Technical Summary

LEVEL OF EVIDENCE
Gold Standard

TeachingStrategies®

Criteria Report

Birth *Through* Third Grade

GOLD® Criteria Report
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Introduction

Effective assessment is part of the infrastructure that supports the development and learning for all children, including special populations (Banerjee & Luckner, 2013; Copple & Bredekamp, 2009; Snow & Van Hemel,. 2008). Recent research and demographic, societal, and technological changes have altered our views about assessment including who, how, and what to assess (Castro, 2014; Hirsh-Pasek, Kochanoff, Newcombe, & deVilliers, 2005; Rodríguez & Guiberson, 2011; Snow & Van Hemel, 2008).

Early education professionals have long recognized the importance of taking a "whole child" perspective to assessment. Each developmental and learning area influences and is influenced by other areas (Copple & Bredekamp, 2009). Assessment that includes the major domains presents a more complete picture of children's abilities than does narrowly-focused assessment. When assessment includes a progression of development and learning, it helps teachers support child success in each area as they proceed toward greater complexity (NAEYC & NAECS/SDE, 2003; Snow & Van Hemel, 2008).

Instrument quality and the purpose(s) and goal(s) for assessment should guide the assessment process (Snow & Van Hemel, 2008). Good assessment instruments are fair; developmentally, culturally and linguistically appropriate; research-based; and educationally and psychometrically sound (AERA, APA, & NCME, 1999; Hirsh-Pasek, Kochanoff, Newcombe, & deVilliers, 2005; NAEYC & NAECS/SDE, 2003, 2005; Snow & Van Hemel, 2008). Divergent beliefs among administrators, practitioners, and families can make it challenging to select appropriate tools that satisfy all stakeholders while best meeting programmatic, child, and family needs (Banerjee & Luckner, 2013).

GOLD® by Teaching Strategies® Objectives for Development and Learning: Birth Through Third Grade (2016) expands *GOLD®* (2010) to include seamless assessment throughout the entire early childhood period. Because no assessment tool is comprehensive enough to include everything important to child development and learning, choices must be made as to which items will best serve the intended purpose(s) and audience(s). *GOLD®* (2016) development was informed by national trends; professional association recommendations; state and national standards; and relevant professional literature and current and classical research. An extensive, systematic literature review was conducted. Electronic searches, topical texts, individual research studies, and research summaries were used. Particular attention was paid to the knowledge, skills, and behaviors predictive of school success. The document was reviewed by local, state, and national development and content area experts; measurement specialists; and early education supervisors, administrators, and practitioners across the country. Pilot studies and field tests were conducted. Changes to the assessment tool were made based on study results and the feedback received throughout its development.

The *GOLD® Criteria Report -Birth Through Third Grade* (2016) was written to assist consumers in the assessment process. The report includes an overview and rational for inclusion of the development and learning areas: Social-Emotional, Physical, Language, Cognitive, Literacy, and Mathematics. Research-based support for each indicator (widely-held expectations) and the associated ages/grade-levels (color bands) is presented for each assessment item.

The scientifically-informed information available in this document can help stakeholders make informed decisions about what best meets their assessment needs and communicate this information to others. It can support consumers' knowledge and understanding of the progressions of development and learning of children birth through third grade. Teachers may find the information useful as they collect and analyze documentation evidences and as they discuss assessment results with families and other professionals.

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Contents

Areas of Development & Learning

Social-Emotional

SOCIAL–EMOTIONAL OBJECTIVES

1 Regulates own emotions and behaviors

2 Establishes and sustains positive relationships

3 Participates cooperatively and constructively in group situations

Young children's social–emotional development involves learning how to understand their own and others' feelings, regulate and express their emotions appropriately, build relationships with others, and interact in groups (Rubin, Bukowski, & Parker, 1998). Social–emotional development flourishes when children have close, supportive, and trusting relationships with adults (Howes & James, 2002). When adults are responsive, when they express pleasure about children's accomplishments and discoveries, and when they create an environment in which children can participate actively in daily routines and experiences, children know that adults consider them to be important, interesting, and competent.

Children's interactions with others are crucial to their learning. Problematic childhood relationships with adults and peers have been linked to negative outcomes such as emotional and mental health problems, lower school achievement, higher dropout rates, peer rejection, and delinquency. When their interactions are positive, young children are more likely to have positive short- and long-term outcomes (Rubin et al., 1998; Smith & Hart, 2002). The strong connection between early relationships and later behavior and learning makes it especially important for teachers to assess children's social–emotional development accurately and to support their growth and competence in this area.

Objective 1. Regulates own emotions and behaviors

a. Manages feelings

Children in the *red* (birth–1 year) and *orange* (1–2 years) bands *use adult support to calm self*. Infants rely on responsive adults to help them regain their equilibrium when they become upset. Young infants try to avoid distressing situations by turning away or mouthing and sucking (Berk, 2009; Woltering & Lewis, 2011), and they can be comforted by a soothing touch, soft voice, or gentle rocking (Berk, 2009; Florez, 2011). They watch trusted adults (Shelov & Hannemann, 2004), and they may become quiet when they see or hear them approach (Bronson, 1995). Toddlers are able to take verbal and physical cues from adults to help them manage their feelings (Florez, 2011) and to co-regulate (Bilmes & Welker, 2006).

Children in the *orange* (1–2 years), *yellow* (2–3 years), and *green* (preschool 3 class) bands *comfort self by seeking out special object or person*. Older toddlers and young preschoolers begin to show the ability to regulate some of their own emotions and behaviors (Grusec, Hastings, & Almas, 2011), but they frequently rely on external support (Denham, von Salisch, Olthof, Kochanoff, & Caverly, 2002). They may use a favorite toy or blanket (Allen & Marotz, 2007) or cues provided by trusted adults (Florez, 2011). As children's language and cognitive abilities increase, they become better able to communicate their distress to an adult when they seek their assistance (Berk, 2009).

Children in the *green* (preschool 3 class), *blue* (preK 4 class), and *purple* (kindergarten) bands *are able to look at a situation differently or delay gratification.* Preschoolers and kindergartners begin to use various emotional self-regulation strategies (Berk, 2009). They may use "self-talk" to guide their feelings and actions (Riley, San Juan, Klinkner, & Ramminger, 2008). At about 3 1/2 children begin to develop the ability to delay gratification (Riley et al., 2008). One of the strategies they may use is to think about something else rather than their immediate wants or needs (Berk, 2009; Riley et al., 2008). They also begin to learn how to use "cognitive reframing," whereby they view a situation more positively (Riley et al., 2008) such that circumstances become less emotionally charged or frustrating. Adults play a key role in helping young children develop strategies by modeling appropriate behavior, providing language, playing games that require self-control, and establishing appropriate routines and schedules (Bilmes, 2004; Copple & Bredekamp, 2006).

Students in the *purple* (kindergarten) and *pink* (first grade) bands *control strong emotions in an appropriate manner most of the time*. Although older preschool and kindergarten children continue to need adult guidance, they are gaining in their ability to manage emotions on their own (Allen & Marotz, 2007; Copple & Bredekamp, 2006), and emotional displays tend to become stable across time and across some situations (Denham, von Salisch, Olthof, Kochanoff, & Caverly, 2002). They usually can restrain their emotions when necessary and often use language to assist them in controlling their emotions and that of others (Copple & Bredekamp, 2006; McAfee & Leong, 2007). Kindergartners "are expected to regulate their emotions and behavior appropriately under most circumstances"... and "to be able to delay, defer, and accept substitution for their preferred goals without becoming aggressive or overly frustrated" (Tomlinson, 2009, p. 192). As students enter first grade, their appropriate management of their emotions and behaviors becomes even more important as they learn in collaboration with peers and adults. If they cannot handle negative emotions, they may find focusing on learning tasks more challenging (Denham & Brown, 2010). As they interact with peers, teachers, parents, and other adults, children learn how to express negative emotions in ways that are likely to elicit desirable responses from others (Berk, 2009).

Students in the *silver* (second grade) and *brown* (third grade) bands *manage strong emotions by using known strategies*. Grade school-aged students are cognizant of numerous strategies they can enact to regulate their emotions. These strategies are similar to the ones they utilized in preschool, but are now more advanced and include "problem-solving, support-seeking, distancing, internalizing, reframing/redefining, and denial" (Denham, 2007, p. 9).

Students in the *brown* (third grade) band *demonstrate patience with personal limitations; control feelings based on how they will affect others.* Perspective taking increases greatly between the ages of 8 and 10 (Bengtsson & Arvidsson, 2011). Children's increasing self-awareness and their social awareness of the perspectives and feelings of others aids them in their ability to regulate emotional responses (Allen & Marotz, 2007; Denham & Brown, 2010). They are better able to recover from emotional arousal and to better control strong positive and negative emotions than they could at younger ages (Bengtsson & Arvidsson, 2011).

Objective 1. Regulates own emotions and behaviors
a. Manages feelings

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Objective 1. Regulates own emotions and behaviors

b. Follows limits and expectations

Children in the *red* (birth–1 year) and *orange* (1–2 years) bands *respond to changes in an adult's tone of voice and expression.* Infants and young toddlers can distinguish the emotional meaning behind the facial (Bilmes & Welker, 2006) and vocal expressions of many adults (Saarni, Mumme, & Campos, 1998). In the first 4 months, infants may turn toward or away from a person depending upon voice familiarity, tenor, and volume fluctuation (Allen & Marotz, 2007). Between the ages of 1 and 2, children look at adults' facial expressions to get cues as to how they should proceed with their actions (PBS, n.d.).

