



Research Foundation: Teaching Strategies GOLD™ Assessment System



Research Foundation: Teaching Strategies GOLD™ Assessment System

In recent years, a growing body of research has offered new and powerful insight into the importance of early learning and its relationship to school and success in later life. Much of this evidence links children's early cognitive, language, and social–emotional development to later developmental and school outcomes (Hair, Halle, Terry-Humen, Lavelle, & Calkins, 2006).

In response to this growing evidence of the importance of early development and learning, as well as the changing needs of the diverse early childhood programs across the country, Teaching Strategies decided to develop an entirely new assessment system. Although the current systems (*The Creative Curriculum® Developmental Continuum for Ages 3–5*, *The Creative Curriculum® Developmental Continuum for Infants, Toddlers & Twos*, and the related online subscription service CreativeCurriculum.net) have proven to be highly successful and well received by educators, we recognized that new needs had to be met. The new system will

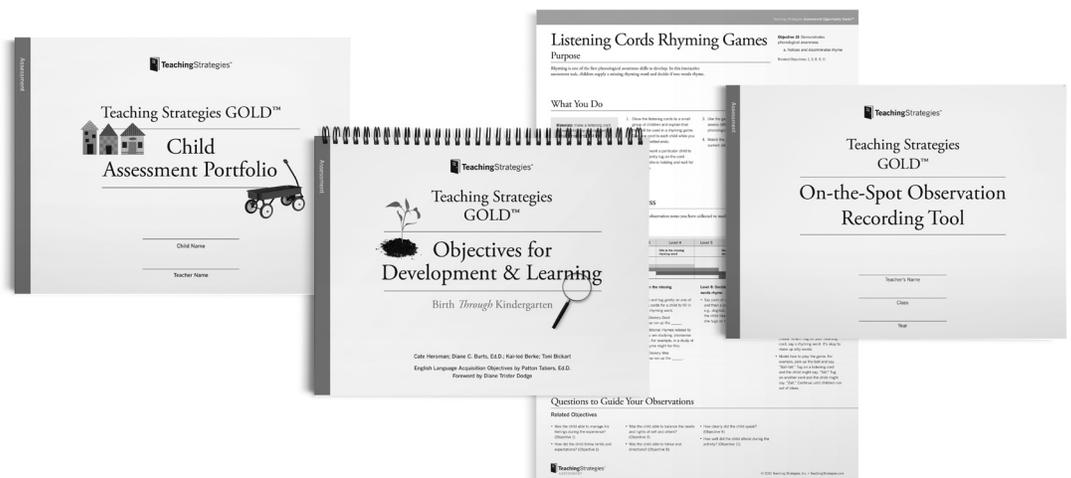
- serve children from birth through kindergarten
- focus on the key elements that research indicates are most predictive of school success
- align with the expected outcomes identified in state early learning standards
- serve the needs of English-language learners

To gather evidence on the most important predictors of school success, Teaching Strategies embarked upon an extensive literature-based research review of the most significant recent studies on early learning. This review resulted in the development of Teaching Strategies GOLD™ assessment system, a seamless, observation-based assessment system for children from birth through kindergarten that blends ongoing, authentic assessment in all areas of development and learning with intentional, focused performance assessment tasks for selected predictors of school readiness in the areas of literacy and numeracy. Designed for use as part of meaningful, everyday experiences in the classroom or program setting, Teaching Strategies GOLD™ is inclusive of children with developmental delays and disabilities, children who are English-language or dual-language learners, and children who are advanced learners.

Because the complex, uneven nature of child development and learning makes it impossible to measure every skill and behavior that children demonstrate in the early years, Teaching Strategies GOLD™ measures the knowledge, skills, and behaviors that are predictive or most important for school success, focusing on 36 basic objectives and two additional objectives related to English language acquisition. Objectives are organized into nine areas of development and learning; the first four describe major areas of child growth and development (social–emotional, physical, oral language, and cognitive), and the following five focus on content learning (literacy, mathematics, science and technology, social studies, and the arts). A tenth area, English language acquisition, helps teachers follow a child’s progress in acquiring both receptive and expressive language in English. Teaching Strategies GOLD™ can be used as one of many tools to inform state efforts as educators develop their own school readiness criteria. It is also appropriate for use with any developmentally appropriate curriculum.

The Research Behind Teaching Strategies GOLD™

Selection of the specific 38 objectives and indicators showing widely held expectations for each age group was based on further review of the current research and professional literature in child development and early childhood education as well as state early learning standards. As evidenced in the research summary below, the first 23 objectives focus on key predictors of school success in the areas of social–emotional, physical, cognitive, oral language, literacy, and math development and learning. The remaining objectives help teachers plan instruction in science and technology, social studies, and the arts, and enable teachers to assess children’s English language acquisition.



Social–Emotional Development

There is a strong connection between children’s early relationships and behaviors and their later development and learning (Smith & Hart, 2002). For this reason, assessing children’s social–emotional development accurately and supporting their growth and competence in this area is especially important. Teaching Strategies GOLD™ includes three social–emotional objectives:

Objective 1. Regulates own emotions and behaviors

Self-regulation is ranked as the most important characteristic necessary for school readiness by kindergarten teachers (Rimm-Kaufman, Pianta, & Cox, 2000). Children who positively regulate their emotions and behaviors do better in school (Blair & Razza, 2007; Bronson, 2000) and have an easier time getting along with peers (Copple & Bredekamp, 2009). Children with poor emotional regulation skills are not likely to get along well with teachers and peers (Berk, 2006; Denham, Blair, Schmidt, & DeMulder, 2002).

