begin to learn about the practical uses of written language and to understand why reading and writing are activities worth doing. If their parents happen to model reading for pleasure, so much the better. These children see literature as a source of entertainment. Children's exposure to these types of functional and recreational literacy demonstrations has been found to vary greatly.

Supportive Adults

Early readers tend to have parents who are very supportive of their early attempts at literacy (Morrow, 1983). While these parents rarely attempt to directly teach their children how to read and write, they do support literacy growth by doing such things as (a) answering their children's questions about print; (b) pointing out letters and words in the environment; (c) reading storybooks frequently; (d) making regular visits to the local library; (e) providing children with a wide variety of experiences such as trips to stores,

parks, and museums; and (e) initiating functional literacy activities (such as suggesting that a child write a letter to Granny or help with making a shopping list).

The amount of such support that children receive during the preschool years varies greatly from family to family, and these differences have been found to have a considerable effect on children's literacy learning during kindergarten and the elementary grades (Christian, Morrison, & Bryant, 1998; Leseman & de Jong, 1998).

Independent Engagements with Literacy

Young children need to get their hands on literacy materials and to have opportunities to engage in early forms of reading and writing. This exploration and experimentation allows children to try out and perfect their growing concepts about the functions, forms, and conventions of written language. Independent engagements with literacy often take place in connection with play. Don Holdaway (1979) has described how, as soon as young children become familiar with a storybook through repetitive read-aloud experiences, they will begin to play with the books and pretend to read them. He believes that this type of reading-like play is one of the most important factors promoting early literacy acquisition.

Opportunities to engage in independent engagements with literacy depend on access to books and writing materials. As mentioned previously, research on children's home environments indicates that there are wide discrepancies in the availability of children's books and other reading materials. Similar differences also exist in the availability of writing materials. Teale's (1986b) descriptive study of the home environments of low-income preschoolers revealed that only 4 of 24 children had easy access to paper and writing instruments. He noted that children who had more access to writing tools engaged in far more emergent writing than did the other subjects in the study.

Storybook Reading

Storybook reading is undoubtedly the most studied aspect of home literacy. Quantitative studies have attempted to establish the importance and value of parents reading to their children. A recent meta-analysis of 29 studies spanning more than three decades indicated that parent-preschooler storybook reading was positively related to outcomes such as language growth, early literacy, and reading achievement (Bus, van IJzendoorn, & Pellegrini, 1995).

Other studies have attempted to describe and analyze what actually takes place during storybook-reading episodes and to identify the mechanisms through which storybook reading facilitates literacy growth (e.g., Altwerger, Diehl-Faxon, & Dockstader-Anderson, 1985; Heath, 1982; Holdaway, 1979; Snow & Ninio, 1986; Taylor, 1986; Yaden, Smolkin, & Conlon, 1989). These studies have shown that parent-child storybook reading is an ideal context for children to receive all of the previously mentioned factors that promote literacy acquisition:

1. Storybook reading provides children access to enjoyable children's books, building positive attitudes about books and reading.

2. During storybook reading, parents present children with a model of skilled reading. Children see how books are handled, and they hear the distinctive intonation patterns that are used in oral reading.
3. Parents provide support that enables young children to take an active part in storybook reading. Early storybook-reading sessions tend to be routinized, with the parent first focusing the child's attention on a picture and then asking the child to label the picture. If the child does so, the parent gives positive or negative feedback about the accuracy of the label. If the child does not volunteer a label, the parent provides the correct label (Snow & Ninio, 1986). As children's abilities grow, parents up the ante, shifting more of the responsibility to the children and expecting them to participate in more advanced ways.
4. Storybook reading encourages independent engagements with literacy by familiarizing children with stories and encouraging them to attempt to read the stories on their own (Holdaway, 1979; Sulzby, 1985a).

Adult involvement in preschool children's emergent literacy development is crucial to their future success in school. Unfortunately many parents are unaware of how to support their children's literacy development or consider kindergarten entry to be the starting point for children's literacy instruction. Providing parents with information on how they can support children's early reading and writing development will improve children's preparedness for school and encourage parents to remain involved in their children's education.

School Readiness and Early Mathematics Development

Over the past several years, the mathematics achievement of America's youth has become a national concern. While much has been done to address mathematics education for children in middle school and beyond, only limited attention has been paid to enhancing the mathematical knowledge of preschool children (Johnson, 1999). Ginsburg and Baron (1993) contend that early childhood educators have previously refrained from explicitly designing mathematics instruction for young children because young children's thinking is qualitatively different than adults (Piaget, 1947/1973, Kamii, 1995), but our knowledge about young children's mathematical capabilities are changing.

Young children begin school already possessing knowledge and skills in mathematics (Baroody 1993; Ginsburg, 1989). Their experiences with their environment—street signs, number of steps up to their door, witnessing the change of seasons—all contribute to their mathematical development. According to a recent report, America's Kindergartners (West, Denton and Germino-Hausken 2000), 94% of first-time kindergartners can read numerals; 58% can count past ten, sequence patterns and use non-standard measures to compare lengths of objects; 20% can sequence numbers, read two-digit numerals, identify the ordinal position of an object, and solve word problems; and 4% can calculate sums up to ten. Yet children come to school with different background experiences, and the mathematical skills and knowledge children possess at kindergarten entry vary.

Children's understanding of mathematics at kindergarten entry is related to their race/ethnicity, health status, home educational experiences, and child care histories (West, Denton and Germino-Hausken, 2000). Black and Hispanic children, children from single-parent families, and children whose families are, or have received welfare services are less likely to possess the mathematical knowledge that will help them succeed in school (West, Denton and Germino-Hausken, 2000). However, participation in early intervention programs specifically designed to improve children's mathematical thinking has shown to improve the mathematical understanding of children from disadvantaged backgrounds (Reynolds & Temple, 1998; Starkey & Klein, 2000).

Findings from early intervention programs have led to the general agreement that preschool children do not need to be protected from mathematics (Greenes, 1999; NCTM, 2000). We now understand that children's mathematical ideas are more sophisticated than traditionally assumed (Gelman, 1999), and that their informal theories (even if erroneous) provide the basis for their understanding of abstract conceptual ideas (Clement, & Sarama, 2000; Ginsberg, 1999). The ideas that preschoolers construct, however, can be quite different from those of adults. Therefore, parents and teachers must be particularly careful not to assume that children approach and solve mathematical problems in the same ways as adults.

Preschoolers' Logical-Mathematical Thinking

Logical-mathematical knowledge involves the ability to put objects into relationships with one another based on similarities, differences, etc., and then to coordinate these relationships to draw conclusions about the objects. Several aspects of young children's thinking influence their ability to form these abstract

relationships. Most importantly is the fact that preschool children are 'pre-logical" thinkers. Pre-logical does not mean that children cannot think logically; however, it does mean that they do not possess the same mental flexibility in their thought processes as adults. Some characteristics of preschool children's thinking that influence their ability to fully understand abstract mathematical concepts are: centrition (perception based thinking), irreversibility (the inability to mentally undo or reverse actions), and transductive reasoning (linking events into a cause and effect relationship without justification). Another important characteristic of preschool children's thinking is that many are "nonconservers": they do not recognize the essential sameness in objects that have a different appearance. Thus, while adults can easily internalize a series of actions, reverse their thinking to consider how one action influenced the other and finally, coordinate all of their thoughts together to draw a conclusion about the situation/problem, this is extremely difficult for preschool children. This pre-logical thinking influences children's understanding of all mathematical constructs, but particularly their understanding of classification systems and equivalency which are crucial to developing number sense, understanding geometric properties and working with complex patterns.