Children in the *orange* (1–2 years), *yellow* (2–3 years), and *green* (preschool 3 class) bands *accept redirection from adults*. Toddlers and young preschool children are learning to assert their independence, and sometimes they test limits (Bilmes & Welker, 2006). They may initially refuse to cooperate during daily routines but then comply (Allen & Marotz, 2007). They usually follow simple rules or instructions that are consistent and clearly stated (Zero to Three, 2009). Two-year-olds show a beginning awareness of rules and expected behavior (Grusec, Hastings, & Almas, 2011), while 3-year-old children are more cooperative and have fewer and less intense conflicts with adults than twos (Allen & Marotz, 2007).

Children in the *green* (preschool 3 class), *blue* (preK 4 class), and *purple* (kindergarten) bands *manage classroom rules, routines, and transitions with occasional reminders*. Preschool and kindergarten children understand routines, simple rules (Epstein, 2009), and expected classroom behaviors (McAfee & Leong, 2007). Children as young as 3 years of age exhibit "learning-related social skills," such as following directions, participating appropriately in groups, and organizing work materials (McClelland & Morrison, 2003). They understand the concepts of sharing and of taking turns (Allen & Marotz, 2007) but may need adult guidance to follow through. Older preschool children have a better understanding of the reasons for limits than younger children and will abide by them most of the time (Allen & Marotz, 2007). Kindergartners generally are cooperative and comply with adult requests. They know how to share, take turns, and participate in routines with only occasional lapses in expected behaviors (Allen & Marotz, 2007).

Students in the *purple* (kindergarten) band *apply basic rules in new but similar situations*. Adults' use of inductive discipline or providing rationales for rules helps children understand the consequences of their actions and provides them with behavioral information they can use in future situations (Berk, 2002). Children's ability to abide by limits and expectations advances from a dependence on specific personal experiences to the ability to apply the limits to less familiar situations. Kindergartners can manage social situations with greater autonomy than younger children (PBS, n.d.). Their varied social experiences and advances in cognitive, language, and social–emotional development help them to act in accordance with social rules and to display behavior appropriate for the situation or place (VORT, 2004). They have a differentiated understanding of authority figures and are likely to abide by legitimate limits established by them, even in different contextual settings (e.g., school and park) (Berk, 2009; Laupa & Elliot, 1993).

Students in the *pink* (first grade) and *silver* (second grade) bands *understand and explain reason for rules*. First and second-grade children have an increasing appreciation for rules and an understanding of how they relate to events and to their own and others' behaviors (Allen & Marotz, 2007). During play, they may create rules as the need arises and may change them to suit their own goals (PBS, n.d.). Input into classroom rules helps children learn about the reasonableness and appropriateness of rules (Tomlinson, 2009).

Students in the *brown* (third grade) band *demonstrate an understanding of the "big rule" concepts of safety, kindness, respect and care for the objects and materials in the environment.* They are aware of adult and societal expectations and generally are accepting of them. Their understanding of the idea of fairness is more differentiated, and they can accept separate, but fair treatment without becoming upset, such as when another child receives a special reward for distinctive performance (Tomlinson, 2009). They generally treat others with respect during play (PBS, n. d.) and become more proficient at knowing when and how to offer help and perform other prosocial acts (Berk, 2009).

Objective 1. Regulates own emotions and behaviors
b. Follows limits and expectations

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Objective 1. Regulates own emotions and behaviors

c. Takes care of own needs appropriately

Children in the *red* (birth–1 year) band *indicate needs and wants; participate as adult attends to needs.* Infants initially communicate their needs by crying (Bilmes & Welker, 2006) and later by repeating sounds or gestures to gain the attention of adults (Shelov & Hannemann, 2004). By about 6 months, infants' emotional expressions become more organized and specific, allowing adults to better interpret what the infant is feeling (Berk, 2009). As infants near their first birthday, they begin to assist in caregiving activities. They may hold out their arms, legs, or feet so adults can dress them, or they may feed themselves with finger foods (PBS, n.d.).

Children in the *orange* (1–2 years) and *yellow* (2–3 years) bands *seek to do things for self*. Toddlers enjoy using their more advanced abilities that allow them to do many things independently. They show pleasure as they try out their skills (Berk, 2009) and begin to see themselves as capable (Epstein, 2009). They want to participate in self-care activities, but they sometimes get distracted or frustrated and do not complete the process (Allen & Marotz, 2007). Motor development during this period makes it easier for them to remove clothing than to put it on or to take toys off the shelf rather than to put them back (Allen & Marotz, 2007). Twos enjoy assisting with everyday chores and activities, and they are better able to communicate requests for help in self-care needs than previously (Allen & Marotz, 2007; PBS, n.d.).

Children in the *yellow* (2–3 years), *green* (preschool 3 class), and *blue* (preK 4 class) bands *demonstrate confidence in meeting own needs*. One of the ways children evaluate themselves is in terms of competence or the things they can do (Epstein, 2009; McAfee & Leong, 2007), including self-care. Older toddlers (Bilmes & Welker, 2006) and preschool children gradually learn basic self-care (Shelov & Hannemann, 2004). Four-year-olds can generally undress and dress themselves independently, feed themselves with a fork and spoon, and engage in personal hygiene routines, such as brushing their teeth (Shelov & Hannemann, 2004).

Children in the *blue* (preK 4 class) and *purple* (kindergarten) bands *take responsibility for own well-being*. Older preschool and kindergarten children are capable of assuming many daily self-care (Shelov & Hannemann, 2004) and routine classroom responsibilities (McClelland & Morrison, 2003). Kindergarten children are conscientious and usually act responsibly (Bronson, 2006) as they carry out assignments (Allen & Marotz, 2007) and assume responsibility for dressing and for their own toileting needs (Allen & Marotz, 2007).

Students in the *pink* (first grade) and *silver* (second grade) bands *practice skills to reach desired level of personal achievement*. First and second graders are enthusiastic and competitive, and they have a desire to do things well. They have a balance between hard work and self-evaluation and do not like to make mistakes or to be unsuccessful (Wood, 1994).

Students in the *brown* (third grade) band *accurately identify own strengths and challenges (self-assessment, self-appraisal); develop and work toward personal goals*. As students advance through primary school, they are more able to judge their competencies in relation to teachers' assessments and are more perceptive to their successes and failures (Eccles et al., 1993). They develop a more global and realistic assessment of their abilities than they had at younger ages (McAfee & Leong, 2007; Tomlinson, 2009).

Objective 1. Regulates own emotions and behaviors
c. Takes care of own needs appropriately

- **Berk, L. E. (2009).** *Child development* (8th ed.). Boston: Pearson/Allyn & Bacon.
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Objective 2. Establishes and sustains positive relationships

a. Forms relationships with adults

Children in the *red* (birth–1 year) band *demonstrate a secure attachment to one or more adults*. Over time, most infants develop social bonds or attachments with their primary caregivers (Epstein, 2009), including their teachers (Berk, 2009; Ray, Bowman, & Brownell, 2006; Riley, San Juan, Klinkner, & Ramminger, 2008). During the first few weeks and months of life, the attachment is formed (Berk, 2009) as responsive caregivers meet infants' needs and interact with them during care routines and social interactions. From about 6 weeks to about 6–8 months, infants respond differently to familiar persons than to strangers (Berk, 2009). Children who are securely attached may demonstrate this special bond with adults as they accept comfort and are calmed by their caregivers (Riley et al., 2008) or by becoming upset when separated from them (Berk, 2009).

Children in the *red* (birth–1 year), *orange* (1–2 years), and *yellow* (2–3 years) bands *use trusted adult as a secure base from which to explore the world*. From early warm, nurturing interactions, infants form a sense of trust with their primary caregivers (Epstein, 2009; Ray, Bowman, & Brownell, 2006). Infants and toddlers rely on trusted adults to help them feel safe and secure (Berk, 2009). Older infants begin to use adults' facial expressions to guide their actions (Saarni, Mumme, & Campos, 1998). The more advanced motor abilities of mobile infants and toddlers allow them to explore the world around them. As they venture away, they may repeatedly look toward their caregiver, viewing him as their secure base (Berk, 2009; Raikes, 1996; Raikes & Edwards, 2009).

Children in the *yellow* (2–3 years) and *green* (preschool 3 class) bands *manage separations without distress and engage with trusted adults.* Young children typically exhibit some reaction to the newness of an unfamiliar place, such as a new care or education setting (Balaban, 2006). As a result of warm, supportive, caring relationships, young children can develop secure relationships with their teachers similar to the attachment relationships they form with parents (Howes & Richie, 2002; Tomlinson & Hyson, 2009). Preschool children are much more able to separate from parents, family members, or other primary caregivers (Bilmes & Welker, 2006) than they were at earlier ages and may even look forward to the experience with anticipation (Balaban, 2006).

Children in the *blue* (preK 4 class) band and students in the *purple* (kindergarten) and *pink* (first grade) bands *engage with trusted adults as resources and to share mutual interests.* Supportive, sensitive, and stimulating teacher-child relationships are important in helping children adjust to the school environment (Birch & Ladd, 1997) and in supporting school success (Burchinal, Howes, Pianta, Bryant, Early, Clifford, et al., 2008). Older preschool and kindergarten children view their teachers and other trusted adults as supportive guides as well as someone with whom to share warm and friendly interactions (Bilmes & Welker, 2006; Hyson, 2004; Tomlinson, 2009). Kindergartners enjoy engaging in conversations with adults and seek their approval (Tomlinson, 2009). First graders are likely to form strong attachments to their teachers and value their attention (DeBord, n.d.). Children's interactions with teachers are bidirectional whereby both children and teachers influence the relationship (Gallagher, Kainz, Vernon-Feagans, & White, 2013). Teachers may "struggle in their relationships with children who are less regulated, less attentive, and more hostile in their reactions" (Gallagher et al., 2013, p. 526). High-quality relationships are beneficial to children and may serve as a buffer against negative outcomes (Liew, Chen, & Hughes, 2010), particularly for boys (Gallagher, 2013).