Objective 2. Establishes and sustains positive relationships

Children’s ability to form positive relationships with adults is important to their social–emotional development and academic success (Birch & Ladd, 1997; Bronson, 2006; Hamre & Pianta, 2001; Howes, 2000; Howes, Burchinal, Pianta, Bryant, Early, Clifford, et al., 2008; Palermo, Hanish, Martin, Fabes, & Reiser, 2007; Pianta & Stuhlman, 2004). Warm, supportive teacher–child relationships are related to children’s self-direction and positive attitudes toward school (Birch & Ladd, 1997). Children’s ability to build positive relationships with peers affects their social competence, school adjustment, and academic success (Ladd, Birch, & Buhs, 1999; Riley, San Juan, Klinkner, & Ramminger, 2008; Shonkoff & Phillips, 2000).

Objective 3. Participates cooperatively and constructively in group situations

The foundational skills for being a productive member of social and learning groups are established during the early childhood years, and they are important for early school success (Ladd et al., 1999). Positive group participation includes work-related skills like listening, following directions, behaving appropriately, staying on task and organizing work materials; poor work-related skills in kindergarten are related to behavioral difficulties and lower academic achievement in the early primary grades (McClelland, Morrison, & Holmes, 2000).

Physical Development

Physical development includes children’s gross-motor (large muscle) and fine-motor (small muscle) skills. Physical development affects other areas of development. In fact, brain research points to the importance of early, positive movement experiences to brain development (Gabbard, 1998; Robert, 1999), and physical development is linked to children’s emotional development and their school performance (Pica, 2006; Rule & Stewart, 2002; Sanders, 2002; Son & Meisels, 2006). The physical development objectives are:

Objective 4. Demonstrates traveling skills

Traveling involves moving the body through space. The early years are critical for the development of the large muscles needed for traveling. This important skill has implications beyond just the physical. When children with disabilities achieve greater independent mobility, they show improved social and language development (Charlesworth, 2008; Kim, 2005).

Objective 5. Demonstrates balancing skills

Turning, stretching, stopping, rolling, jumping, swinging, and dodging require balance (Sanders, 2002). Children use balancing skills during structured and unstructured play and game activities. Children’s ability to balance affects their performance of gross-motor tasks (Ulrich & Ulrich, 1985).

Objective 6. Demonstrates gross-motor manipulative skills

The early years are important for the development of fundamental gross-motor manipulative skills including throwing, catching, and kicking. When children are told discreet actions to take (e.g., “Watch the ball. Reach with your hands.”), they are helped to focus on the skill so they can perform it more efficiently (Breslin, et al., 2008; Sanders, 2002).

Objective 7. Demonstrates fine-motor strength and coordination

Fine-motor skills involve grasping and releasing objects using fingers and hands and coordinating movements with the eyes. These skills are important in the performance of daily routines and many school-related tasks. When teachers provide structure and guidance, children can increase their fine-motor skills (Stewart, Rule, & Giordano, 2007).

Language Development

Strong language skills are essential for children’s success in school and life (Hart & Risley, 2003; Heath & Hogben, 2004; Jalongo, 2008; Kalmer, 2008). Oral language, including grammar, the ability to define words, and listening comprehension helps provide the foundation and is an ongoing support for literacy (National Early Literacy Panel, 2008; Strickland & Shanahan, 2004). The oral language objectives are:

Objective 8. Listens to and understands increasingly complex language

To comprehend language, children must focus their attention and listen with a purpose. They must accurately and quickly recognize and understand what they hear (Roskos, Tabors, & Lenhart, 2004). Receptive language (including listening to, recognizing, and understanding the communication of others) starts to develop before expressive language, but they are closely connected (Hirsch-Pasek, Golinkoff, & Naigles, 1996; Strickland, 2006).

Objective 9. Uses language to express thoughts and needs

Oral language is important to children’s literacy development. Children’s first writing experiences are usually based on what they learned through narrative talk (Beals, 2001; Dickinson & Tabors, 2001; Hart & Risley, 1995), and their literacy development also is influenced by their ability to define words and their knowledge of grammar (National Early Literacy Panel, 2008).

Objective 10. Uses appropriate conversational and other communication skills

Children benefit from conversations that include varied vocabulary and that challenge their thinking (Dickinson & Tabors, 2001). Such conversations contribute to early reading success. In addition, conversations are important to children’s cognitive and social–emotional learning (Hart & Risley, 1995).

Cognitive Development

Cognitive development, also called intellectual development, is influenced by various factors including biological makeup, the environment, and how the child approaches learning tasks (e.g., attention, persistence, curiosity, and flexibility). A child’s background knowledge, or knowledge base, also affects the way a child thinks. This background knowledge influences the child’s information processing, memory, classification, problem solving, language acquisition, and reading and mathematics learning (Bjorklund, 2005; McAfee & Leong, 1994). The cognitive development objectives are:

Objective 11. Demonstrates positive approaches to learning

Children who have positive approaches to learning are more likely to succeed academically and to have more positive interactions with peers (Fantuzzo, Perry & McDermott, 2004; Hyson 2005, 2008; Hyson, Buch, Fantuzzo & Scott-Little, 2006). The ability to resist distractions, remain positively engaged, and persist at learning tasks are related positively to children's academic achievement, cognitive development, and peer interactions (Deater-Deckard, Petrill, Thompson, & DeThrone, 2005; Duncan, Dowsett, Claessens, Magnuson, Huston, Klebanov et al., 2007; Fantuzzo, Perry, & McDermott, 2004; Howse, Lange, Farran, & Boyles, 2003; Hyson, 2008). In addition, cognitive flexibility is important for children's academic achievement (George & Greenfield, 2005; Hyson, 2008), and flexible thinking is critical to children's development of sorting and categorization skills, understanding of concepts, problem-solving skills, reasoning skills, divergent thinking, and inventiveness.

Objective 12. Remembers and connects experiences

As children develop their abilities to attend and to use memory strategies, their learning is enhanced. Adult scaffolding, or support, helps children attend and use memory strategies such as categorizing (Barry, 2006; Larkina, Guler, Kleinknect, & Bauer, 2008; McAfee & Leong, 1994; Mussen, Conger, Kagan & Huston, 1990).