Classification and Seriation

Preschoolers' understanding of classification and seriation provides them with a foundation for understanding number concepts and operations. Research finds that the ability to classify and seriate on one dimension during the preschool years is predictive of children's later academic success (Ciancio, Sadovsky, Malabonga, Trueblood, & Pasnak, 1999). Most preschool children can, and do form simple classifications; however, few classify objects based on more than one attribute, and most do not possess the ability to conclude how objects classified by one characteristic are related to a set classified by another characteristic (part-whole relationships). Preschool children also experience difficulty in determining how or where objects fit into an ordered set. During the preschool years, young children begin to seriate objects (e.g., daddy is biggest, mommy is next, and baby is the smallest), but many have difficulty adding objects to a seriated set without dismantling the original set and recreating it with the new object inserted (Ciancio et al., 1999).

The ability to see and understand part-whole or part-part-whole relationships is essential to children's understanding of number and number operations (Broody, 2000; Kamii, 1995). Without a solid understanding of hierarchies of classification, or how a whole is related to its parts, children are unable to easily determine how various combinations of objects or numbers are equivalent or unequivalent, and why. Understanding hierarchical inclusion not only influences children's understanding of number, but it also influences their ability to solve simple equations involving addition and subtraction.

Equivalence

Although preschool children possess an informal knowledge of numerical equivalence (Broody, 2000), they often compare the quantity of sets based on their spatial configuration, rather than numerical quantification (Kamii, 1995). Because preschool children are just beginning to understand counting as a problem solving tool, they often rely on perceptual-based estimation to establish comparison of amount when dealing with large groups of objects. Thus, when comparing two equivalent sets of blocks, one spread apart, and the other grouped close together, preschool children will often say that the set of blocks that is spread apart contains more, even if they have previously counted the objects and agreed that they contained the same number. However, when working with quantities smaller than five, preschool children are quite adept at

using both counting and visual markers as tools to establish equivalence or inequivalence (Broody, 2000).

Researchers do not know specifically how young children visualize the mental markers they use to establish equivalence, but a study done by Sinclair, Seigerst, & Sinclair, (1983, as cited by Kamii, 2000) suggests that children use a combination of symbols and signs to represent the quantity of objects they see. The researchers found that during the preschool years, children progressed from representing quantity by broad "global representations" (e.g., more tally marks represent larger numbers of objects), to using qualitative representations to represent quantity (drawing 1 house to represent 5 houses), and finally to using one-to-one correspondence with symbols (using 5 tally marks, or 5 unrelated letters to represent 5 objects). By the age of five, the children in this study began to use numerals to represent quantity (e.g., 1, 2, 3, or 3, 3, 3, represented three objects). By age six, children used numeral and object words to identify the quantity and type of objects they saw (3 houses).

Spatial Orientation and Spatial Visulization

Preschool children are just developing spatial orientation: the ability to describe how and where they and other objects are located in space and spatial visualization: the ability to mentally manipulate objects and conclude how they might look from various perspectives (Clements, 1998). These spatial abilities provide the foundation for children's thinking about geometric concepts and problem solving, and also influence other subject areas such as reading. In fact, Kurdek & Sinclair (2001) found that children's visual discrimination skills at kindergarten entry are more predictive of later mathematics achievement than number skills, and naming or drawing shapes—-activities that most adults tend to focus on during the preschool years.

Young children learn about spatial orientation first by physically moving through space and examining the relationship between themselves and objects in their environment. They learn about more abstract spatial relationships by examining the properties of three dimensional objects in their environment, and describing the characteristics and locations of these objects from multiple perspectives. Based on these experiences, children learn to visually organize and manipulate objects and put them in relationships with one another (e.g., determining how a shape may look from an overhead view, or where their room may be located on a map of their house).

Although many children accomplish the ability to describe spatial relationships among three dimensional objects during the preschool years, most have difficulty determining exact spatial relationships or visualizing how a two dimensional objects may look from another perspective. Preschool children also experience difficulties in locating figures and shapes that are hidden within other figures (e.g, two triangles are in a square), and identifying the similarities in shapes and symbols that are alike except for orientation (e.g. W and M).

Mathematics in Preschool

Number

Although many adults relate understanding of number to counting or writing numerals, to truly understand the construct of number children must be able mentally manipulate the various number combinations that

make up each number. For example, many young children will hold up 4 fingers to tell you how old they are, but few understand that number 4 also includes 3, 2, and 1. Thus, when asked to show '4' children will point to their fourth finger, showing that they understand the assignment of the numeral 4 to the last object in the series (the cardinal principle), but not that the number 4 includes the entire set of fingers they are holding up (part-whole relationships). Children learn about number through counting, comparing and manipulating groups of objects, and putting groups of objects into relationship with one another.

Quantification of Objects

One of the earliest, most important number skills that children learn and use is counting. However, for young children's counting to be useful in solving mathematical problems they must understand the procedures for counting and how counting is used in problem solving. The cardinal principle, one-to-one correspondence, and the stable-order principle are procedures for counting. The abstraction principle, and the order-irrelevance principle deal with how counting is used in problem solving.

- The cardinal principle: This principle reflects the child's understanding that the last number word of an array of counted items has a special meaning: it represents the set as a whole and the numerosity of this set of items.
- One-to-one principle: This principle emphasizes the importance of assigning only one counting tag (number word, alphabet element, or other) to each counted object in the array.
- The stable-order principle: Counting involves more than the ability to assign arbitrary tags to the items in an array. The counting tags chosen must be arranged in a stable (i.e. repeated) order.
- The abstraction principle: The realization that counting could be applied to heterogeneous items like toys of different kinds, color, or shape and demonstrate skills of counting even actions or sounds.
- The order-irrelevance principle: That the order of enumeration (from left to right or right to left) is irrelevant. Consistent use of this principle does not seem to emerge until 4 or 5 years of age,

Research suggests that there is a developmental progression to learning to count, beginning with rote counting and progressing to rational counting.

Rote Counting

Children know names of numbers, but not necessarily in proper order. Children do not necessarily understand or use one-to-one correspondence when counting. During the rote counting stage children make several types of counting errors:

- Pointing to objects and saying words, but not in the proper order
- Skipping counting names
- Repeating counting names
- Touching an item more than once, so that it is counted twice

Rational Counting

Children who count rationally use one-to-one correspondence when counting. Number names are said in

correct order (stable-order rule), they can count objects in any order, and they understand that the last number indicates the size of the set (cardinality rule).

Addition and Subtraction

Preschool children have an informal knowledge of addition and can add small sets of numbers. They easily add '1' to sets of objects, but begin making numerous errors when asked to add more than one object to a set. Adults should build on this knowledge by providing children with opportunities to quantify collections and compare quantities of collections so children develop a sense of numbers, number relationships and problem solving skills.

Geometry

Preparing young children for geometric problem solving involves much more than teaching them to identify shapes. As discussed above, children's geometric understanding depends, in large part on their spatial orientation and spatial visualization abilities. Adults should encourage children to experiment with, arrange, or combine materials to make new shapes, call attention to changes in objects, encourage children to look at objects from various angles, and model positional language throughout the day. As children actively explore the size, shape, and spatial relationships of real objects, they exhibit a growing awareness of geometric relationships in everyday activities and begin to develop the foundational knowledge of geometry (Clements, 1998).

Patterns

Identifying, extending and describing patterns requires young children to think inductively (from the parts to the whole) and deductively (from the whole to parts). As children are provided with opportunities to collect interesting items and arrange items in a series, they learn to recognize patterns and come to understand how patterns are related to everyday activities and interactions. Adults should model mathematical language and provide children with opportunities to describe how they classify, sort and order their "collections". Children's work with patterns in the environment provides them with the foundation necessary to identify and work with number patterns.