Students in the *silver* (second grade) and *brown* (third grade) bands *respectfully engage adult with a different viewpoint; consider adult's alternative ideas when engaged in discussion.* Students now begin to understand that others may have a differing point of view (DeBord, n.d.). This not only fosters students' social–emotional development, but perspective-taking also requires advanced cognitive skills (de Wied, Branje, & Meeus, 2007). As with younger children, teacher warmth and support continues to play an important role in children's perceived relationship with their teachers, which can influence their academic achievement (Hughes, Wu, Kwok, Villarreal, & Johnson, 2012).

Objective 2. Establishes and sustains positive relationships
a. Forms relationships with adults

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Objective 2. Establishes and sustains positive relationships

b. Responds to emotional cues

Children in the *red* (birth–1 year), *orange* (1–2 years), and *yellow* (2–3 years) bands *react to others' emotional expressions*. As early as the first few days of life, infants respond to the emotional distress of other newborns (Sagi & Hoffman, 1976). During the first year, they react differently to the emotional tones (Grusec, Hastings, & Almas, 2011) and the voices of others (Bronson, 1995). They may cry when others cry (Grusec et al., 2011) and smile and display pleasure in response to positive social stimulation (PBS, n.d.). Toddlers are more aware of others' emotions than are infants. They visually check when they hear sounds of distress, use appropriate facial expressions, and try to soothe and help others in response to their emotional expressions (Epstein, 2009).

Children in the *yellow* (2–3 years) and *green* (preschool 3 class) bands *demonstrate concern about the feelings of others.* When toddlers sense another's unhappiness, they frequently try to relieve their distress (Berk, 2009) by trying to comfort or to help them (Grusec, Hastings, & Almas, 2011). Older toddlers and young preschool children most often show their concern for the feelings of others through physical means (Tomlinson & Hyson, 2009), such as hugging or sharing a toy. Preschool children have a greater understanding of their own feelings and that of others (Epstein, 2009), but they are inclined to use physical means, rather than verbal ones, to express their concern.

Children in the *blue* (preK 4 class) and *purple* (kindergarten) bands *identify basic emotional reactions of others and their causes accurately*. As children gain a better understanding of their own emotions, they also begin to show a greater appreciation of the feelings of others (PBS, n.d.). Preschool (Denham, von Salisch, Olthof, Kochanoff, & Caverly, 2002; Tomlinson & Hyson, 2009) and kindergarten children can accurately label and identify the causes of most basic emotions in other people (Tomlinson, 2009). They use that awareness to comfort others through verbal as well as physical means (Tomlinson, 2009; Tomlinson & Hyson, 2009). Children who are more emotionally competent in preschool and the early primary years are more receptive to their peers and are able to adapt better in social situations (Denham, 2007).

Students in the *purple* (kindergarten) and *pink* (first grade) bands *recognize that others' feelings about a situation might be different from their own*. More advanced cognitive development and a wider array of experiences assist them in understanding that someone else's emotions and feelings about something may differ from their own (Denhan, von Salisch, Olthof, Kochanoff, & Caverly, 2002). For example, they understand that one child may really enjoy playing chase, but another child does not like the game. They also are beginning to predict with some accuracy how a child expressing a particular emotion may react in that situation (Golbeck, 2006; Tomlinson, 2009).

Students in the *pink* (first grade) and *silver* (second grade) bands *recognize that people can experience more than one emotion at the same time.* During the later part of first grade and in second grade, children begin to understand that a person can feel both positive and negative emotions simultaneously and that the two emotions may vary in intensity (Berk, 2009; Tomlinson, 2009). This helps them to better understand their own mixed emotions, interpret the emotions of others (Tomlinson, 2009), and to recognize more complex emotions which combine several feelings (Berk, 2009).

Students in the brown (third grade) band *use the situational context and past experiences when interpreting another's feelings; gauge reactions of others to determine response.* Children's ability to respond appropriately to complex emotional cues expands as they use emotional situational knowledge, in addition to relying solely on the expressive cues of others (Fine, Izard, & Trentacosta, 2006). By third grade, most children have had numerous experiences interacting in various contexts with people representing diverse backgrounds (Allen & Marotz, 2007; Berk, 2009). They simultaneously use multiple cues to predict how another may react (Berk, 2009; PBS, n.d.).Their expanding knowledge of social customs and their emotional situational knowledge help them to predict how someone may respond such as when another person may want assistance (Tomlinson, 2009).

Objective 2. Establishes and sustains positive relationships
b. Responds to emotional cues

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Objective 2. Establishes and sustains positive relationships

c. Interacts with peers

Children in the *orange* (1–2 years) and *yellow* (2–3 years) bands *play near other children; use similar materials or actions*. Toddlers actively seek out other children, imitate their behaviors, and may work together briefly to accomplish a common goal, such as pulling a wagon (Zero to Three, 2009). They watch other children playing and may engage in similar activities when they play beside each other in parallel play (Epstein, 2009; PBS, n.d.). They sometimes share materials, but they usually are possessive and want to keep "their" materials to themselves (Bronson, 1995).

Children in the *green* (preschool 3 class) and *blue* (preK 4 class) bands *use successful strategies for entering groups*. Preschool children increasingly want to engage in cooperative or interactive play with other children (Epstein, 2009; Tomlinson & Hyson, 2009), but they must first establish common ground. As they approach others at play, they may initiate conversations by referring to mutually known persons or characters (O'Neill, Main, & Ziemski, 2009). They begin to use a wider assortment of successful peer-group entry strategies (Tolminson & Hyson, 2009). This may include observing what others are doing, smiling, asking a play-related question or making an appropriate play-related comment, or offering an appropriate prop for play (Ladd, Herald, & Andrews, 2006). Some children find entering group play difficult and may need teacher guidance and coaching to successfully enter the group (Epstein, 2009).

Children in the *blue* (preK 4 class) and *purple* (kindergarten) bands *initiate, join in, and sustain positive interactions with a small group of two to three children*. When groups are too large, it is difficult for young children to follow conversations (Hulit & Howard, 2002). Older preschool (Hulit & Howard, 2002) and kindergarten children can successfully maintain conversations, role-play, and participate in make-believe activities when groups are small (McAfee & Leong, 2007). Four-year-olds take turns, share, and play cooperatively most of the time (Allen & Marotz, 2007). Kindergarten children can initiate and sustain play that is more complex (Epstein, 2009) and that has more positive interactions than those of preschool children (McAfee & Leong, 2007).

Students in the *purple* (kindergarten) and *pink* (first grade) bands *interact cooperatively in groups of four or five children*. Group size influences children's ability to maintain conversations (Hulit & Howard, 2002) and the quality of their peer interactions and play (McAfee & Leong, 2007). Groups of five or less children support kindergartners' and first graders' positive peer interactions and cooperation (McAfee & Leong, 2007). They can maintain conversations with attention to the needs of others (McAfee & Leong, 2007), share materials, make suggestions for play ideas, and communicate the boundaries for play and other activities (Allen & Marotz, 2007; Tomlinson, 2009). Peer groups become increasingly important for children in first grade, although the group structure continues to be flexible, and children enter and leave the group with ease (Tomlinson, 2009).

Students in the *pink* (first grade) and *silver* (second grade) bands *work with a group toward a shared goal; participate in group games with rules.* Children's interactions become more precise and focused than those of younger children. They "understand the complementary roles of several players in relation to a set of rules" (Berk, 2009, p. 607), although games with rules during this period remain relatively simple (Johnson, 2006).

Students in the brown (third grade) band *fluidly alternate between the roles of leader and follower in order to sustain play.* Children's interactions are reciprocal, and they must learn to voluntarily accept restrictions and conventions during their play and other activities (Manning, 2006). Children navigate among various peer groups both within school (e.g., classroom, playground, school bus) and outside of school (e.g., neighborhood, relatives) and come to understand the differing demands of various relationship types (e.g., dyadic, group, gender, and age) (Brownell & Gifford-Smith, 2003). These assorted experiences, along with supportive adult guidance, can help them learn to engage appropriately with peers (Tomlinson, 2009).

Objective 2. Establishes and sustains positive relationships
c. Interacts with peers

- **Bronson, M. B. (1995).** *The right stuff for children birth to 8: Selecting play materials to support development*. Washington, DC: National Association for the Education of Young Children.
- **Epstein, A. S. (2009).** *Me, you, us: Social-emotional learning in preschool*. Ypsilanti, MI: HighScope Press.
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Objective 2. Establishes and sustains positive relationships

d. Makes friends

Children in the *orange* (1–2 years) and *yellow* (2–3 years) bands *seek a preferred playmate; show pleasure when seeing a friend*. The concept of friendship changes over time and differs for younger and older children during the early childhood years and in later life (Hartup & Abecassis, 2002). The friendships of toddlers are usually brief and may be based on a temporary common activity (McAfee & Leong, 2007). Toddlers show social preferences among their playmates (Hartup & Abecassis, 2002; Riley, San Juan, Klinkner, & Ramminger, 2008) and seek them out (Zero to Three, 2009). They "exchange expressions of positive emotions" (Berk, 2009, p. 610), imitate each other's behaviors, and participate together in simple games and activities (Zero to Three, 2009). Over time, toddler friends cultivate special customs and favorite games and activities, and their affection for one another becomes stronger (Zero to Three, 2009).

Children in the *green* (preschool 3 class) band *play with one or two preferred playmates*. Interacting with peers is more important for preschool children than for toddlers, and they prefer certain playmates over other children in the group (Epstein, 2009). Their friendship networks are small, consisting of one or two children (Copple & Bredekamp, 2006; Hartup & Abecassis, 2002). They often refer to a preferred playmate as their "friend," even though they do not yet fully understand the concept of friendship (Tomlinson & Hyson, 2009).