Objective 13. Uses classification skills

The ability to classify is important for learning and remembering (Larkina, Guler, Kleinknect, & Bauer, 2008). Exploration of objects, expanding knowledge of the world, and increased language skills contribute to children's ability to classify (Berk, 2002; Gelman & Coley, 1990).

Objective 14. Uses symbols and images to represent something not present

Thinking symbolically is necessary for language development, problem solving, reading, writing, mathematical thinking, and participating fully in society (DeLoache, 2004; Younger & Johnson, 2004). Before children can effectively use symbols such as letters, numbers, or maps, they must understand implicitly that symbols represent other things (DeLoache, 1991). Dramatic play, sometimes called symbolic play, is an important vehicle for development and learning (Bergen, 2002; Klein, Wirth, & Linas, 2004; Nourot & Van Hoorn, 1991; Similansky & Shefatya, 1990; Steglin, 2005). Dramatic play contributes to children's development of abstract thinking and imagination and supports their school adjustment, memory, language, and self-regulation abilities (Bodrova & Leong, 2004; Fantuzzo & McWayne, 2002; Krafft & Berk, 1998; Newman, 1990).

Literacy

The early years are critical for literacy development. The level to which a child progresses in reading and writing is one of the best predictors of whether the child will function competently in school and in life (Neuman, Copple, & Bredekamp, 2000). Effective instruction in the early years can have a large impact on children's literacy development. The assessment system has these literacy objectives:

Objective 15. Demonstrates phonological awareness

Phonological sensitivity is a strong predictor of later reading, writing, and spelling ability (National Early Literacy Panel, 2004, 2008). Instruction that strengthens children's phonological awareness has been shown to contribute to later reading success (Ehri, Nunes, Willows, Schuster, Yaghouh-Zadeh, & Shanahan, 2001; National Early Literacy Panel 2008).

Objective 16. Demonstrates knowledge of the alphabet

Young children's alphabet knowledge, especially their ability to rapidly name letters and numerals in random order, is a strong predictor of later reading, writing, and spelling ability (Adams, 1990; National Early Literacy Panel, 2004, 2008; Stevenson & Newman, 1986). Children's knowledge of the alphabet is also closely related to their comprehension skills by the end of second grade (Cats, Fey, Zhang, & Tomblin, 2001).

Objective 17. Demonstrates knowledge of print and its uses

Young children's concepts about print are a good predictor of later reading, writing, and spelling ability (Clay, 1979a, 1979b; McCormick & Mason, 1986; National Early Literacy Panel, 2004, 2008; Wells, 1985). In addition, understanding that print is meaningful is one of the first steps children take in learning to read and write (Mason, 1980).

Objective 18. Comprehends and responds to books and other texts

Comprehension of oral language and simple texts is essential to future reading success; children learn to process what they hear and read (Teale & Yokota, 2000). Children who engage in frequent activities with books have larger vocabularies. These children learn to read better than children who have few book experiences (Dickinson & Tabors, 1991; Wells, 1986).

Objective 19. Demonstrates emergent writing skills

Writing letters or name writing is a predictor of later literacy (National Early Literacy Panel, 2008). By exploring writing, children learn about letters, sounds, and the meaning of text (Schickedanz & Casbergue, 2004). Understanding the mechanics of the writing system (letter naming and letter-sound correspondence) has a moderate correlation with reading in the primary grades (Stuart, 1995).

Mathematics

Research has made a clear link between early math skills and later school reading and math achievement. Children's mathematical knowledge at kindergarten entry is considered predictive of future mathematics success throughout their years in school. Evidence shows that high-quality early childhood education programs can make a difference in children's mathematical learning (Clements & Sarama, 2009). These mathematics objectives are:

Objective 20. Uses number concepts and operations

Children's understanding of counting, number symbols, and number operations are fundamental to their success with more complex mathematics (Ginsburg & Baroody, 2003; Zur & Gelman, 2004). Through both everyday experiences and planned learning experiences, children begin to construct understandings of number concepts and operations.

Objective 21. Explores and describes spatial relationships and shapes

Understanding spatial relationships and shapes helps children build the foundation for understanding geometry. Children who have a strong spatial sense do better in mathematics (Clements, 2004).

Objective 22. Compares and measures

Children's initial ideas about size, quantity, and seriation involve comparisons related to their play materials and books. They experiment with measurement by lining up and comparing objects. They begin to connect number to length as they use nonstandard measurement tools, e.g., links, blocks, rods (Clements & Sarama, 2009). In addition, children can benefit from exploring and using tools with uniform units (e.g., rulers and centimeter cubes) as their measurement ideas and skills are developing (Clements, 2003; Sarama & Clements, 2006).

Objective 23. Demonstrates knowledge of patterns

Children begin to identify patterns in their environment at an early age. Guiding children to understand patterns is a foundational skill in mathematics. Learning experiences that focus on patterns facilitate children's generalizations about number combinations, counting strategies, and problem solving (Copley, 2000).

Science and Technology

Young children are natural investigators. They are curious about how things work and what will happen next (Gronlund, 2006; Mantzicopolous, Patrick & Samarapungavan, 2008). During the early years, learning to engage in the process of scientific thinking, gaining understanding, and making connections are more important than learning scientific facts. Young children need many opportunities to explore science concepts firsthand over time so they can connect new understandings to related experiences. The science and technology objectives are:

Objective 24. Uses scientific inquiry skills

Children use a variety of inquiry skills as they connect what they know to new experiences. Inquiry skills include making focused observations, posing meaningful questions, determining what is already known by examining books and other resources, making predictions, selecting appropriate techniques and tools, conducting investigations, reflecting on experiences, and communicating their findings (Chalufour & Worth, 2004; National Committee on Science Education Standards & Assessment, National Research Council, 1996). Scientific inquiry can support the development of young children's explanatory language as well as their scientific knowledge (Lind, 2001; Peterson & French, 2008).