Social Construction of Mathematics

"All children develop in a world containing a multitude of quantitative phenomena and events." (Ginsburg, 1999). Children see numbers in their environment, hear adults counting, and see adults using and comparing numbers while banking and shopping. They encounter mathematical concepts in familiar stories such as The Three Bears and other cultural folk tales. Young children also learn valuable mathematical concepts through their everyday activities. They learn to sort and classify as they clean up their toys or put groceries away; they learn to reason as they compare the sizes of family members or peers; they learn representation when they draw or construct objects from clay; they learn about patterns by participating in daily routines, singing nursery rhymes, and reading familiar books; and they learn spatial visualization as they build block structures and work puzzles. Nevertheless, few conversations between adults and children encourage children to explain, clarify, or justify their thinking during mathematical activities (Anderson.1997). These activities are essential to children's development of argumentation and problem solving, and their

interest in mathematics.

Mathematical Communication

Young children need opportunities to engage regularly in mathematical conversations with peers and adults. Children in preschool show their mathematical literacy by using words such as big/small, more, or number words. When adults provide opportunities for children to talk, write, and represent their mathematical thinking, children will begin to demonstrate a deeper understanding of abstract mathematical concepts. Adults should engage children in conversations about mathematical operations and provide experiences that call children's attention to comparisons of objects. They should also point out relationships between symbols and actual objects they represent as children interact with materials throughout the day.

Problem Solving

Children in preschool create, pretend, invent, take risks and solve problems using a variety of strategies. When adults encourage divergent activities and discuss both the process and product of these activities, children's understanding of problem solving processes will develop. Adults should interact with children and encourage them to experiment with equipment in new ways and use their ideas as a basis for problem solving.

Attitudes Towards Mathematics

Children learn, through social interaction, which skills and knowledge are important in their worlds, and what knowledge is elusive. What is known about children's view of mathematics indicates that as children become socialized to 'school mathematics' they loose their spontaneous motivation (Elkind, 1999) to explore mathematical concepts and come to view mathematics as a rigid system of externally dictated rules governed by accuracy, speed, and memory (National Research Council, 1989). Many children, but specifically low-income African American, Native American, and Hispanic children learn at a very young age that mathematics is a process of performing specific skills, rather than a way of thinking and solving problems (Bowman, 1999).

Children who come from families that do not focus on the use of mathematics in their everyday lives are also less likely to assign significance to mathematics as a "way of knowing". However, children of parents who place more emphasis on the importance of mathematics prior to first grade tend to be more engaged in mathematical activities (Musun-Miller & Blevins-Knabe, 1998). Children with short attention spans, high activity levels, and negative emotionality tend to shy away from mathematical pursuits and display lower performance on indices of early numeracy abilities (Coplan, Barber, & Lagace-Seguin, 1999). In studying the correlation between teacher and parent perceptions of how easily children make and keep friends and children's mathematical abilities, Starkey & Klein (2000) find a small but significant relationship. This finding furthers the argument that children's construction of mathematical knowledge is, in part, a social process and that social interaction with adults and peers (e.g., scaffolding) support young children's interest in and understanding of mathematical constructs (Anderson, 1997; Arnold, Fisher, Doctoroff & Dobbs, 2002).

Adult-Child Interaction During Mathematical Activities

Children's relationships with adults during the early years are crucial to children's mathematical development (Clements& Samara, 2000). However little is known about how specific adult-child interactions influence early mathematical development (Anderson, 1997). While parents from a variety of backgrounds report supporting their young children's mathematical development through similar games and activities, it seems that both parents and educators focus most mathematical activities and conversations with preschool children on counting (Anderson, 1997; Bowman, 1999). As we have seen, learning mathematics involves far more than counting, memorizing algorithms (Kamii, 1995), or mastering basic skills. To truly prepare young children for mathematics in elementary school, adults must help young children develop flexibility in their thinking about number, geometry, and patterns (NCTM, 2000). However, many preschool teachers do not feel comfortable teaching math and much remains to be learned about appropriate mathematics programs for preschool children.

Arnold et al. (2002) investigated how implementing a six week mathematics intervention influenced teacher and child attitudes toward math and influenced child outcomes in mathematics. Head Start teachers were asked to incorporate a variety of early mathematics activities focusing on counting, recognizing and writing numbers, one-to-one correspondence, comparisons, change operations, and understanding numbers and quantity into their daily routines for a period of six weeks. Teachers implemented activities during circle time activities, transitions, free play, and meal times. Both children and teachers completed pre and post tests regarding interest in mathematics and children were tested on mathematical concepts. Following the intervention, children in the intervention group learned four times as much as children in the control group in all areas tested on Test of Early Mathematics Ability. Results were found to be more significant for boys than girls in the intervention group, but not in the control group indicating a possibility that teachers provided more instruction to boys. African American and Puerto Rican children showed more improvement than Anglo American children. Children in the experimental group also showed an increased interest in number and sorting activities as compared to those in the control group. After the intervention, teachers who implemented the activities and attended the professional development activities associated with the project reported more confidence in their abilities to teach mathematics and found teaching math more enjoyable than teachers in the control group.

Parent and Teacher Education Needs

Understanding abstract mathematical concepts is challenging for preschool children, but not impossible. To prepare young children for mathematics in elementary school, adults must pose interesting numerical, geometric, and algebraic problems for children to solve during play and expose them to the language and conventions of mathematics that relate to these constructs. Parents and teachers are in need of educational programs that will help them see the mathematics that children engage in on a daily basis, and strategies to build on children's informal mathematical understanding. Adults should support young children's diligence and mathematical development by directing attention to the mathematics that children use in their play, challenging them to solve problems, and encouraging their persistence (NCTM, 2000 p.74). Adults should also structure the home or school environment, as well as peer and adult-child interactions, to build upon children's developing mathematical ideas. When children recognize a stop sign by focusing on the octagonal shape, adults have an opportunity to talk about different shapes in the environment. Having children

listen to other children's reasoning helps them construct their own understanding about numerical relationships and apply that knowledge to new problem situations (Boucher, 1998).

Parents and teachers should also be encouraged to provide children with access to books and stories with numbers and patterns; to music with actions and directions such as up, down, in, and out; and to games that involve rules and taking turns. (NCTM, 2000 p. 75). They can sing songs with clear patterns and ask children to abstract and name the pattern (e.g., ABAB). They can introduce children to games, such as variants of war, in which the number card with the greater number of dots wins (Kamii, 1995). Through careful observation, conversations, and guidance, adults can help children make connections between their informal mathematics and more abstract constructs (NCTM, 2000 p. 74).

Kindergarten Readiness Indicators

Social Competence Readiness Indicators

Has a secure attachment to primary caregiver

Shows self confidence

Is enthusiastic about learning new things

Is friendly toward others

Relates to peers without being too submissive or overbearing

Is willing to give and receive support from peers and adults

Demonstrates the ability to concentrate on and persist at challenging tasks

Demonstrates the ability and willingness to take ideas from others

Is curious about new situations

Adjusts to new situations with adult assistance

Enters into play situations without adult assistance

Initiates and sustains interactions with familiar and unfamiliar adults and peers

Verbally expresses wants, needs, and emotions

Is attentive to others for short periods of time

Shows empathy toward others

Solves conflicts with little adult assistance

Uses several strategies or approaches to solve problems encountered in play

Language and Literacy Readiness Indicators

Uses language to express ideas, emotions, and needs

Speaks in sentences

Tells stories or events in sequence

Asks and answers questions about people and objects in their environment

Identifies rhyming words

Breaks words into syllables

Enjoys looking at books

Knows how to hold a book and look at pages from front to back

Talks about the pictures in the book

Asks other to read books to them

Understands that print has meaning and can be used for a variety of purposes

Represents ideas through drawing, painting, construction, and dramatic play

Recognizes environmental print

Recognizes some letters of the alphabet, particularly those in their name

Play writes and makes marks or writes letters to represent words, particularly his or her name