Children in the *blue* (preK 4 class) and *purple* (kindergarten) bands *establish a special friendship with one other child, but the friendship might only last a short while*. "By 4 years of age, about three quarters of children are involved in mutual friendships as indicated by time spent together, cooperation and reciprocities in social interaction, and various affective markers" (Hartup & Abecassis, 2002, p. 289). These friendships are flexible and may only last a short time (Copple & Bredekamp, 2006) as children drift away due to changing interests, disagreements, and lack of friendship talk (Berk, 2009; Hartup & Abecassis, 2002). Sometimes friendships last for longer periods (Park, 1992). This is the case particularly if children have been together over time in contextual settings (e.g., neighborhoods, community, and early care and education) and if the friendships are based on positive interactions rather than on negative ones (Ladd, Herald, & Andrews, 2006).

Students in the *purple* (kindergarten) and *pink* (first grade) bands *maintain friendships for several months or more; form friendships around similar play interests.* The friendships of kindergarten children are more complex and longer lasting than the friendships of younger children (Copple & Bredekamp, 2006). Kindergartners' more advanced cognitive, language, and social–emotional abilities (Berk, 2006; McAfee & Leong, 2007) help support the development of stronger friendship bonds. Friendships are more often developed between children of the same sex (Copple & Bredekamp, 2006) and between children who share other things in common, such as age, ethnicity, and personality (Berk, 2006). When a friend moves away, children may express sadness and continue to talk about the friend for a period of time after the departure (Park, 1992; Riley, San Juan, Klinkner, & Ramminger, 2008).

Students in the *pink* (first grade) and *silver* (second grade) bands *form friendships based on personal qualities.* Friendships are built on "personal qualities as a function of growing interpersonal awareness and are evident in animated conversations, games, and contests" (Gifford-Smith & Brownell, 2003, p.253). Friends tend to share commonalities, such as personality, popularity, academic achievement, and prosocial behaviors (Berk, 2009). Friends are likely to become more similar as they spend increasing time with one another (Berk, 2009). Friends with more favorable traits can positively influence children with less positive attributes (Berk, 2009; Laursen, Bukowski, Aunola, & Nurmi, 2007).

Students in the *silver* (second grade) and *brown* (third grade) bands *form friendships based on mutual trust and assistance; understand that friendship can still exist when disagreements occur*. As students in primary school build friendships around mutual interests and care for one another, they are more likely than nonfriends to resolve conflicts swiftly and peacefully in order to maintain the friendship (Berk, 2009; Hartup & Laursen, 1999; Gifford-Smith & Brownell,2003). These experiences help them develop mutual role-taking and collaborative negotiation, thus allowing for stronger friendship formation (Blume & Zembar, 2007).

Objective 2. Establishes and sustains positive relationships
d. Makes friends

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Objective 3. Participates cooperatively and constructively in group situations

a. Balances needs and rights of self and others

Children in the *orange* (1–2 years) and *yellow* (2–3 years) bands *respond appropriately to others' expression of wants*. Toddlers increasingly desire to play with their peers (Bronson, 1995; Raikes & Edwards, 2009), and they are learning how to cooperate in small groups (Allen & Marotz, 2007). They watch and imitate the actions of older children and adults (Shelov & Hannemann, 2004), including how they interact with other people. Although toddlers are still most concerned with their own desires (Shelov & Hannemann, 2004), they can respond appropriately to another's wants, particularly if the adults around them have modeled prosocial behaviors. They may offer another child a desired toy (Allen & Marotz, 2007) or help move a heavy object (Zero to Three, 2009). As children's language skills improve, they increasingly use verbal rather than physical means to communicate their wants (Allen & Marotz, 2007).

Children in the *green* (preschool 3 class) and *blue* (preK 4 class) bands *take turns*. Preschoolers have a greater ability than they did as toddlers to understand the feelings of others (Tomlinson & Hyson, 2009), to delay gratification (Riley, San Juan, Klinkner, & Ramminger, 2008), and to share and to take turns (Allen & Marotz, 2007; Bilmes & Welker, 2006; Epstein, 2009; McAfee & Leong, 2007). Younger preschoolers, in particular, may still need the support of sensitive adults to help them follow through with sharing and turn-taking when they participate in group activities (Allen & Marotz, 2007).

Children in the *blue* (preK 4 class) and *purple* (kindergarten) bands *initiate the sharing of materials in the classroom and outdoors*. To take turns and to share, children must be able to postpone their wishes and understand that such behaviors are normal and expected within the social context (Katz & McClellan, 1997). Older preschool and kindergarten children demonstrate an increasing ability to share (McAfee & Leong, 2007), and they often independently engage in these prosocial acts without adults having to intervene (Whitin, 2001). The peer interactions of kindergartners are "governed by social norms such as sharing and helping" (McAfee & Leong, 2007, p, 240). Adults continue to be important in helping children develop positive social interaction skills (Bronson, 2006; Whitin, 2001).

Students in the *purple* (kindergarten) and *pink* (first grade) bands *cooperate and share ideas and materials in socially acceptable ways*. Kindergarten children have better self-control and greater understanding of others' feelings than they did at younger ages (PBS, n.d.), and they act in more consistent and responsible ways (Bronson, 2006). Their social play is generally cooperative and conforming (Bronson, 1995). They freely share ideas and materials during play, and they are capable of performing many socially acceptable acts, especially if adults reinforce their positive behaviors (Whitin, 2001). During first grade, children progress in their abilities to cooperate, share, and participate constructively in group situations (McAfee & Leong, 2007). These requisite skills assist them in successfully navigating through the academic and social task demands of the school environment (Lane, Givner, & Pierson, 2004).

Students in the *silver* (second grade) band *complete cooperative projects with other children*. Second graders exhibit prosocial behaviors such as helping, cooperating, and sharing (Denham & Brown, 2010). They can follow through and stay on-task for longer time periods than when they were younger. They can plan ahead (Allen & Marotz, 2007), are conscientious, and work diligently toward finishing what they began (Wood, 1994). These abilities make them good group members.

Students in the *brown* (third grade) band *accurately complete self-assessment of role in group work*. Children in third grade have a relatively accurate perception of self-competence that is more realistic than at younger ages (Jacobs, Lanza, Osgood, Eccles, & Wigfield, 2002), although they are still generally positive about their abilities . They can recognize and acknowledge differences in the abilities, skills, and efforts of others (Allen & Marotz, 2007; Jacobs et al., 2002; Tomlinson, 2009). This allows them to compare and assess their group performance more accurately than they were able to do at younger ages.

Objective 3. Participates cooperatively and constructively in group situations
a. Balances needs and rights of self and others

- **Allen, K. E., & Marotz, L. R. (2007).** *Developmental profiles: Pre-birth through twelve*. Clifton Park, NY: Thomson Delmar Learning
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Objective 3. Participates cooperatively and constructively in group situations

b. Solves social problems

Children in the *orange* (1–2 years) band *express feelings during a conflict*. Toddlers are just beginning to learn how to solve social problems, and they use both positive as well as more negative ways to communicate their feelings (Bilmes & Welker, 2006). They may express their feelings using gestures such as pointing, shaking their heads, and pushing (Zero to Three, 2009) or by vocalizations such as screaming or crying when they encounter conflict situations (PBS, n.d.; Zero to Three, 2009). At about 18 months of age, they begin developing a vocabulary for talking about how they feel, but they are not yet skilled at using language to help them control their emotions (Berk, 2009).

Children in the *yellow* (2–3 years) and *green* (preschool 3 class) bands *seek adult help to resolve social problems.* Although toddlers and young preschool children are beginning to learn strategies for resolving social problems, they still seek out and rely on adults for help when they become distressed (PBS, n.d.) or cannot handle the situation independently. Adults serve as support or encouragement for turn-taking and waiting, and they suggest ways conflicts can be resolved without the use of aggressive actions (Bilmes & Welker, 2006; Shelov, & Hannemann, 2004).

Children in the *green* (preschool 3 class), *blue* (preK 4 class), and *purple* (kindergarten) bands *suggest solutions to social problems.* As children gain an appreciation for the feelings and actions of others, they begin to learn how to cooperate and resolve conflicts in nonaggressive ways, particularly when interacting with their friends (Tomlinson & Hyson, 2009). They are able to manage many of their own solutions to disputes by using their words, and by about 38 months, they begin using simple negotiation strategies to resolve conflicts (Shelov & Hannemann, 2004). They can resolve conflicts using beginning understandings of moral principles and socially accepted ways of achieving what they want (Epstein, 2009). Four-year-olds are capable of participating with others in simple group decisions that solve social problems (Epstein, 2009). Kindergarten children can reflect on their own and others' motivations for actions and suggest strategies that focus on the problem rather than the emotions surrounding a situation (McAfee & Leong, 2007).

Students in the *purple* (kindergarten) and *pink* (first grade) bands *resolve social problems through basic negotiation and compromise*. Kindergartners are less impulsive than younger children (McAfee & Leong, 2007), and they usually develop a reflective approach to solving social dilemmas (Riley, San Juan, Klinkner, & Ramminger, 2008). They "use proactive strategies to organize, direct, and sustain interactions with others," thus allowing them to have "more complex interactions with fewer conflicts" (Bronson, 2006, p. 48). Disputes are generally settled through negotiations (Bronson, 2006) and "friendly persuasion" (Berk, 2009). When an initial strategy does not work, kindergarten children think of alternative solutions without having to rely on adults to resolve the issue for them (Berk, 2009).