Objective 25. Demonstrates knowledge of the characteristics of living things

No matter what topic of the life sciences children study, they can learn the major concepts as they interact with living things. Through regular contact with nature, children expand their curiosity and observation skills, practice nurturing behaviors as they care for living things, and gain knowledge in other academic areas (Rosenow, 2008; Russo, 2008).

Objective 26. Demonstrates knowledge of the physical properties of objects and materials

By preschool, children have already begun building scientific knowledge about the physical properties of objects and materials (Gelman & Brenneman, 2004). As teachers talk with children about the properties of objects and materials, children develop vocabulary and important background knowledge; this background knowledge helps children observe their environment more closely (Eshach & Fried, 2005).

Objective 27. Demonstrates knowledge of Earth's environment

Young children show an emerging knowledge of the properties of the Earth (Nobes, Moore, Martin, Clifford, Butterworth, Panagiotaki, et al., 2003), but they know much more about their immediate surroundings. When children learn about the Earth's environment and explore the properties of the world around them, they notice changes and make predictions. They begin to understand their environment, learn important ideas, and develop respect for their natural surroundings.

Objective 28. Uses tools and other technology to perform tasks

Technology enables children to respond and represent their learning in individual ways (Northwest Educational Technology Consortium, Northwest Regional Educational Laboratory, 2002). Technology can increase participation for English-language learners and children with disabilities (Murphy, DePasquale, & McNamara, 2003).

Social Studies

When young children study social studies, they learn how to be researchers, critical thinkers, active members of a classroom community, and experts on topics related to everyday life. The social studies objectives are:

Objective 29. Demonstrates knowledge about self

During the preschool years children begin to develop their racial identities and notice differences in social class (Feeney & Moravcik, 2005; Ramsey, 2003). They also begin to develop self-perceptions of their abilities. Negative self-perceptions have been linked to non-social behaviors (Nelson, Hart, Evans, Coplan, Roper, & Robinson, in press). Personal storytelling involving family members serves as a rich source of self-knowledge and helps to instill a child's cultural values (Burger & Miller, 1999; Miller, Fung, & Mintz, 1996).

Objective 30. Shows basic understanding of people and how they live

Young children are eager to learn about other people and how they live. Reading appropriate books to children can be an effective way to help them develop positive attitudes about others and to better understand how people live throughout the world (Feeney & Moravcik, 2005).

Objective 31. Explores change related to familiar people or places

To gain a sense of history, children must first understand that people and places change over time. Change is a difficult concept for young children to understand because they focus on the here and now (Seefeldt, 1997). However, they enjoy thinking about what they can do now that they could not do when they were babies. They can learn about time and change related to their daily schedule, what they did yesterday, and what they will do tomorrow.

Objective 32. Demonstrates simple geographic knowledge

The study of geography for young children needs to be relevant to their experiences; they can learn about the characteristics of the places where they live and the relationship between that place and other places. Children's experiences with mapmaking help them to develop the concepts of representation, symbolization, perspective, and scale (Lenhoff & Huber, 2000).

The Arts

The early childhood years are very important in helping children to realize their creative potential (Kemple & Nissenberg, 2000). Children's involvement in the arts also helps support other areas of learning and development (Epstein, 2007). As children draw, paint, construct, mode, weave, dramatize, sing, dance, and move, they make new discoveries and integrate what they are learning. The arts objectives are:

Objective 33. Explores the visual arts

Children benefit from working with many different kinds of materials and having conversations about their artwork and the work of others (Bae, 2004; Colbert, 1997; Johnson, 2008). The more they are able to experiment with various media and to discuss different ways to use materials, the more children are able to express their ideas through the visual arts.

Objective 34. Explores musical concepts and expression

Music can affect children's literacy development and academic performance (Shore & Strasser, 2006; Wiggins, 2007). Musical activities that relate to story reading can focus children's attention and enhance their social interactions (deVries, 2008).

Objective 35. Explores dance and movement concepts

One of the first ways children express themselves is through movement. Each new movement gives children more information about the capabilities of their bodies (Lutz & Kuhlman, 2000).

Objective 36. Explores drama through actions and language

Drama is an important part of learning for young children; it positively affects their language development and literacy, self-awareness, social–emotional reasoning, and problem solving (Brown, 1990; Pinciotti, 1993; Wright, Bacigalupa, Black & Burton, 2008). Experiences and cultural traditions influence what stories children tell and how they tell stories (Curenton & Ryan, 2006; Wright, et al., 2008).

English Language Acquisition

Language learning is a basic feature of the early development of all children. The language-learning process for bilingual children, or simultaneous language learners, closely resembles the process for monolingual children. Because simultaneous language learners' need to know twice as many words, their vocabulary development may be less extensive in each language in comparison to monolingual children (Oller & Eilers, 2002). Children learning English as a second language, or sequential language learners, follow a different learning sequence. They may first use their home language and they may enter a nonverbal period (Tabors, 2008). This process is cumulative and uneven. The English language acquisition objectives are:

Objective 37. Demonstrates progress in listening to and understanding English

Children begin to hear the sounds of the new language and begin the process of connecting those sounds to the objects and activities around them at different rates (Itoh & Hatch, 1978; Saville-Troike, 1988; Fillmore, 1979). As they acquire English phonology, children may also play with the sounds of the language by inventing new words that sound English-like (Saville-Troike, 1988).

Objective 38. Demonstrates progress in speaking English

A distinct feature of young children's second language acquisition is their memorization and use of social interactive terms (Fillmore, 1979) to help them enter play situations and to have their needs met. Once children have acquired a number of words and socially useful phrases, they can begin to construct original sentences in English (Tabors, 2008).