Logical Mathematical Readiness Indicators

Shows interest in similarities and differences of objects

Classifies groups of objects based on more than one attribute

Compares small groups of objects

Seriates small groups of objects

Is interested in how they fit into different spaces and how other objects are organized in the environment

Describes and visually represent two and three dimensional objects from a variety of perspectives

Locates and identifies shapes in the environment

Locates and describes patterns in the environment

Uses one-to-one correspondence to count groups of objects (one cookie for each person)

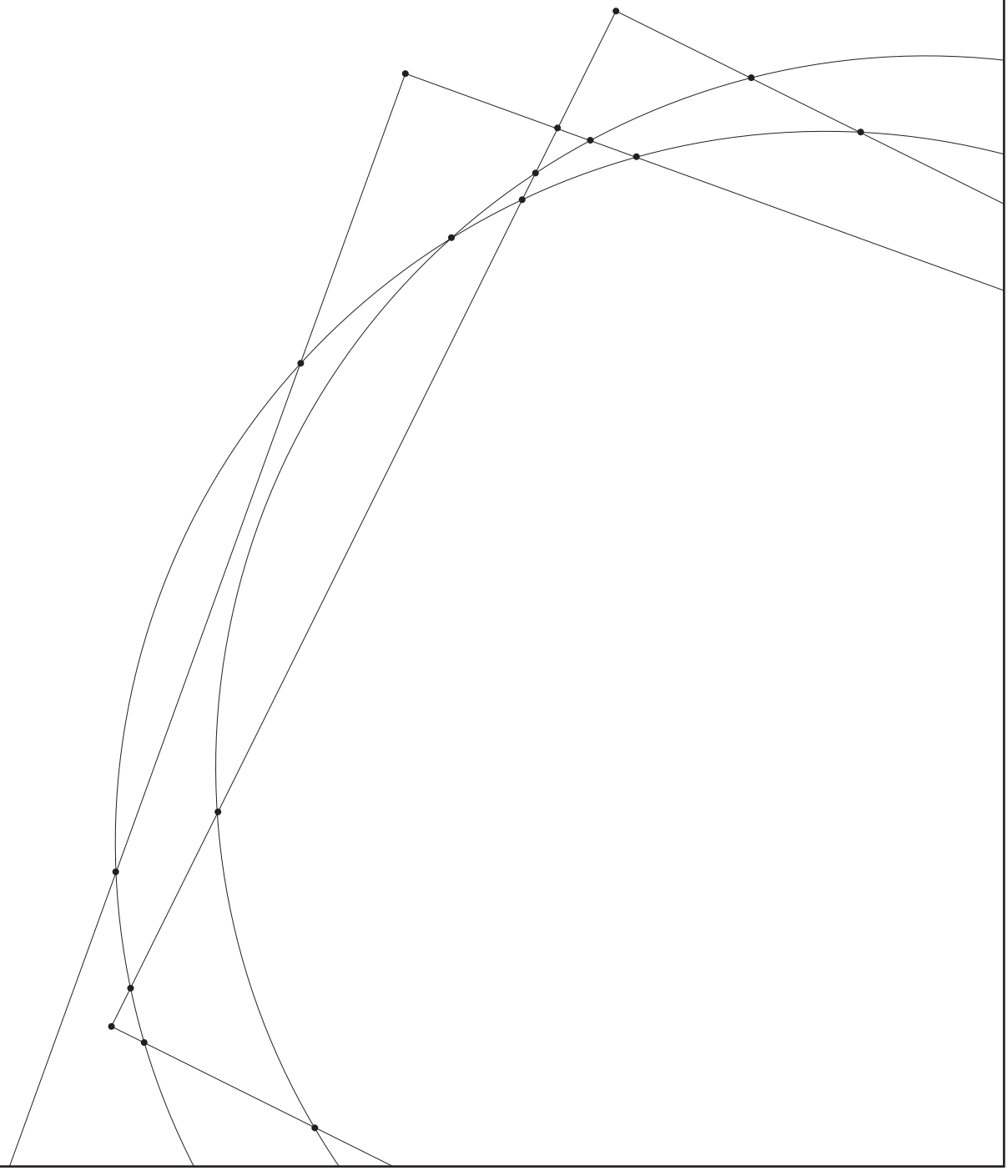
Rationally counts small groups of objects (10 or less)

Understands that the last item counted represents the number of the group of objects

Correctly compares the amount of two groups of objects containing less than five items

Tells when small groups of objects (fewer than 5 items) contain more or less than another group

Section Two



Supporting Parents through Parent Education

Parents have the greatest influence on children's development. Parent-child interaction styles, parental aspirations for children, and parental involvement in educational activities at home and at school all contribute to children's school readiness and later academic success (Bowes, 2000; Hill, 2001). Most parents, however, begin the job of parenting with little preparation. Many parents do not have a readily available support system and are hesitant to ask unfamiliar professionals for assistance. Others lack the literacy skills needed to seek out parenting information on their own (Bowes, 2000).

Parenting is one of the most challenging and complex of all the tasks of adulthood. For disadvantaged families, the difficulties of parenting are exacerbated by high levels of social and economic stress (Hill, 2001). Combined, these stressors often lead to negative parent-child relationships, lower performance in school (Hill, 2001) and in many cases, child abuse (Bowes, 2000). Daro, McCurdy and Harding (as cited in Bowes, 2000) argue that lack of information about appropriate behavior for children at different ages, and lack of monitoring and emotional support from other adults contribute to increased instances of physical and psychological abuse of children. Parent education and support programs that provide both information about child development, and positive parenting strategies, are seen as crucial elements in interventions designed to prevent child abuse and neglect, and to help parents give their children a firm emotional, social and intellectual start in life (Bowes, 2000).

Although economic hardship and social discrimination provide difficult obstacles for parents to overcome, positive parental attitudes, beliefs, goals, and lifestyles are shown to foster academic success in some disadvantaged children (Halle et al., 1997). In recent literature review of parent education programs, Bowes (2000) concludes that when parents receive information about child development and positive parenting strategies, instances of child abuse are lowered, and parents' attitudes toward their children and parenting skills are improved. Parents participating in these parent education programs report providing their children with more time and attention, using negotiation strategies to solve parent-child and child-child conflicts, increased amounts of time spent reading to their children, and increased involvement in other school readiness activities (Bowes, 2000).

Parental Involvement in Education

Parental involvement in education can be defined as activities that parents conduct at home and in school settings to directly or indirectly support their children's learning. Many studies show that family involvement in young children's education contributes to a smooth transition to school, increases children's prereading and premathematical performance (Hill, 2001), and decreases enrollment in special education programs (Henderson & Berla, 1994; Marcon, 1999). Seitz and colleagues (1985) found that mothers involved in the Yale Parenting Project were more aware of their child's school performance and had more frequent contact with their child's teacher. Olmsted (1991) found that parents involved in the Head Start Follow Through Project were more apt to question special education placement of their children, maintain contact with the school, and closely follow their child's progress. Marcon (1998) found that parent involvement during the kindergarten year led to decreased special education placement and less grade retention for children in sixth and seventh grades.

According to Barnard (cited by Kreider, 2002), a review of early childhood education and intervention literature suggests that parents' experiences of involvement in their children's education can affect parents' current and future beliefs about their children's capabilities as well as their parenting practices. Parents of children who participated in preschool programs that fostered parent partnerships had higher occupational aspirations for their children, more satisfaction with their children's school performance, and greater parent involvement in elementary years at home and in school. Nevertheless, many minority parents feel powerless to make a difference in their children's education because of previous unsuccessful experiences in the education system, limited English skills, or lack of skills to help their children succeed in school (Halle, 1997; Kurtz-Costes & Mahoney, 1997). Due to these problems, parent education programs designed for families from minority backgrounds need to provide a clearer understanding of school expectations and must support parents in their efforts to bridge the gap between home and school (Kagan & Garcia, 1991).