Students in the *pink* (first grade) and *silver* (second grade) bands *seek conflict resolutions based on interest in maintaining the relationship in the future*. Children want to have friends and are concerned about being lonely (McAfee & Leong, 2007). When conflicts arise, they seek to find solutions, and they are better able to consider other's needs than they were at younger ages (McAfee & Leong, 2007). Children still need adult assistance to resolve social problems if they are not able to do so independently (PBS, n.d.).

Students in the *brown* (third grade) band *consider multiple viewpoints when solving conflicts*. Children are now much more skillful at resolving conflicts independently than they were at younger ages. Their ability to consider the perspectives of others as well as their improved communication skills allow them to think about and talk through resolutions to solve social problems. Some children may even show leadership skills in this area (PBS, n.d.). The ability to make responsible decisions and to use prosocial responses during social problem-solving situations appears to assist children in their later academic success (Denham & Brown, 2010).

Objective 3. Participates cooperatively and constructively in group situations
b. Solves social problems

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Physical

PHYSICAL OBJECTIVES

4 Demonstrates traveling skills
5 Demonstrates balancing skills
6 Demonstrates gross-motor manipulative skills
7 Demonstrates fine-motor strength and coordination

Physical development includes children's gross-motor (large muscle) and fine-motor (small muscle) skills. Balance; coordination; and locomotion, or traveling, are part of gross-motor development. Motor development progresses predictably, from simple to complex, in a head-to-toe direction. An infant lifts his head, lifts his trunk, rolls, crawls, sits, stands, walks, and then becomes a toddler who runs. Children gain control of their bodies in a predictable sequence as well, from the center of their bodies and outward to their fingers and toes. A child first catches a ball by trapping it against her whole body, then by holding out her arms to catch it, and finally by catching it with her hands. Older primary children integrate various motor abilities into complex movements. Similarly, fine-motor skills progress from the child's grabbing an object with a whole hand, picking up a small item with thumb and index finger, and eventually controlling the fine hand muscles needed for writing.

As they develop physically, children master increasingly sophisticated tasks and are able to meet more of their own physical needs, such as feeding and dressing themselves. Physical development is influenced by gender, heredity, nutrition, health, environment, economic level, experience, culture, and disabilities (McKenzie, et al., 1997; Spaulding, Gottlieb, & Jensen, 2008; Trawick-Smith, 2006). Children need many opportunities to practice both their gross-motor skills, e.g., pulling, climbing, running, kicking, throwing, jumping, and their fine-motor skills, e.g., cutting, drawing, and writing if they are to develop physical competency (Epstein, 2014; Sanders, 2002).

Physical development affects other areas of development. Brain research points to the importance of early, positive movement experiences to brain development (Gabbard, 1998; Robert, 1999). Physical development is also linked to children's emotional development and their school performance (Pica, 2006; Rule & Stewart, 2002; Sanders, 2002; Son & Meisels, 2006).

The ability to be physically active influences social well-being and mental health. Regular physical activity helps children build and maintain healthy bones, muscles, and joints. It helps them to control weight and prevents or delays health conditions such as high-blood pressure (McKenzie, et al., 1997; Pica, 2006; Sanders, 2002). The more children can do physically, the more willing they are to interact with other children and to try new and challenging physical tasks (Kim, 2005). This establishes a positive cycle that affects overall learning and health.

There is an important relationship between children's level of motor skill performance and their participation in physical activity. Children with better motor proficiency may find it easier to be physically active and may be more likely to engage in physical activity compared with peers who have poorer motor skill competence. Children with limited motor proficiency may subsequently choose a more sedentary lifestyle to avoid these movement difficulties (Wrotniak et al., 2006). Fine-motor skills are also important for children's later development and learning and are a strong and consistent predictor of later academic achievement (Becker, Miao, Duncan, & McClelland, 2014; Grissmer, Grimm, Aiyer, Murrah, & Steele, 2010). Lack of fine-motor control is linked to young primary-grade children's writing errors and can negatively influence their self-esteem and success with other tasks such as story composition (Feder & Majnemer, 2007).

Motor development is not automatic, and different skill sets are needed for different tasks (Stevenson & Just, 2014). If children are to develop physical competence, they need a variety of equipment and materials; planned, appropriate motor experiences; and opportunities to practice and apply previously learned skills (Barbour, 1999; Epstein, 2007; Gallahue, 1995; Manross, 2000; Sanders, 2006).

Objective 4. Demonstrates traveling skills

Infants in the *red* (birth–1 year) band *move to explore their immediate environment*. While they are motivated by their desire to explore (Kostelnik, Soderman, & Whiren, 2004) and master new tasks (Berk, 2009), their beginning traveling skills are rudimentary (Gallahue & Donnelly, 2003) and must be refined with a great deal of practice. Infants display a wide range of purposeful locomotion (Gallahue & Ozmun, 2006) including rolling over, bouncing forward, scooting, crawling, creeping, cruising, side-stepping while holding onto furniture, and taking unsteady steps to get where they want to go (Ahola & Kovacik, 2007; Berk, 2009; Charlesworth, 2008; Zero to Three, 2009). Their increasing mobility allows them to interact with adults and peers and to "gain in social and cognitive development as they explore and construct new knowledge about their world" (Charlesworth, 2008, p. 235).

Children in the *orange* (1–2 years) and *yellow* (2–3 years) bands *experiment with different ways of moving* as they travel from place to place. The skills they developed in the first year of life improve qualitatively and become more refined. They continue to practice and modify early traveling motions (Berk, 2009) as they explore their movement potential while traveling through space (Gallahue & Ozmun, 2006). During this period, their curiosity, together with their developing motor skills, allow them to move around their environment (Zero to Three, 2009) in new ways, such as by moving a riding toy with their feet, tromping through puddles, running, walking backwards, and marching. They "may take lots of tumbles as they misjudge distances or relative weight or strength" (Carlson, 2011, pp. 8–9).

Preschoolers in the *green* (preschool 3 class) and *blue* (preK 4 class) bands *move purposefully from place to place with control*. During the early part of this period, children may temporarily experience some awkwardness as their bodies catch up with their new-found abilities (Beaty, 2002). They begin to know what their bodies can do, and their movement control improves greatly. Traveling skills become much more automatic, allowing them to focus intently on the activity. Children become "strong, efficient, and speedy" (Beaty, 2002, p. 198) during this period and are good at riding tricycles. They can pedal and steer a wheeled toy with confidence, frequently zooming around corners and avoiding obstacles and "oncoming traffic" (Allen & Marotz, 2007; Beaty, 2002). They can travel vertically as they climb ladders and other playground equipment with control (Allen & Marotz, 2007).

Children in the *blue* (preK 4 class) and *purple* (kindergarten) bands *coordinate increasingly complex movements in play and games* as they "integrate previously acquired skills into more complex, dynamic '*systems of action*'" (Berk, 2009, p. 177). They fall infrequently and enjoy participating in activities and games that test their abilities (Beaty, 2002). Their running speed increases, and their galloping and skipping abilities become smooth (Allen & Marotz, 2007; Berk, 2009). They now can ride a tricycle with speed and dexterous steering (Allen & Marotz, 2007).

Students in the *pink* (first grade) and *silver* (second grade) bands *use a variety of traveling moments, varying speed, pathways, and direction*. At the lower-elementary level, students achieve mature forms of the basic locomotor skills and vary the manner in which these skills are performed in relation to changing conditions and expectations (McAfee & Leong, 2011; National Association for Sport and Physical Education, 2004). They enjoy activities involving traveling movements and perform them independently or with a partner (PBS, n.d.). As they incorporate movement into dance, they use their bodies to respond to changes in tempo, direction, and levels from the floor (PBS, n.d.). By the end of second grade, students excel in activities involving running, skipping, and galloping (PBS, n.d.).

Students in the *brown* (third grade) band *coordinate multiple complex movements while traveling*. Third graders run with a longer stride and greater speed and agility than children in the lower primary grades. Their experiences, improved physical prowess, and more mature cognitive and social abilities facilitate their participation in more complex games with rules and sports (Tomlinson, 2009). They enjoy vigorous activities and look for occasions to participate in team activities such as kickball, soccer, and baseball that require traveling in coordination with other motor skills (Johnson, 2006; McAfee & Leong, 2011). They continue to develop movement skills with a partner as they copy, lead and follow, and mirror others in dance activities (PBS, n.d.)

Objective 4. Demonstrates traveling skills

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Objective 5. Demonstrates balancing skills

Infants in the *red* (birth–1 year) band show *balance while exploring their immediate environment*. At first, infants cannot support their head unaided, but as body proportions become more evenly distributed and muscle tone, strength, and control improve, they can balance in a sitting position. This ability gives them a new perspective of their world (Berk, 2009). "Around 4 to 5 months, when infants begin to sit up, they no longer need their arms to maintain body balance," freeing the hands to explore objects (Berk, 2009, p. 149). Toward the end of the period, improved balance allows infants to change sitting positions without falling (Allen & Marotz, 2007), making way for even greater exploration.

Toddlers in the *orange* (1–2 years) and *yellow* (2–3 years) bands *experiment with different ways of balancing*. They may fall as they try out new ways of maintaining their balance, but they gain in their abilities to maintain a steady position while the body is stationary (static balance) and while it is moving (dynamic balance) (Kostelnik et al., 2004; Sanders, 2002). They can stand on tiptoes (Carlson, 2011), bend over to retrieve an object, climb in and out of chairs (Allen & Marotz, 2007; Charlesworth, 2008), and move across different width surfaces. Younger children tend to opt for wider walking surfaces (e.g., "bridge" between two platforms, balance beam, and sandbox edge) more often than narrow ones and to choose sturdy supports (e.g., handrails) rather than wobbly ones to help balance themselves (Berger, Adolph, & Lobo, 2005).