References

- Adams, M. J. (1990). *Beginning to read: Thinking and learning about print*. Urbana: University of Illinois Center for the Study of Reading.
- Bae, J. (2004). Learning to teach visual arts in an early childhood classroom: The teacher's role as a guide. *Early Childhood Education Journal*, 31(1), 247–254.
- Barry, E. S. (2006). Children's memory: A primer for understanding behavior. *Early Childhood Education Journal* 33, 405–411.
- Beals, D.E. (2001). Eating and reading: Links between family and conversations with preschoolers and language and literacy. In D.K Dickenson & P.O. Tabors (Eds.), *Beginning literacy with language: Young children learning at home and school* (pp. 75–92). Baltimore: Paul H. Brookes.
- Bergen, D. (2002). The role of pretend play in children's cognitive development. *Early Childhood Research and Practice*, 4(1). Retrieved May 27, 2007, from <http://www.ecrp.uiuc.edu/v4n1/bergen.html>.
- Berk, L. E. (2002). *Infants, children, & adolescents* (4th ed.). Boston: Allyn & Bacon.
- Berk, L.E. (2006). Looking for kindergarten. In D.F. Gullo (Ed.). *K Today: Teaching and Learning in the Kindergarten Year* (pp. 11–25). Washington, DC: National Association for the Education of Young Children.
- Birch, S., & Ladd, G. (1997). The teacher-child relationship and children's early school adjustment. *Journal of School Psychology*, 35, 61–69.
- Bjorklund, D.F. (2005). *Children's thinking: Cognitive development and individual differences*. Belmont, CA: Wadsworth Thomson Learning.
- Blair, C., & Razza, R. P. (2007). Relating effortful control, executive function, and false belief understanding to emerging math and literacy ability in kindergarten. *Child Development*, 78, 647–663.
- Bodrova, E., & Leong, D. J. (2004). Chopsticks and counting chips: Do play and foundational skills need to compete for the teacher's attention in an early childhood classroom? In D. Koralek (Ed.), *Spotlight on young children and play* (pp. 4–11). Washington, DC: National Association for the Education of Young Children.
- Breslin, C. M., Morton, J. R., & Rudisill, M. E. (2008). Implementing a physical activity curriculum into the school day: Helping early childhood teachers meet the challenge. *Early Childhood Education Journal*, 35, 429–437.
- Bronson, M. B. (2000). *Self-regulation in early childhood*. New York: Guilford Press.
-

-
- Bronson, M. B. (2006). Developing social and emotional competence. In D. F. Gullo, *K today: Teaching and learning in the kindergarten year* (pp. 47–56). Washington, DC: National Association for the Education of Young Children.
- Brown, V. (1990). Drama as an integral part of the early childhood curriculum. *Design for Arts Education*, 91(6), 26–33.
- Burger, L. K., & Miller, P. J. (1999). Early talk about the past revisited: Affect in working-class and middle-class children's co-narrations. *Journal of Child Language*, 26(1), 133–162.
- Cats, H. W., Fey, M. E., Zhang, X., & Tomblin, J. B. (2001). Estimating the risk of future reading difficulties in kindergarten children: A research-based model and clinical implications. *Language, Speech, and Hearing Services in School*, 32, 38–50.
- Chalufour, I., & Worth, K. (2004). *Building structures with young children: The Young Scientist Series*. St. Paul, MN: Redleaf Press.
- Charlesworth, R. (2008). *Understanding child development* (7th ed.). New York: Thomson Delmar Learning.
- Clay, M. M. (1979a). *The early detection of reading difficulties* (2nd ed.). Auckland, New Zealand: Heinemann.
- Clay, M. M. (1979b). *Reading recovery: A guidebook for teachers in training*. Auckland, New Zealand: Heinemann.
- Clements, D. H. (2003, September). *Good beginnings in mathematics: Linking a national vision to state action*. New York: Carnegie Corporation.
- Clements, D. H. (2004). Geometric and spatial thinking in early childhood education. In D. H. Clements, D. H., Sarama, J., & Dibiase, A. (Eds.). (2004). *Engaging young children in mathematics* (pp. 267–298). Mahwah, NJ: Lawrence Erlbaum Associates.
- Clements, D.H., & Sarama, J. (2009). *Learning and teaching early math: The learning trajectories approach*. New York: Routledge.
- Colbert, C. (1997). Visual arts in the developmentally appropriate integrated curriculum. In C. H. Hart, D. C. Burts, & R. Charlesworth (Eds.), *Integrated curriculum and developmentally appropriate practice: Birth to age eight* (pp. 201–223). Albany, NY: SUNY Press.
- Copley, J.V., (2000). *The Young Child and Mathematics*. Washington, DC: National Association for the Education of Young Children.
- Copple, C., & Bredekamp, S. (Eds.). (2009). *Developmentally appropriate practice in early childhood programs serving children from birth through age 8* (3rd ed.). Washington, DC: National Association for the Education of Young Children.
-