Implementing parent involvement activities during the preschool years can provide a strong foundation for family-school relations that can promote successful home-school transitions (Miedel & Reynolds, 1999), and an increased sense of efficacy in parents (Kreider, 2002). According to Kreider (2002), parents whose children attended early childhood settings with strong parent components, reported knowing more about their child as a learner. Parents report that receiving information about activities to do with their child at home, receiving direct suggestions from providers about children's development and participating in other center activities as important to helping them support their children's learning at home and at kindergarten entry.

Another benefit of involvement in early childhood programs that parents highlighted was having someone to help them solve a wide array of problems, which ranged from practical issues of transportation, housing, employment, and child care, to personal and parenting difficulties. In particular, parents valued providers who gave emotional support, and listened to them during times of personal crisis. The trusting and lasting relationships built over long-term association with one preschool program, helped parents to believe that child care providers/educators had faith in their abilities to guide their child's education, and had confidence in them as parents regardless of their circumstances.

Finally parents report that their involvement in preschool programs leads them to pursue leadership and learning opportunities. In addition to helping parents locate jobs or pursue educational goals, preschool programs provided opportunities for parents to serve on the parent councils, speak to groups about the program benefits, and offer informal help to new children and families in the program. As a result of their expanded roles in the preschool program and community, parents report an increased sense of empowerment and confidence in their capabilities to enhance and contribute to their child's education and the overall program.

The Transition to Kindergarten

Readiness for school and how children experience the transition from home/preschool to kindergarten are closely related. Recent research suggests that how adults prepare children for the transition to kindergarten is closely related to how 'ready' a child is for the demands of a new school environment. (Ramey & Ramey, 1999). Kindergarten transition is a process that parents, childcare providers and schools create and participate in, rather that an event that happens solely to children (Pianta, Rimm-Kauffman, & Cox,

1999). Interactions between families, schools, and childcare providers frame children's experiences as they transition into kindergarten. However, the ways in which communities go about assuring that all children experience a sense of continuity between home, early education programs, and kindergarten is context specific. The similarities and differences in home contexts, child care centers, and kindergarten classrooms must make sense to young children if they are to be successful during the first years of schooling. Without a thoughtful, well planned transition process, many of the benefits of early educational experiences (regardless of where they take place) are lost, or fade out as children enter kindergarten and progress through the primary grades (Shore, 1998).

Early intervention research suggests that cognitive gains made by children in compensatory preschool fade as they move through primary grades (Shore, 1998). This drop-off may be attributed, at least in part, to dramatic differences between parent involvement, classroom organization, and teaching style in early care and education programs and in elementary schools (Bohan-Baker & Little, 2002). Results of the National Head Start Demonstration evaluation suggest that local commitments to promote effective home-school transitions combat the "fade-out effect". Furthermore, many studies support the importance of creating home-school transition programs and practices to sustain and build on children's social, emotional, and academic competencies.

To inform communities of home-school transition practices that bolster children's success in kindergarten, Bohan-Baker and Little (2002) synthesized research from several sources (Child Trends, 2000; Education Commission of the State, 2000; Pianta et al., 1999; Shore, 1998) and offer the following recommendations:

1. Periodic contact with families of preschoolers, either via a telephone call or face-to-face, to begin sharing information about the child and their routines, and their school setting.
2. Periodic contact with the children themselves to begin to develop a relationship prior to school entry.
3. Invitations to visit the kindergarten in the spring of the child's preschool year.
4. Preparation and dissemination of home-learning activities, including providing summer booklists and other literacy activities for the summer months prior to kindergarten entry.
5. Family meetings prior to the onset of kindergarten to discuss teacher expectations.
6. Partner with local parent-teacher association to inform parents how they can be involved in their child's kindergarten setting and connect new families with families currently enrolled in the school.
7. Dissemination of information to parents on the transition to kindergarten, including kindergarten registration guidelines, kindergarten options in the community, information on specific schools once placements have been made, and health and nutrition information to ensure that children enter school healthy.
8. Home visits before and after children enter kindergarten.
9. Support groups for parents as their children transition to kindergarten.
10. Facilitate early registration for kindergarten so that families have time to prepare children for their new setting and so specific teachers can reach their prospective students well before the first day of school.
11. In areas with a large percentage of limited English proficiency families, staff early care education and kindergartens with bilingual teacher aides.

Parental Perceptions of Kindergarten

Kreider (2002) asked parents about their feelings, experiences, and involvement practices related to their children's transition into kindergarten. Parents expressed three main feelings: happiness, sadness, and worry. Recognizing their child as smart, curious, or able to interact well with other children, parents happily saw kindergarten as another opportunity for their child to flourish as a learner. This was especially true if the parents felt confidence in the quality of the teacher and the school. Parents' sadness was related to missing their child, who would be "leaving the nest." Parents worried mostly about children's social relationships and vulnerabilities. Parents deduced these vulnerabilities in part from their child's early childhood experiences.

Schools and early childhood programs can employ practices like those above to respond to parents' feelings of anxiety and excitement, promote their sense of welcome and familiarity with kindergarten, and bolster parents' sense of confidence in themselves as parents and their ability to recognize ways to become involved in their child's education in a new environment (Kreider, 2002). However, many educators do not receive appropriate training in facilitating home-school partnerships (Kreider, 2002), or how culture influences parents' views about their role in school activities (Lopes, 2001). Marcon (1999) notes that many lower-income parents attribute greater professional expertise to teachers than do middle-income parents and perceive their ability to intervene in school decision making as limited. The perceived or actual imbalance in power between teachers and these parents makes building partnerships more difficult.

In order to ensure that all children enter school ready to learn, it is essential that early childhood educators receive training to maximize the continuity between home and school. Validating the home culture of families with diverse backgrounds and circumstances requires educators to relinquish predetermined and limited views of parental involvement that cause marginalized parents to be labeled as uninvolved. Developing parent partnerships that include an expanded definition of parent involvement and consider social factors and time constraints that could limit parent participation is essential to children's future success. .

Supporting Preschool Teachers and Child Care Providers

Supporting Preschool Teachers and Their Work with Children and Families

Recent reports estimate that sixty-seven percent of three-year-olds and seventy-seven percent of four-year-olds, in the United States attend some type of formal care and education program (Hofferth, Shauman, Henke, & West, 1998). Seventy-six percent of preschool children attend tuition-funded preschool programs provided by for-profit agencies (29%), religious agencies (22%), or independent non-profit agencies (25%). The remaining 24% of three and four year-old children attend Head Start or Public School Preschool programs (Gitanjali, Early & Clifford, 2002). Research suggests that quality preschool programs do a good job of preparing young children for kindergarten; however, most of the preschool programs in the country are rated low in quality (Cost, Quality, & Child Outcomes, 1995; Gitanjali, Early & Clifford, 2001). While quality of early educational experiences is a multi-faceted construct, research shows four quality indicators that are consistently related to positive child outcomes and children's readiness for school.

Level of Teacher Education

The amount and level of an early childhood professional's education and specialized training has a direct influence on the quality of the early learning experience provided. Children whose teachers have a bachelor's degree in early childhood education (not elementary education) score better on measures of social, cognitive, and language development (Whitebook, Howes, & Phillips, 1990: Dunn, 1993; Howes, Smith, & Galinsky, 1995).