Young children in the *yellow* (2–3 years), *green* (preschool 3 class), and *blue* (preK 4 class) bands can *sustain balance during simple movement experiences*. Balance plays a significant role in the performance of several fundamental motor skills, such as running and jumping (Zachopoulou, Tsapakidou, & Derri, 2004). Preschoolers now maintain rudimentary dynamic balance as they jump over (Copple & Bredekamp, 2006) or off low steps (Sanders, 2002) or small objects (Beaty, 2002) and walk on a straight line (Allen & Marotz, 2000) or across a wide balance beam (McAfee & Leong, 2007).

Children in the *blue* (preK 4 class) and *purple* (kindergarten) bands make tremendous progress in stability skills as they *sustain balance during complex movement experiences*. Balance is a key component of most movements but is especially important for the complex movements in games or dance (Kostelnik et al., 2004). In general, children in the upper end of these bands find these balancing tasks easier and are more competent than children at the lower end of the band (Robert, 1999) as "they integrate previously acquired skills into more complex actions" (Tomlinson, 2009, p. 189).

Between kindergarten and second grade (*purple, pink*, and *silver* bands), students *demonstrate how to balance on different body parts (feet, hands, knees, elbows) at varying levels(e.g., up high, down low) while making different poses*. As children move into the elementary grades, they balance on increasingly smaller bases of support (Tomlinson, 2009) while holding the body in inverted positions, and in stationary balances on apparatus (PBS, n.d.). These experiences begin to provide the ingredients for a movement repertoire of balances that may be included in sequences involving traveling and other balances.

Students in the *silver* (second grade) and *brown* (third grade) bands *balance on apparatus with control and stability*. As children get older, they combine balancing and transferring weight for a contrast in stillness and action. Experiences include balancing in dynamic environments and transferring weight into stationary, still balances on various bases of support, as well as approaches to and dismounts from an apparatus. Tasks that involve sequences of movement, on the floor and on an apparatus, are particularly important and valuable. Children make decisions about the combinations of movements and select and invent ways for one balance or action to move smoothly into another (Graham, Holt, Hale, & Parker, 2010).

Students in the *brown* (third grade) band *design and perform movements that combine traveling and balance into a smooth, flowing sequence with intentional changes in direction and speed.* As children show appropriate form and improved control over their bodies, they begin to participate in activities such as rollerblading or jumping rope using complex patterns (McAfee & Leong, 2011; PBS, n.d.). They smoothly incorporate symmetrical and asymmetrical balance independently and upon cue (PBS, n.d.).

Objective 5. Demonstrates balancing skills

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6. Demonstrates gross-motor manipulative skills

Infants in the *red* (birth–1 year) band *reach, grasp, and release objects*. To do this, they must be able to make successful contact with the object, retain it in their grasp, and release it at will (Gallahue & Ozmun, 2006). During this period, infants swipe at, drop, or throw objects or toys (Charlesworth, 2008) rather than intentionally putting them down (Allen & Marotz, 2007). Moderate visual stimulation (e.g., mobile over the crib) can enhance infants' early reaching abilities (Berk, 2009). Around 8–11 months, reaching and grasping are well-rehearsed by the infant, which frees his attention from the motor skill itself to events that occurred before and after obtaining the object (Berk, 2009).

In the *orange* (1–2 years) and *yellow* (2–3 years) bands, infants and toddlers *manipulate balls or similar objects with stiff body movements*. Early in the period children use both forearms together to shove the ball forward with somewhat jerky movements (Beaty, 2002). Catching is more difficult than throwing, and it develops later than catching (Beaty, 2002). Early on children catch balls or other objects against their chest with a rigid upper body (Berk, 2009). Kicking is a complex visual-motor task requiring coordination of the eyes with the feet (Gallahue & Donnelly, 2003). Older toddlers learn to kick and to somewhat direct the motion of balls and other objects (Shelov & Hannemann, 2004) as they use a straight leg and little body movement (Gallahue & Ozmun, 2006; McAfee & Leong, 2007).

Children in the *green* and *blue* (preschool 3 class and preK 4 class) bands *manipulate balls or similar objects with flexible body movements*. They begin to throw with more body rotation and arm range and with increased transfer of weight on their feet (Beaty, 2002; Berk, 2009; Gallahue & Donnelly, 2003). Their aim improves (Allen & Marotz, 2000), but the distance they throw is still limited (Allen & Marotz, 2000). At first they catch with slight involvement of their upper body with arms extended (Charlesworth, 2008), trapping the object against their chest in a "basket catch" fashion (Gallahue & Donnelly, 2003). Kicking abilities have improved for children in these bands. They now flex their lower leg on the backward lift and straight on the forward swing (Gallahue & Ozmun, 2006; McAfee & Leong, 2007).

In the *blue* (preK 4 class) and *purple* (kindergarten) bands, children *manipulate balls or similar objects with a full range of motion* that is similar to that of older children. They now throw by stepping forward with the leg that is on the same side as the throwing arm (Beaty, 2002; Gallahue & Donnelly, 2003). Their motions are flexible, involving the shoulders, torso, trunk, and legs, which makes the ball travel faster and farther (Berk, 2009). When they catch a thrown ball in their hands, they use mature, whole-body catching patterns that require upper body maturity and eye-hand coordination to track the thrown ball (Beaty, 2002). Their kicking resembles a relatively mature pattern as they use a smooth, continuous running step (Gallahue & Ozmun, 2006; Sanders, 2006; Tomlinson, 2009).

Between kindergarten and second grade (*purple*, *pink*, and *silver*) bands, students *manipulate balls or similar objects, propelling them away from the body (throwing) and receiving and controlling them (catching) with increased accuracy.* Children's reaction time is still somewhat slow, but their skills improve greatly during this period allowing them to throw and catch with greater proficiency (Tomlinson, 2009). They become more consistent as they throw, catch, and kick with increasing accuracy, and force (PBS, n.d.). With opportunities to practice their skills, they are able to throw objects for farther distances (Tomlinson, 2009).

Students in the *silver* and *brown* (second and third grade) bands *manipulate balls or similar objects with accuracy, fluidity, and control*. Children now have good response time, trajectory judgment, and control as they receive and propel objects (McAfee & Leong, 2011; Tomlinson, 2009). They throw overhand by leaning the body back to produce a fluid follow-through motion and throw underhand with a forceful release (McAfee & Leong, 2011). As they anticipate receiving an object, they position their bodies and adjust their hands to catch balls of various sizes (McAfee & Leong, 2011).

Students in the *brown* (third grade) band *manipulate and control balls or similar objects with rackets, paddles, bats, and other long-handled implements, e.g., golf club, hockey stick, lacrosse stick.* As children engage in experiences striking objects using short-handled implements, they gain increasing control over the use of long-handled instruments (Sanders, 2002). Third graders can determine the amount of force needed to influence trajectory and apply appropriate force as they use various implements to strike balls and other objects (PBS, n.d.)

Objective 6. Demonstrates gross-motor manipulative skills

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Objective 7. Demonstrates fine-motor strength and coordination

a. Uses fingers and hands

Infants in the *red* (birth–1 year) band *reach for, touch, and hold objects purposefully*. In the first several months, infants exhibit reflexive motor actions (Ahola & Kovacik, 2007). The Palmar grasp reflex, which occurs around 3–4 months, "prepares the infant for voluntary grasping" (Berk, 2009, p. 128). Being able to reach and grasp allows the child to explore the environment in new ways (Ahola & Kovacik, 2007; Berk, 2009). Infants engage in pre-reaching or swiping at an object without making contact (Ahola & Kovacik, 2007; Berk, 2009) before they can actually grasp an object. Around 3–4 months, they begin to grasp objects with the fingers closed around the palm (ulnar grasp) in an attempt to hold on to something. Between 6–8 months, the grasp will improve as the infant begins to use wrist movements. Toward the end of the period, they use the thumb and index finger in opposition to one another (pincer grasp) (Berk, 2009; Shelov & Hannemann, 2004). This allows the infant to pick up finger foods or small items (Allen, K. E., & Marotz, L. R., 2007) and to manipulate objects, as in banging blocks together (Shelov & Hannemann, 2004).

Children in the *orange* (1–2 years) and *yellow* (2–3 years) bands *use fingers and whole-arm movements to manipulate and explore objects*. They can stack blocks and fill and dump containers using materials such as blocks, sand, and water (Allen & Marotz, 2007). As they progress, they better coordinate movements of the wrist, fingers, and palm, allowing them to manipulate objects as in rotating knobs (Ahola, D., & Kovacik, A., 2007; Shelov & Hannemann, 2004), unscrewing jar lids, and tearing paper (Kostelnik et al., 2004).

Children in the *yellow* (2–3 years), *green* (preschool 3 class), and *blue* (preK 4 class) bands *use refined wrist and finger movements*. Although they make tremendous progress in manual dexterity during this period, they cannot be expected to "perform tasks requiring precise control of the hand muscles, careful perceptual judgment involving eye-hand coordination, and refined movements requiring steadiness and patience" (Tomlinson & Hyson, 2009, p. 117). They enjoy pounding, rolling, and squeezing clay (Charlesworth, 2008) and become more accurate at hitting pegs with a hammer (Allen & Marotz, 2007). Younger children may use an incorrect grasp to hold scissors as they snip and cut paper with little directional control. Toward the latter part of these bands, children hold the scissors correctly and cut paper using more refined movements such as cutting straight lines and turning corners (Kostelnik et al., 2004).