- Currenton, S. M., & Ryan, S. K. (2006). Research in review: Oral storytelling: A cultural art that promotes school readiness. *Young Children, 61*(5), 78–89.
- Deater-Deckard, K., Petrill, S. A., Thompson, L.A., & DeThorne, L.S. (2005). A cross-sectional behavioral genetic analysis of task persistence in the transition to middle childhood. *Developmental Science, 8*(3), F21–F26.
- DeLoache, J. S. (1991). Symbolic functioning in very young children. Understanding of pictures and models. *Child Development, 62*, 736–752.
- DeLoache, J. S. (2004). Becoming symbol-minded. *Trends in Cognitive Sciences, 8*(2), 66–70.
- Denham, S. A., Blair, K., Schmidt, M., & DeMulder, E. (2002). Compromised emotional competence: Seeds of violence sown early? *American Journal of Orthopsychiatry, 72*(1), 70–82.
- deVries, P. A. (2008). Parental perceptions of music in storytelling sessions in a public library. *Early Childhood Education Journal, 35*(5), 473–478.
- Dickinson, D. K., & Tabors, P. O. (1991). Early literacy: Linkages between home, school, and literacy achievement at age five. *Journal of Research in Childhood Education, 6*, 30–46.
- Dickinson, D.K., & Tabors, P.O. (Eds.). (2001). *Building literacy with language: Young children learning at home and school*. Baltimore: Paul H. Brookes.
- Duncan, G. J., Dowsett, C.J., Claessens, A., Magnuson, K., Huston, A.C., Klebanov, P., et al. (2007). School readiness and later achievement. *Developmental Psychology, 43*, 1428–1446.
- Ehri, L. C., Nunes, S. R., Willows, D. M., Schuster, B. V., Yaghoub-Zadeh, Z., & Shanahan, T. (2001). Phonemic awareness instruction helps children learn to read: Evidence from the national reading panel’s meta-analysis. *Reading Research Quarterly, 36*, 250–297.
- Epstein, A. S. (2007). *The intentional teacher: Choosing the best strategies for young children’s learning*. Washington, DC: National Association for the Education of Young Children.
- Eshach, H., & Fried, N. N. (2005). Should science be taught in early childhood? *Journal of Science Education and Technology, 14*(3), 315–336.
- Fantuzzo, J., & McWayne, C. (2002). The relationship between per-play interaction in the family context and dimensions of school readiness for low-income preschool children. *Journal of Educational Psychology, 28*, 961–974.
- Fantuzzo, J., Perry, M.A., & McDermott, P. (2004). Preschool approaches to learning and their relationship to other relevant classroom competencies for low-income children. *School Psychology Quarterly, 19*(3), 212–230.
- Feeney, S., & Moravcik, E. (2005). Children’s literature: A window to understanding self and others. *Young Children 60*(5), 20–28.

- Fillmore, L. W. (1979). Individual differences in second language acquisition. In C. J. Fillmore, D. Kempler, & W. S-Y. Wang (Eds.), *Individual differences in language ability and language behavior* (pp. 203–228). New York: Academic Press.
- Gabbard, C. (1998). Windows of opportunity for early brain and motor development. *Journal of Physical Education, Recreation & Dance*, 69(8), 54–56.
- Gelman, R., & Brenneman, K. (2004). Science learning pathways for young children. *Early Childhood Research Quarterly*, 19(1), 150–158.
- Gelman, S. A., & Coley, J. D. (1990). The importance of knowing a dodo is a bird: Categories and inferences in 2-year-old children. *Developmental Psychology*, 26, 796–804.
- George, J., & Greenfield, D.B. (2005). Examination of a structured problem-solving flexibility task for assessing approaches to learning on young children: Relation to teacher ratings and children's achievement. *Applied Developmental Psychology*, 26(1), 69–84.
- Ginsburg, H. P., & Baroody, A. J. (2003). *Test of early mathematics ability: Examiner's manual* (3rd ed.). Austin, TX: Pro-Ed.
- Gronlund, G. (2006). *Make early learning standards come alive: Connecting your practice and curriculum to state guidelines*. St. Paul, MN: Redleaf Press.
- Hart, T., & Risley, B. (1995). *Meaningful differences in the everyday experience of young children*. Baltimore: Paul H. Brookes.
- Hair, E., Halle, T., Terry-Humen, E., Lavelle, B., & Calkins, J. (2006). Children's school readiness in the ECLS-K: Predictions to academic, health, and social outcomes in first grade. *Early Childhood Research Quarterly*, 21, 431–454.
- Hamre, B. K., & Pianta, R. C. (2001). Early teacher-child relationships and the trajectory of children's school outcomes through eighth grade. *Child Development*, 72, 625–638.
- Hart, B., & Risley, T.R., (2003). The early catastrophe. *Education Review*, 17(1), 110–118.
- Heath, S.M., & Hogben, J.H. (2004). Cost-effective prediction of reading difficulties. *Journal of Speech, Language, and Hearing Research*, 47, 751–765.
- Hirsch-Pasek, K., Golinkoff, R.M., & Naigles, L. (1996). *The origins of grammar: Evidence from early language comprehension*. Cambridge, MA: MIT Press.
- Howes, C. (2000). Social-emotional classroom climate in child care: Child-teacher relationships and children's second grade peer relations. *Social Development*, 9(2), 191–204.
- Howes, C., Burchinal, M., Pianta, R., Bryant, D., Early, D., Clifford, R., et al. (2008). Ready to learn? Children's pre-academic achievements in pre-kindergarten programs. *Early Childhood Research Quarterly*, 23, 27–50.

- Howse, R. B., Lange, G., Farran, D. C., & Boyles, C. D. (2003). Motivation and self-regulation as predictors of achievement in economically disadvantaged young children. *The Journal of Experimental Education, 71*, 151–174.
- Hyson, M. (2005). Enthusiastic and engaged: Strengthening young children's positive approaches to learning. *Young Children, 60*(6), 68–70.
- Hyson, M. (2008). *Enthusiastic and engaged learners: Approaches to learning in the early childhood classroom*. New York: Teachers College Press.
- Hyson, M., Buch, L., Fantuzzo, J., & Scott-Little, C. (2006). *Enthusiastic and engaged: Why are positive approaches to learning so important, and how can we support their development in young children?* Paper presented at the Annual Conference of the National Association for the Education of Young Children, Atlanta, GA.
- Itoh, H., & Hatch, E. M. (1978). Second language acquisition: A case study. In E.M. Hatch (Ed.), *Second language acquisition: A book of readings* (pp. 76–88). Rowley, MA: Newbury House Publishers.
- Jalongo, M.R. (2008). *Learning to listen, listening to learn: Building essential skills in young children*. Washington, DC: National Association for the Education of Young Children.
- Johnson, M. H. (2008). Developing verbal and visual literacy through experiences in the visual arts. *Young Children, 63*(1), 74–79.
- Kalmar, K. (2008). Let's give children something to talk about! Oral language and preschool literacy. *Young Children, 63*(1), 88–92.
- Kemple, K. M., & Nissenberg, S. A. (2000). Nurturing creativity in early childhood education: Families are part of it. *Early Childhood Education Journal, 28*(1), 67–71.
- Kim, S. D. G. (2005). Kevin: "I gotta get to the market": The development of peer relationships in inclusive early childhood settings. *Early Childhood Education Journal, 33*(3), 163–169.
- Klein, T. P., Wirth, D., & Linas, K. (2004). Play: Children's context for development. In D. Koralek (Ed.), *Spotlight on young children and play* (pp. 28–34). Washington, DC: National Association for the Education of Young Children.
- Krafft, K. C., & Berk, L. E. (1998). Private speech in two preschools: Significance of open-ended activities and make-believe play for verbal self-regulation. *Early Childhood Research Quarterly, 13*, 637–658.
- Ladd, G.W., Birch, S.H., & Buhs, E.S. (1999). Children's social and scholastic lives in kindergarten: Related spheres of influence? *Child Development, 70*, 1373–1400.
- Larkina, M., Guler, O. E., Kleinknect, E., & Bauer, P. J. (2008). Maternal provision of structure in a deliberate memory task in relation to their preschool children's recall. *Journal of Experimental Child Psychology, 100*, 235–251.