Quality of Teacher-Child Interactions

Children who participate in programs where the teacher is responsive and promotes frequent positive interactions are shown to have more secure attachments with their parents (Scarr, Eisenberg & Deater-Deckard, 1994; Howes, Smith, & Galinsky, 1995; NICHD, 1996), better social competence (Vandell, Henderson, & Wilson, 1988), advanced social reasoning (Holloway & Reichhart-Erickson, 1988), positive temperaments (Hestenes, Kontos, & Bryan, 1993), and experience less stress (Love, Ryer & Faddis 1992).

Parent Communication

Studies show that the frequency of teacher-parent communication influences parental perceptions of child care quality, which improves child outcomes (Ghazvini & Readdick, 1994; Kontos, Howes, Shinn, & Galinsky, 1995).

Teacher Beliefs

Several studies show that the level of teachers' child centered beliefs (NICHD, 1996) and use of developmentally appropriate practices (Howes, Phillips & Whitebrook, 1992) is related to secure parent-child attachments. Other studies show that children enrolled in preschool programs that implement a child-centered curriculum are less likely to be enrolled in special education, have higher high school graduation rates, and are more

likely to be employed as adults (Schweinhart et al., 1993).

Professional Development of Child Care Providers

The qualifications and in-service training required of childcare teachers and assistants vary. Each state has its own licensing requirements that regulate pre-service caregiver training, ranging from a high school diploma, to community college courses, to a college degree in child development or early childhood education. Across the United States today, less than 50% of lead teachers of three and four year-olds in center-based early childhood programs (including childcare, school-based prekindergarten, and Head Start) have a 4-year college degree (Early & Winton, 2001). Studies have shown that centers in states with more strict training regulations offer higher quality care, on average, than do centers in states with more lenient regulations (Phillips, Mekos, Scarr, McCartney, & Abott-Shin, 2000).

In Arizona, child care teachers must be 18 years of age or older and possess a high school or high school equivalency diploma and 6 months of child care experience. Teacher assistants must be 16 years of age or older and be currently enrolled in high school or a high school equivalency class. Educational requirements for Head Start teachers and public school preschool teachers are governed by federal, state and local regulations. Federal regulations require that Head Start teachers possess an associates degree by 2003. In Arizona, the level of training for public school preschool teachers is controlled locally. Many school districts accept a CDA credential (independent training offered through the National Early Childhood Academy) or an associates degree, while others require a bachelor's degree in child development.

Arizona requires all preschool teachers to receive 12 hours of training each calendar year in 1 or more of following areas:

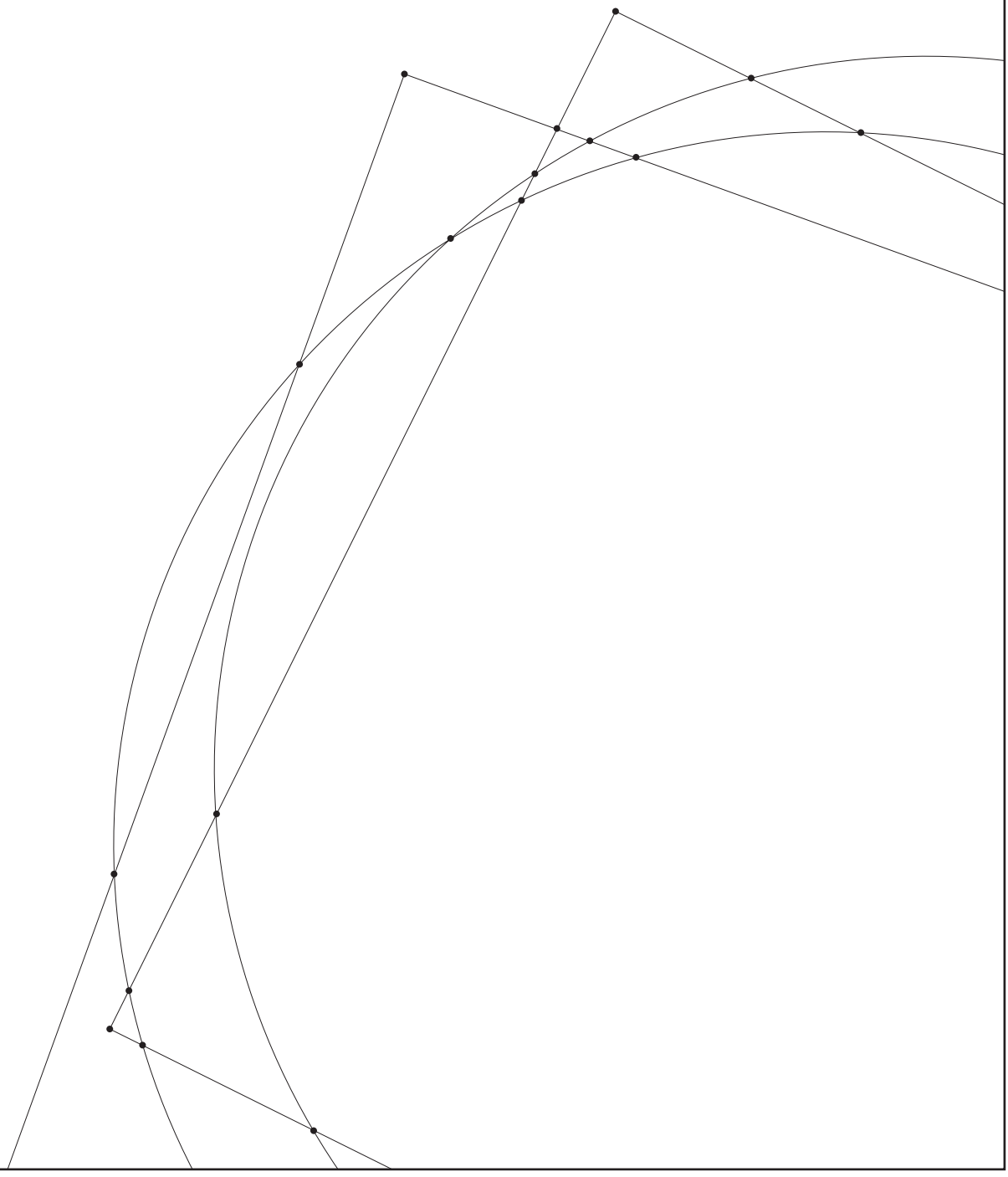
- Accident and emergency procedures, including CPR and first aid for infants and children
- Recognition of signs of illness and infestation
- Child growth and development
- Child abuse or neglect detection, reporting, and prevention
- Child guidance and methods of discipline
- Nutrition and developmentally appropriate eating habits
- Availability of community services and resources, including those available to children with special needs
- Parent involvement and communication with parents
- Program administration, planning, and development
- Environment of child care activity areas
- Sun safety policies and procedures
- Safety on outdoor activity areas

As can be inferred by the above regulations, Arizona's child care workforce is not required by law to possess the level of training shown by research to promote positive child outcomes and school readiness.

Furthermore, of the training Arizona's child care providers are required to receive, little focuses on the domains of social competence, language and literacy, and mathematical development, which contribute to children's kindergarten readiness. All preschool teachers need specific training in teacher child interaction, curriculum content in social, literacy, and mathematical development, and effective instructional strategies if they are to prepare young children for successful kindergarten experiences. Unfortunately, many private child care providers cannot afford this essential professional development (e. g., college courses, or conferences).

The average salary for Arizona's private child care providers is $7.12 per hour, which makes pursuing professional development opportunities difficult. The beginning salaries for Head Start teachers and public school preschool teachers range from approximately $10.00 per hour to $15.00 per hour, and both groups benefit from free, ongoing professional development activities which are unavailable to child care practitioners. With 76% of all preschool children attending private child care facilities, offering free or low-cost training to private practitioners is of crucial importance. Without a well-trained teacher in every preschool classroom, America's preschool children will enter school without the supportive relationships, knowledge, skills, and dispositions necessary for success in kindergarten and beyond.