Children in the *blue*, *purple*, and *pink* (preK 4, kindergarten, and first grade) bands *use small, precise finger and hand movements* as they engage in fine-motor activities. They increasing manipulate small items with ease as they participate in activities such as placing small pegs in pegboards, stringing small beads, or building three-dimensional structures with small cubes (Charleswoth, 2008). "A child's attention span usually lengthens during kindergarten, and this can lead to a greater enjoyment of and involvement in fine-motor activities" (Sanders, 2006, p. 133). They can use scissors easily and accurately and can usually cut curved shapes and pictures from magazines (Kostelnik et al., 2004). First graders successfully manipulate smaller objects and cut out more complex figures. Most can easily tie their shoelaces and manage other small clothing parts (Allen & Marotz, 2007).

Students in the *pink* and *silver* (first and second grade) bands use *smooth finger and hand movements*. During the early elementary grades, children's fine-motor skills improve steadily, and they use a range of materials requiring manual dexterity. They use a computer mouse and a fork with relative ease, and most can use a knife to cut their food into small pieces (Allen & Marotz, 2007). They enjoy coloring and cutting activities and can manipulate various art materials safely and responsibly (PBS, n.d.).

Students in the *brown* (third grade) band *manipulate grade-appropriate tools and intricate materials with control and precision*. They have good eye-hand coordination (Allen & Marotz, 2007) and can participate in hand games involving finger snapping and other complex hand movements (Johnson, 2006). They now can use computer software and electronics that require more advanced fine-motor skills. Third graders work with a variety of materials to create complex 2-D or 3-D products or play scenes (Johnson, 2006). They produce increasingly realistic portrayals which include details of facial features, clothing, architectural components, and elements in nature (PBS, n.d.) and can participate in arts and crafts activities such as weaving, origami, needlework, woodworking, and model construction (Johnson, 2006; Tomlinson, 2009) Although they are fairly responsible, activities such as those involving chemistry or electricity should be closely supervised (Allen & Marotz, 2007).

Objective 7. Demonstrates fine-motor strength and coordination
a. Uses fingers and hands

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Objective 7. Demonstrates fine-motor strength and coordination

b. Uses writing and drawing tools

Unlike infants who watch but do not use tools for writing and drawing (Baghban, 2007), children in the *orange* (1–2 years) and *yellow* (2–3 years) bands *grasp drawing and writing tools, jabbing at the paper*. Toddlers enjoy using crayons and markers, but their actions are rudimentary, with little control, as they grasp the implements with their fist (Allen & Marotz, 2000). Their movements sometimes represent physical actions such as "hopping" as they move the crayon around the paper making dots like a hopping rabbit (Berk, 2009).

Children in the *yellow* (2–3 years) and *green* (preschool 3 class) bands *grip drawing and writing tools with their whole hand but may use whole-arm movements to make marks*. Early on children may still jab at the paper but then begin to make fluid motions using their whole arm (McAfee & Leong, 2007). They are inconsistent in their hand positioning (McAfee & Leong, 2007), trying out different grips. Toward the end of the period, they experiment with grasps that more closely resemble a tripod grasp (Allen & Marotz, 2000).

Preschoolers in the *green* and *blue* (preschool 3 class and preK 4 class) bands *hold drawing and writing tools by using a three-point finger grip but may hold the instrument too close to one end*. Early in this period the preschooler may experiment with hand preference and with different ways to hold tools (Ahola & Kovacik, 2007) of different kinds and sizes (e.g., large and small crayons, markers, chalk, pencils, pens, and paintbrushes). The 4-year-old uses a more efficient tripod grasp to hold writing/drawing tools than do younger preschoolers (Allen & Marotz, 2000, 2007), but she may still experiment with the most comfortable and efficient hand placement.

Students in the *purple* and *pink* (kindergarten and first grade) bands *use three-point finger grip and efficient hand placement when drawing and writing.* Toward the end of kindergarten children have fairly good control over writing and drawing tools (Allen & Marotz, 2007). However, they still must concentrate on the correct formation of letters, often varying letter size and placement (Allen & Marotz, 2007; Wood, 1997). As their control improves, they begin to print more legibly, although they may sometimes apply too much or too little pressure. First graders increasingly use appropriate form, size, and spacing, although they continue to be somewhat inconsistent (PBS. n.d.). They also have greater control over drawing tools, which allows them to add more details to their drawings (PBS, n.d.).

Students in the *silver* and *brown* (second and third grade) bands *demonstrate control and appropriate pressure when using writing and drawing tools; write legibly*. Throughout the primary grades, children's writing and drawing skills improve dramatically as they have opportunities to use varied writing and drawing materials (Overvelde & Hulstijn, 2011; Tomlinson, 2009). They can print legibly using appropriate spacing and size (PBS, n.d.). They have control over their drawing tools as they begin to portray objects realistically (PBS, n.d.).

Students in the *brown* (third grade) band *move writing or drawing utensils fluidly across the page with increasing speed and accuracy; produce letters and number symbols having accurate formation, size, proportion, slant, and spacing; may use cursive writing.* For most third graders, printing is automatic, organized, and can be used as effective communication tool (Overvelde & Hulstijn, 2011).They no longer have to think about how to form the letters or how to control the writing materials (Feder & Majnemer, 2007). They can copy from the board with improved speed and accuracy (Allen & Marotz, 2007) and take simple notes and write longer compositions (Wood, 1997). Children's fine-motor control and memory assists them as they begin to use cursive writing (McAfee & Leong, 2011) and to add small details to their drawings using various drawing tools (PBS, n.d.).

Objective 7. Demonstrates fine-motor strength and coordination
b. Uses writing and drawing tools

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Language

LANGUAGE OBJECTIVES

8 Listens to and understands increasingly complex language

9 Uses language to express thoughts and needs

10 Uses appropriate conversational and other communication skills

Language is the principal tool for establishing and maintaining relationships with adults and other children. Children's desire to communicate their thoughts, ideas, needs, and feelings with others motivates them to develop language (Epstein, 2007). Learning to understand and use words is complex. Language also involves learning about the structure and sequence of speech sounds, vocabulary, grammar, and the rules for engaging in appropriate and effective conversation (Berk, 2003).

Language development begins at birth, but many children do not receive the ongoing experiences that support this learning. By age 3, differences in children's understanding and use of language are enormous (Berk, 2005; Strickland & Shanahan, 2004). Strong language skills are essential for children's success in school and life (Hart & Risley, 2003; Heath & Hogben, 2004; Jalongo, 2008; Kalmar, 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). Children use language to think and to solve problems. Because words represent objects and ideas, language development is closely related to cognitive development. Children with certain types of disabilities face particular challenges in learning to understand and use language effectively.

Family background and culture also affect how children learn language (Hammer, Hoff, Uchikoshi, Gillanders, Castro, & Sandilos, 2014). There are differences in how much mothers talk with their children and what they talk about. Some parents focus on social norms such as turn-taking; others discuss what people are thinking and feeling. There are major differences in the kinds of questions they ask (Pena & Mendez-Perez, 2006).

Teachers are very important in helping all children develop a strong foundation in language (Nemeth, 2012). Teachers influence language development through the language they use, the way they set up the environment, and the types of experiences they provide. The opportunities children have for sociodramatic play and the level of that play affects children's language development. Higher levels of play allow for increased language and more complex language structures (Heisner, 2005).

Language continues to be a key factor in children's development and learning as they enter first grade (Dickinson, Golinkoff, & Hirsh-Pasek, 2010). Dramatic increases in children's *metalinguistic awareness* occur during the early elementary years. Children begin to think about the elements of language and to use language to analyze, study, and further understand language (Hulit & Howard, 2002). They have greater ability to use decontextualized language, a highly valued school skill that may ease their transition to formal instruction (Snow, Burns, & Griffin, 1998).

As primary-grade children work collaboratively with others, they use and respond to language as they explain, describe, challenge and defend, and negotiate (Neuman, Copple, & Bredekamp, 1999). The ability to describe the world through language furthers primary children's thinking and their growth in knowledge (Juel, 2006). It also exerts a persistent and indirect influence on later reading, and children who fail to attain grade expectations by third grade are less likely to experience later school success than children with stronger language skills (Morrison, Connor, Bachman, 2006). For children at risk of school failure, early and intensive language support is essential (Dickinson et al., 2010).

Objective 8. Listens to and understands increasingly complex language

a. Comprehends language

Infants and toddlers in the *red* (birth–1 year) and *orange* (1–2 years) bands s*how an interest in the speech of others.* Newborns are responsive to the pitch range of the human voice (Berk, 2009) and show great pleasure in hearing language (Zero to Three, 2009). They prefer listening to familiar voices, especially their mother's voice, and to speech in their native tongue (Berk, 2009). Early on, babies turn their eyes and head toward sounds to indicate their interest, and they begin to listen intently to the speech of others (Fahey, 2000). At 12–14 months they learn words when adults name objects that are within sight (PBS, n.d.).

Children in the *orange* (1–2 years) and *yellow* (2–3 years) bands *identify familiar people, animals, and objects when prompted*. Children comprehend more words than they can speak (Charlesworth, 2008). During this period, they are rapidly learning many nouns as well as other types of words (e.g., pronouns, verbs, and descriptive and location words) (PBS, n.d.). When asked, they can point to familiar people, body parts, toys, and other objects (Allen & Morotz, 2000; Shelov & Hannemann, 2004). They can also label familiar objects in books (Burns, Griffin, & Snow, 1999).

Preschool children in the *green* and *blue* (preschool 3 class and preK 4 class) bands *respond appropriately to specific vocabulary and simple statements, questions, and stories*. The language skills of children during this time period are rapidly increasing, and their language abilities are such that they can be expected to respond to adults' suggestions, statements, and instructions (Deak, 2003) and to comment about the literal meaning of stories (Snow, Burns, & Griffin, 1998). They comprehend many word meanings and concepts (Fahey, 2000) and show increased ability to listen to and understand conversations, stories, songs, and poems (PBS, n.d.).