-
- Lenhoff, R., & Huber, L. (2000). Young children make maps. *Young Children*, 55(3), 6–11.
- Lutz, T. & Kuhlman, W. D. (2000). Learning about culture through dance in kindergarten classrooms. *Early Childhood Education Journal* 28(1), 35–40.
- Lind, K. K. (2001). *Science in early childhood: Developing and acquiring fundamental concepts and skills*. Presentation handout retrieved October 21, 2008 from www.hsnrc.org/CDI/pdfs/klind1.pdf
- Mantzicopoulos, P., Patrick, H., & Samarapungavan, A. (2008). Young children's motivational beliefs about learning science. *Early Childhood Research Quarterly*, 23(3), 378–394.
- Mason, J. (1980). When do children begin to read? An exploration of four-year-old children's letter and word reading competencies. *Reading Research Quarterly*, 15, 203–227.
- McAfee, O., & Leong, D. (1994). *Assessing and guiding young children's development and learning*. Boston: Allyn & Bacon.
- McClelland, M.M., Morrison, F. J., & Holmes, D. L. (2000). Children at risk for early academic problems: The role of learning-related social skills. *Early Childhood Research Quarterly*, 15(3), 307–329.
- McCormick, C. E., & Mason, J. M. (1986). Intervention procedures for increasing preschool children's interest in and knowledge about reading. In W. H. Teale & E. Sulzby (Eds.), *Emergent literacy: Writing and reading* (pp. 90–115). Norwood, NJ: Ablex.
- Miller, P. J., Fung, H., & Mintz, J. (1996). Self-construction through narrative practices: A Chinese and American comparison of early socialization. *Ethos*, 24(2), 237–280.
- Murphy, K. L., DePasquale, R., & McNamara, E. (2003). Meaningful connections: Using technology in primary classrooms. *Young Children*, 58(6), 12–18.
- Mussen, P. H., Conger, J. J., Kagan, J., & Huston, A. C. (1990). *Child development and personality* (7th ed.). New York: Harper and Row.
- National Committee on Science Education Standards and Assessment, National Research Council (1996). *National Science Education Standards*. Retrieved October 20, 2008, from http://books.nap.edu/openbook.php?record_id=4962&page=105
- National Early Literacy Panel. (2004). *A synthesis of research on language and literacy*. Retrieved June 2004, from <http://www.familit.org/ProgramsandInitiatives/FamilyPartnershipsInReading/index.cfm>
- National Literacy Panel. (2008). *Developing early literacy: Report of the National Early Literacy Panel*. Retrieved January 2009, from <http://www.nifl.gov/nifl/publication/pdf/NELPReport09.pdf>
- Newman, L. S. (1990). International and unintentional memory in young children: Remembering vs. playing. *Journal of Experimental Child Psychology*, 50, 243–258.
-

-
- Neuman, S., Copple, C., & Bredekamp, S. (2000). *Learning to read and write: Developmentally appropriate practices for young children*. Washington, DC: National Association for the Education of Young Children.
- Nobes, G., Moore, D. G., Martin, A. E., Clifford, B. R., Butterworth, G., Panagiotaki, G., et al., (2003). Children's understanding of the earth in a multicultural community: Mental models or fragments of knowledge? *Developmental Science*, 6(1), 72–85.
- Northwest Educational Technology Consortium, Northwest Region Educational Laboratory. (2002). *5 effective ways for young children to use technology*. Portland, OR: Author.
- Nourot, P. M., & Van Hoorn, J. L. (1991). Research in review: Symbolic play in preschool and primary settings. *Young Children*, 46(6), 40–50.
- Oller, D. K., & Eilers, R. E. (Eds.) 2002. *Language and literacy in bilingual children*. Bristol, UK: Multilingual Matters.
- Palermo, F., Hanish, L. D., Martin, C. L., Fabes, R. A., & Reiser, M. (2007). Preschoolers' academic readiness: What role does the teacher-child relationship play? *Early Childhood Research Quarterly*, 22, 407–422.
- Peterson, S. M., & French, L. (2008). Supporting young children's explanations through inquiry science in preschool. *Early Childhood Research Quarterly*, 23(3), 395–408.
- Pianta, R. C., & Stuhlman, M. W. (2004). Teacher-child relationships and children's success in the first years of school. *School Psychology Review*, 33, 444–458.
- Pica, R. (2006). Physical fitness and the early childhood curriculum. *Young Children*, 61(3), 12–19.
- Pinciotti, P. (1993). Creative drama and young children: The dramatic learning connection. *Arts Education Policy Review*, 94(6), 24–28.
- Ramsey, P. G. (2003). Growing up with the contradictions of race and class. In C. Copple (Ed.), *A world of difference: Reading on teaching young children in a diverse society* (pp. 24–28). Washington, DC: National Association for the Education of Young Children.
- Riley, D., San Juan, R. R., Klinkner, J., & Ramminger, A. (2008). *Social & emotional development: Connecting science and practice in early childhood settings*. St. Paul, MN: Redleaf Press; Washington, DC: National Association for the Education of Young Children.
- Rimm-Kaufman, S., Pianta, R.C., & Cox, M. (2000). Teacher's Judgments of Problems in the Transition to School. *Early Childhood Research Quarterly*, 15(2), 147–166.
- Robert, D.L. (1999). *The effects of a preschool movement program on motor skill acquisition, movement concept formation, and movement practice behavior*. (Doctoral dissertation, West Virginia University). Retrieved August 10, 2008. From http://eidr.wvu.edu/files/1193/Robert_D_Diss.pdf
-