Section Three



Components of a Successful Kindergarten Readiness Outreach Program

Target Group(s)

Research consistently shows that children from low-income backgrounds, single parent families, homes where English is a second language, and/or whose mothers are in poor mental health are underprepared for kindergarten. It is recommended that the kindergarten readiness outreach program target families with these circumstances. Because so many children are enrolled in child care, and private for-profit child care centers are shown to be of lower quality, child care providers could offer another target group. However, offering educational opportunities to all families in the community with preschool children presents an opportunity for relationship building and developing parent-to-parent support systems. Forming partnerships with child care providers from many programs in the community will provide your program with the necessary 'clout' to enter into sustainable relationships with families while exposing participating early childhood educators to the curriculum you deliver.

In terms of providing services to Hispanic families, Espinosa (1995) recommends understanding how the Hispanic culture influences child rearing and socialization practices, communication styles, and attitudes toward formal education. Although Hispanic subgroups differ in terms of communication styles and socialization practices, as a whole, members of this culture have strong family ties, family loyalty, and a collective orientation supporting community life. Hispanics indicate a preference for warm, personalized styles of interaction, a relaxed sense of time, and an informal atmosphere for communication—preferences that may present a "culture clash" with the style of many educational programs. Recommended strategies for involving Hispanic parents include: a "personal touch," with face-to-face communication rather than written communication, even when translated into Spanish; nonjudgmental communication that supports parents for their strengths, rather than judging their "perceived failings"; perseverance in maintaining involvement; bilingual support for both written and oral communication; and creating a welcoming environment, and a collegial atmosphere.

Program Delivery

The rapid growth of parent education and support programs leads to questions about what constitutes a high-quality parent education program. Four program dimensions are proposed below on the basis of existing research and theory.

1. It can be argued that high-quality programs are characterized by collaborative, equal relations between parents and program staff in which the intent is to empower parents in their child-rearing roles (Powell, 1988). It is increasingly suggested that program staff serve as facilitators of goals and activities jointly determined by parents and program staff, and not as experts who assume they know what is best for parents (Cochran, 1988). Illustrative of this approach is open-ended discussion of parent-initiated topics as opposed to largely one-way flow of information from staff to parent. Collaborative parent-staff ties provide a means for ensuring that program methods and content are responsive to parents' needs.

2. Research data suggest that parent programs need to maintain a balanced focus on the needs of both parent and child. The content of parent programs has broadened in recent years to include significant attention to the social context of parenthood. This substantive shift reflects an interest in the interconnectedness of child, family, and community, and assumes that providing parents with social support in the form of helpful interpersonal relationships and material assistance (if needed) will enhance parent functioning and, ultimately, child development. Program efforts toward this end include the strengthening of parents' social networks, social support, and community ties as a buffer against stressful life circumstances and transitions. The term parent support is a reflection of the shift. While there are strong justifications for the shift, there is the potential problem that parents' needs and interests may overshadow program attention to the child.
3. A recent development in parent education and support has resulted in programs being tailored to be responsive to the needs and characteristics of the population being served. The idea that a particular program model can work with almost any parent has given way to an interest in matching parents to different types of programs. This interest is especially evident in efforts to design programs that are responsive to cultural characteristics and values of ethnic populations, and in programs serving parents living in low-income and high-risk circumstances.
4. In high quality initiatives, a significant amount of program time is devoted to open-ended parent-dominated discussion. Principles of adult education recommend that programs include a strong experimental component. This is critical, because parents are likely to process new information according to existing beliefs about their child and child development. Discussion provides an opportunity for parents to digest new insights in relation to existing ideas.

Potential Barriers to Parent Participation

In 1992, The National PTA sent a survey to its 27,000 local and unit presidents and 3,000 council leaders, asking them what barriers they faced when they tried to get parents involved. The chart below recapitulates their responses (The National PTA, 1992):

Barriers	Percent Giving this Response
Parents do not have enough time	89 percent
Parents feel they have nothing to contribute	32 percent
Parents don't understand; don't know the system; they don't know how to be involved	32 percent
Lack of child care	28 percent
Parents feel intimidated	25 percent
Parents are not available during the time school functions are scheduled	18 percent
Language and cultural differences	15 percent
Lack of transportation	11 percent
Parents don't feel welcome at school	9 percent
Other barriers	21 percent

To combat these barriers, kindergarten outreach projects involving parents should be held at convenient times and locations. Parents should eventually take a major role in selecting topics for discussion, recruiting new parents, managing program events, and serving as advisers to program developers. The atmosphere of meetings should be informal and relaxed, and all content should reflect the needs, interests and cultural beliefs of families to the greatest extent possible. Child care must be provided to participants and in the best case scenario, activities provided for children should reflect the discussion of the parent meeting.

Curriculum Content/Child Development:

Research shows that children who enter kindergarten with the following knowledge and dispositions and support systems are successful in kindergarten*:

1. Social Competence
    - Has a secure attachment to primary caregiver
    - Shows confidence in self
    - Is friendly toward others
    - Relates to peers without being too submissive or overbearing
    - Is willing to give and receive support from peers and adults
    - Demonstrates the ability to concentrate on and persist at challenging tasks
    - Demonstrates the ability and willingness to take ideas from others
    - Is curious about new situations
    - Adjusts to new situations with adult assistance
    - Enters into play situations without adult assistance
    - Initiates and sustains interactions with familiar and unfamiliar adults and peers
    - Verbally expresses wants, needs, and emotions
    - Is attentive to others for short periods of time
    - Shows empathy toward others
    - Solves conflicts with little adult assistance
    - Knows when to seek adult assistance to solve problems encountered during play
    - Follows daily routines

2. Language and Literacy
    - Uses language to express ideas, emotions, and needs
    - Speaks in sentences

- Tells stories or events in sequence
- Asks and answers questions about people and objects in their environment
- Identifies and makes rhyming words
- Enjoys looking at books
- Knows how to hold a book and look at pages from front to back
- Talks about the pictures in the book
- Asks other to read books to them
- Understands that print has meaning and can be used for a variety of purposes
- Represents ideas through drawing, painting, construction, and dramatic play
- Recognizes environmental print
- Recognizes some letters of the alphabet, particularly those in their name
- Play writes and makes marks for words, particularly his or her name

3. Logical Mathematical Knowledge
   - Shows interest in similarities and differences of objects
   - Classifies groups of objects based on more than one attribute
   - Compares small groups of objects
   - Seriates small groups of objects
   - Describes and visually represent two and three dimensional objects from a variety of perspectives
   - Locates and identifies shapes in the environment
   - Locates and describes patterns in the environment
   - Uses one-to–one correspondence to count groups of objects (one cookie for each person)
   - Rationally counts small groups of objects (10 or less)
   - Understands that the last item counted represents the number of the group of objects
   - Correctly compares the amount of two groups of objects containing less than five items
   - Tells when small groups of objects (fewer than 5 items) contain more or less than another group

* These developmental characteristics can be further explored in Arizona's Early Childhood Standards and Comprehensive Guidelines for Early Childhood Programs.

To assure that children are prepared for kindergarten, parents should be provided with a thorough understanding of kindergarten expectations, how children learn these skills and what types of home and community activities will support children's learning. Parents should also be provided with information and access to resources that will help them meet their individual family needs/issues. Most importantly, parent education programs should seek to connect families, schools and communities into a seamless system of support, education, and care that enhances young children's well-being, love of learning, and future success.

Potential Partnerships

- ASU undergraduate and graduate early childhood and social work majors
- ASU service learning program
- Early childhood programs in the community
- Elementary schools
- Church groups
- Other parent organizations in the community
- Arizona School Readiness Board
- Arizona Family Literacy and Block Grant Programs
- Twenty-First Century School Grantees (available from Arizona DOE)
- Local Libraries, Museums, Art Centers
- Local Health Care Providers
- Local Social Service Agencies
- Local United Way, YMCA, Community Programs

Models of Parent Education Programs

Traditional Parent Education/Bridges to Kindergarten

Target Group
Parents of preschool aged children and child care providers.

Partners
Private Child Care Providers, Head Start Centers, Sunday School Groups.

Delivery Method
On-site training, provided at Head Start, day care centers, etc. with sites being rotated so the program is viewed as a community program rather than an agency program.

Facilitators
Graduate students in early childhood education, social work, special education, and family studies. Kindergarten teachers from local school districts may also be involved.

Child Care Providers
Undergraduate Students in Early Childhood Education (ECE) or Service Learning

Training Focus
Parents can select among many topics. To improve readiness, discussions on social competence (adult-child interaction), literacy, and mathematics development, etc., should be included in the process. Arizona Early Childhood Standards and Kindergarten Standards, kindergarten enrollment materials, etc., may also serve as topics. The office of Youth Preparation (OYP) may wish to do a "Preparing for Kindergarten Series" that starts with Kindergarten teachers (or the K standards may be used) discussing the characteristics of a "ready' child and family. The curriculum can be built around the strengths/issues identified at the initial meetings.

Benefits
Most Head Start Agencies and public school preschool programs are required by funding agencies to provide Parent Education. In many cases, the teachers provide the training during the evening, after a full day of work. If OYP agreed to provide the training for free, it would relieve ECE teachers of this duty and provide a 'ready made' parent group. The teachers would attend the meetings as co-participants (supporting OYP and parents) and therefore, benefit from the information presented. Head Start, public school preschool and faith-based agencies may be able to take the lead in social service issues because they have extensive experience in this area. The goal would be to eventually let the parents control the programs.

Rationale
Kreider (2002) discusses important processes for "ready" parents to become involved in their children's kindergarten experience:

- A sense of efficacy among parents can be built through exposure to leadership and learning opportunities in early childhood settings; a confidence which may carry over into school involvement.
- A set of skills and routines conducive to later involvement in school may be built through strong patterns of involvement practice established during early childhood programs.
- Ideas and knowledge, such as those concerning the importance of family involvement to children's school success, can be imparted through the provision of information and guidance to parents during their children's early years.
- Comfort and skills communicating with educators and educational systems can be fostered among parents through meaningful and lasting relationships with early childhood professionals, such that relationships with later educators might be facilitated.

Parents in the Park

Target Group

Parents of preschool aged children.

Partners

YMCA Youth Sports Group, Mother's Groups, Head Start Agencies, Community Agencies for advertising.

Delivery Method

Meetings held in neighborhood parks on Saturday mornings/afternoons.

Facilitators

Graduate students in early childhood education, social work, special education, family studies.

Child Care Providers

Undergraduate Students in ECE or Service Learning provide child care/ activities for children while parents attend discussion group. If OYP holds meetings at South Mountain Park, ECE pre-service educators can also take children on Park-Ranger led hikes, etc

Training Focus

Parent and Child: ECE students present activities to children, which students can then explain to parents (in terms of readiness). Parents select from topics. In addition to readiness (in the narrow sense of the word) parents can discuss/develop neighborhood events, and discuss neighborhood issues that need improvement

To improve readiness, discussions on social competence (adult-child interaction), literacy, and mathematics development, etc., should be included in the process. These discussions could focus on community agencies that support children, such as the museums, library, etc., and what types of 'readiness activities' parents can do while at these facilities to improve children readiness. During Kindergarten and Head Start enrollment periods (usually March or April) these groups can come and present information to parents on

enrollment, etc. Introduction to Arizona Early Childhood Standards and Kindergarten Standards, kindergarten enrollment materials, etc., may also be distributed to show parents what children will learn.

OYP may wish to do a "Preparing for Kindergarten Series" that starts with Kindergarten teachers (or the K standards may be used) discussing the characteristics of a "ready' child and family. The curriculum can be built around the strengths/issues identified at the initial meetings.

Benefits

Parents will meet others in local community and perhaps begin to use local facilities on a more regular basis. Helping parents get into the habit of going to the park on a weekly or bi-weekly basis will provide families with quality time in a relaxing environment. Parents may also make "play dates" with other parents in the neighborhood and begin to develop support networks outside of the parent meetings. Communities will most likely wave fees for pavilion rentals, making this a very low cost option. All children love the park!

Rationale

The Park is a neutral meeting place, unlike a school which may give parents the impression of being told how to parent. Additionally, many families with older children attend sporting events at parks on Saturday mornings, leaving them with little to do with younger siblings. Oftentimes these events are only 1-11/2 hours in length which does not provide parents with time to leave and conduct other business. Free activities for younger children may draw parents to the meetings. (Web Site for Phoenix City Parks is http://www.ci.phoenix.az.us/PARKS/parks.html.)

Advertisement and Web Site for YMCA Sports: Drive by a city park or school yard any weekend, and there will be a YMCA youth sports league in action. Little girls hit their first homeruns in a tee-ball game. A boy runs down the field to catch a touchdown pass. Or coed soccer teams shake hands at the end of the game. The YMCA offers enriching sports programs for kids from kindergarten through high school. Youthful energy is directed to a healthy outlet.
http://www.nscphoenix.com/cs/scottsdaleymca/youthsport.htm

Readiness Mobile

Target Group

Parents of preschool aged children.

Partners

Community Agencies that sponsor community events (e.g., school fairs, county fair, Patriots Square Park events, etc.).

Delivery Method

Readiness mobile travels to local events and OYP provides a kindergarten readiness booth at the events. As parents meet individually with facilitators, ECE students provide activities for children. Weekend shopping locations could also be targeted (e.g., Grocery Stores and/or Malls).

Facilitators

Graduate students in early childhood education, social work, special education, family studies.

Child Care Providers

Undergraduate Students in ECE or Service Learning provide child care/ activities for children while parents get information on school enrollment requirements/dates, 'readiness activity' packets, etc.

Training Focus

Parent and Child: ECE students provide short activities for children, which students can then explain to parents (in terms of readiness). Local Business may contribute equipment, but children's activities should be something parents can replicate for little or no cost. Parents can have one-on-one discussions with facilitators about preparing children for school. Parents can also get information on community agencies designed to support a variety of family needs. Preschool and Kindergarten enrollment information can also be provided.

To improve readiness, literature on social competence (adult-child interaction), literacy, mathematics development, etc. should be provided in an easy to read format. "The Readiness Calendar" lists community events and activities that promote readiness, such as the following brochures: "Becoming a Family of Readers", "Book Lists", "Avoid the Shopping Blues", "Games/ toys to Promote Readiness", etc.

Benefits

This is a less intrusive parent education design and will provide access to large numbers of parents. This can be a stand alone program or be designed as an addition to any program model. It may also serve as a mechanism to determine which issues parents of young children need most help with. In addition to readiness information, OYP can provide information on a variety of topics, health (e.g., where to get immunizations, nutrition, etc), mental health (support groups, divorce recovery, behavior issues), library information (e.g., how to get a library card for children, library story hours, etc.). Most agencies will provide this information for free, OYP would only have to distribute it and discuss with parents.

Other Forms of Parent Education

- Home Visits
- Newsletters
- Videos (ASU technology students could produce these)
- Parent Resource Libraries
- Radio and Television Programs
- Mentor Programs
- Newspaper/ Magazine Articles/ Books
- Fairs and Displays
- Brochures

- Internet Resources

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