-
- Rosenow, N. (2008). Learning to love the Earth ...and each other. *Young Children*, 63(1), 10–13.
- Roskos, K., Tabors, P., & Lenhart, L. (2004). *Oral language and early literacy in preschool*. Newark, DE: International Reading Association.
- Rule, A.C., & Stewart, R.A. (2002). Effects of practical life materials on kindergartners' fine motor skills. *Early Childhood Education Journal*, 30(1), 9–13.
- Russo, M. with Colurciello, S. G. & Kelly, R.). (2008). For the birds! Seeing, being, and creating the bird world. *Young Children*, 63(1), 26–30.
- Sanders, S. W. (2002). *Active for life: Developmentally appropriate movement programs for young children*. Washington, DC: National Association for the Education of Young Children.
- Sarama, J., & Clements, D. H. (2006). Mathematics in kindergarten. In D. F. Gullo (Ed.), *K Today: Teaching and learning in the kindergarten year* (pp. 85–94). Washington, DC: National Association for the Education of Young Children.
- Saville-Troike, M. (1988). Private speech: Evidence for second language learning strategies during the “silent” period. *Journal of Child Language*, 15, 567–590.
- Schickedanz, J. A., & Casbergue, R. M. (2004). *Writing in preschool: Learning to orchestrate meaning and marks*. Newark, DE: International Reading Association.
- Seefeldt, C. (1997). Social studies in the developmentally appropriate integrated curriculum. In C. H. Hart, D. C. Burts, & R. Charlesworth (Eds.), *Integrated curriculum and developmentally appropriate practice: Birth to age eight* (pp. 171–199). Albany, NY: SUNY Press.
- Shonkoff, J.P., & Phillips, D.A. (Eds.). (2000). *From neurons to neighborhoods: The science of early childhood development*. Washington, DC: National Academy Press.
- Shore, R. & Strasser, J. (2006). Music for their minds. *Young Children*, 61(2), 62–67.
- Similansky, S., & Shefatya, L. (1990). *Facilitating play: A medium for promoting cognitive, socio-emotional, and academic development in young children*. Gaithersburg, MD: Psychological and Educational Publications.
- Smith, P.K., & Hart, C.H. (2002). *Blackwell Handbook of Childhood Social Development*. Oxford: Blackwell Publishers.
- Son, S. H., & Meisels, S. J. (2006). The relationship of young children's motor skills to later school achievement. *Merrill-Palmer Quarterly*, 52, 755–778.
- Steglin, D. A. (2005). Making the case for play policy: Research-based reasons to support play-based environments. *Young Children*, 60(2), 76–85.
- Stevenson, H. W., & Newman, R. S. (1986). Long-term prediction of achievement and attitudes in mathematics and reading. *Child Development* 57, 646–659.
-

- Stewart, R. A., Rule, A. C., & Giordano, D. A. (2007). The effect of fine motor skill activities on kindergarten student attention. *Early Childhood Education Journal*, 35, 103–109.
- Strickland, D.S. (2006). Language and literacy in kindergarten. In D.F. Gullo (Ed.). *K today: Teaching and learning in the kindergarten year*. Washington, DC: National Association for the Education of Young Children.
- Strickland, D.S., & Shanahan, T. (2004). Laying the groundwork for literacy. *Educational Leadership*, 61(6), 74–77.
- Stuart, M. (1995). Prediction and qualitative assessment of five- and six-year old children's reading: A longitudinal study. *British Journal of Educational Psychology*, 65, 287–296.
- Tabors, P. O. (2008). *One child, tow languages: A guide for early childhood educators of children learning English as a second language* (2nd Ed.). Baltimore: Paul H. Brookes Publishing.
- Teale, W., & Yokota, J. (2000). Beginning reading and writing: Perspectives on instruction. In D. S. Strickland & L. M. Morrow (Eds.). *Beginning reading and writing: Language and literacy series* (pp. 3–21). Newark, DE: International Reading Association.
- Ulrich, B. D., & Ulrich, D. (1985). The role of balancing ability in performance of fundamental motor skills in 3-, 4-, 5-year-old children. In J.E. Clark & J. H. Humphrey (Eds.), *Motor development: Current selected research* (Vol 1), pp. 87–97. Princeton: Princeton Book Company.
- Wells, G. (1985). Preschool literacy-related activities and success in school. In D.R. Olance, N. Torrance & A. Hildyard (Eds.), *Literacy, language, and learning* (pp. 229–255). Cambridge, University Press.
- Wells, G. (1986). *The meaning makers: Children learning language and using language to learn*. Portsmouth, NH: Heinemann.
- Wiggins, D. G. (2007). Pre-K music and the emergent reader: Promoting literacy in a music-enhanced environment. *Early Childhood Education Journal*, 35(1), 55–64.
- Wright, C., Bacigalupa, C., Black, T., & Burton, M. (2008). Windows into children's thinking: A guide to storytelling and dramatization. *Early Childhood Education Journal*, 35(4), 363–369.
- Younger, B. A., & Johnson, K. E. (2004). Infants' comprehension of toy replicas as symbols for real objects. *Cognitive Psychology*, 18, 207–242.
- Zur, O., & Gelman, R. (2004). Young children can add and subtract by predicting and checking. *Early Childhood Research Quarterly*, 19, 121–137.