Students in the *purple* (kindergarten) *and pink* (first grade) bands *respond appropriately to complex statements, questions, vocabulary, and stories, ask questions when needed; offer opposites for frequently occurring verbs and adjectives; understand the difference between similar action verbs.* Children in these bands already know the meaning of many words, and their vocabularies grow rapidly (Nemeth, 2012). They enjoy asking questions and having explanations provided to them (Tomlinson, 2009a). Their questions and comments demonstrate their understanding of the actual meaning of stories. They can connect what they hear in a story being read to events in their lives and can connect their life experiences to information in texts (Snow, Burns, & Griffin, 1998).

Students in the *pink* and *silver* (first and second grade) bands *use questions and comments to check for understanding of material presented orally by asking questions and making comments; demonstrate understanding of the differences and to contribute to conversation; explain or demonstrate differences between verbs and adjectives that are somewhat similar; use content clues (e.g., known words, facial expressions, gestures) to determine meaning of unknown words or phrases using context clues from grade-level material.* As children enter the primary grades, their receptive language becomes increasingly important for their interactions with others and for their reading comprehension (Biemiller, 2006). During this time, they not only learn many new words, but they refine and coordinate word meanings as they come to better understand how words relate to one another (Hulit & Howard, 2002; Trawick-Smith, 2006). When they do not understand something, they will ask questions (Allen & Marotz, 2007). They also use contextual clues drawing on known words to help them determine meanings (Hulit & Howard, 2002). As with younger children, primary school students benefit from vocabulary instruction during repeated story readings and word explanations (Biemiller, 2006).

Students in the *silver* and *brown* (second and third grade) bands *demonstrate understanding of topic by asking clarifying questions and by recounting details from discussions or other information presented orally; indicate differences between closely related verbs and adjectives; determine meaning of unknown words using context clues from grade-level material*. By the end of second grade, children generally have acquired between 4,000 and 8,000 root words (Biemiller, 2006; Biemiller & Boote, 2006) and can understand word meanings based on their definitions (Berk, 2009). They continue to use context clues to help them determine word meanings and can answer questions to stories that are read out loud (PBS, n.d.).

Students in the *brown* (third grade) band *use knowledge from discussion to explain ideas and opinions about the topic; explain the main idea when presented with information in a variety of formats; use context to understand literal and nonliteral meanings; understand the difference between related words that describe states of mind or degrees of certainty (e.g., might, must, will).* After second grade, children generally add about 1,000 to 3,000 new word meanings per year (Biemiller & Boote, 2006; PBS, n.d.), including those representing more abstract concepts (Hulit & Howard, 2002). They understand that words can have dual meanings (Berk, 2009) and can interpret subtle inferences, as well as literal meanings, in the speech of others (Ackerman, 1978). They also grasp increasingly syntactically complex sentences, such as those that incorporate passive voice (Tomlinson, 2009b).

Objective 8. Listens to and understands increasingly complex language
a. Comprehends language

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Objective 8. Listens to and understands increasingly complex language

b. Follows directions

Children in the *red* (birth–1 year) and *orange* (1–2 years) bands *respond to simple verbal requests accompanied by gestures or tone of voice.* They show sensitivity to variations in the tone of voice when others are excited, sad, angry, or playful, for example (Ahola & Kovacik, 2007; Allen & Marotz, 2007) and can respond appropriately to commands such as "No!" or "Stop!" They understand common phrases and simple directions used in everyday situations, such as "Let's ride," as the teacher motions to the wagon (PBS, n.d.).

Children in the *orange* (1–2 years), *yellow* (2–3 years), and *green* (preschool 3 class) bands *follow simple requests not accompanied by gestures*. Although adults may still use gestures, children can follow one-and-two-step directions that involve familiar objects and actions (PBS, n.d.) without relying on gestures or tone of voice. They can respond appropriately to simple directives (Allen & Marotz, 2007) such as "Sit down please," "Stand up," or "Put the balls in the basket." The quality of adult-child interactions (i.e., emotional availability) appears to influence toddlers' compliance to adult requests (Lehman, Steier, Guidash, & Wanna, 2002).

Children in the *yellow* (2–3 years), *green* (preschool 3 class), and *blue* (preK 4 class) bands *follow directions of two or more steps that relate to familiar objects and experiences.* Early in the period children are better at understanding and following simple directions, but as they progress in their language and memory capacities, they can understand and follow oral directions (Burns, Griffin, & Snow, 1999) with at least three steps (CDC, 2012a; 2012b). For example, children at the upper bands can respond appropriately to directives such as "Hang up your painting, put on your coat, and go outside."

Children in the *blue* (preK 4 class) and *purple* (kindergarten) bands f*ollow detailed, instructional, multistep directions*. They progress from responding appropriately to directions that relate to familiar objects and situations to those that are novel. Following directions is easier for them if the next step follows logically from the previous action (PBS, n.d.). Teachers' perceptions of how well children follow directions upon entering kindergarten may be linked to demographic characteristics such as school district poverty level, school minority composition, and metropolitan status (Rimm-Kaufman, Pianta, & Cox, 2000). However, during the kindergarten year, children learn to follow directions and carry out assignments most of the time and to do what adults request (Allen & Marotz, 2007).

Students in the *pink* (first grade) band *ask for clarification in order to understand complex directions; carry out directions with 5–6 steps.* Improved comprehension and memory capacity help first graders comprehend and perform multistep directions and instructions (Tomlinson, 2009b). This more advanced ability assists them in participating in game with rules and in carrying out procedures in the proper sequence. When they are unsure of directions, they ask for further explanation (PBS, n.d.; Resnick & Snow, 2009).

Objective 8. Listens to and understands increasingly complex language
b. Follows directions

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Objective 9. Uses language to express thoughts and needs

a. Uses an expanding expressive vocabulary

Infants in the *red* (birth–1 year) band *vocalize and gesture to communicate* their needs and to make contact with others. They engage in behaviors such as crying, cooing (about 3 months), and babbling, (approximately 7–8 months) (Berk, 2009; Trawick-Smith, 2010). They are very skillful at attracting and maintaining the attention of familiar, responsive people (Zero to Three, 2009). They may declaratively point to share attention and interest with adults (Liszkowski, Carpenter, Henning, Striano, & Tomasello, 2004). In addition to pointing, mobile infants also learn to use simple gestures such as reaching up, pushing away, bouncing, and shaking their heads to communicate (Zero to Three, 2009).

Children in the *orange* (1–2 years) and *yellow* (2–3 years) bands *name familiar people, animals, and objects.* Beginning around 20 months, children develop a preference for using words as opposed to gesturing, and this preference and ability grows increasingly stronger (DeLoache, 2004). Vocabulary words at this time include many nouns (i.e., names of common objects and familiar people). Action words, descriptive words, pronouns, and location words also increase during this period. During this time children also normally learn quantifiers (e.g., *more*, *all*, *some*) and question words (e.g., *why*, *where*, *who*, *when*) (PBS, n.d.).

Children in the *green* (preschool 3 class)*, blue* (preK 4 class), and *purple* (kindergarten) bands *describe and tell the uses of many familiar items.* During this children continue to increase their vocabularies for various types of words: nouns (e.g., common objects and familiar people), pronouns, quantifiers, interrogative, action, descriptive, connecting (e.g., *and*, *because*, *but*, *if*), number, location, and category (e.g., toys, furniture, clothes, fruits, and animals) (PBS, n.d.). They use functional definitions, saying, for example, "a shoe is to wear" or "a marker is to draw with" (Allen & Marotz, 2007). Involvement in sociodramatic play stimulates children to use language to convey meaning and to interpret ideas (Neuman & Dickinson, 2002).

When children progress to the *purple* (kindergarten) and *pink* (first grade) bands, they *incorporate new, less familiar, or technical words (acquired through texts and conversations) in everyday conversations; correctly use new meanings for familiar words*. Kindergartners use their growing vocabulary in daily activities and interactions. They are better able than younger children to use their increasing vocabulary to describe an object among a group of similar objects in a way that differentiates it (Tomlinson, 2009a). Between the ages of 5–6, they provide detailed descriptions of objects and their functions (Ahola & Kovacik, 2007) and they recognize that words can have multiple meanings (Resnick & Snow, 2009). As they engage in inquiry, learn more about their world, and construct new concepts, they begin to use specialized vocabulary, such as, scientific words or vocabulary related to technology (Roskos, Tabors, & Lenhart, 2004).

Students in the *pink* and *silver* (first and second grade) bands *incorporate new grade-appropriate words (acquired through texts and conversations); clearly describe and explain events, ideas, and feelings using relevant details*. When children enter the primary grades, their language skills become increasingly sophisticated (Resnick & Snow, 2009). They learn new words rapidly, about five to ten new words daily, although they may not immediately incorporate them into their daily conversations (Allen & Marotz, 2007; Snow, Burns, & Griffin, 1998). Their vocabulary continues to increase as they hear new words read aloud and participate in discussions of unfamiliar words (Armbruster, Lehr, & Osborn, 2006; Tomlinson, 2009b).

Students in the *silver* and *brown* (second and third grade) bands *incorporate new grade-appropriate words (acquired through texts and conversations); use several descriptive words to relay detailed and specific information*. Students in these bands are eager to learn new words and like using their expanding vocabulary in school and other settings (Armbruster, Lehr, & Osborn, 2006). Their language shows increased complexity, details, and precision as they search for the right word/s to convey what they are thinking (Resnick & Snow, 2009). They incorporate descriptive adjectives and adverbs and begin to use synonyms (Allen & Marotz, 2007; Trawick-Smith, 2006).

Students in the *brown* (third grade) band *incorporate new grade-appropriate words (acquired through texts and conversations);use conversational and academic words and phrases; correctly use abstract nouns*. Children's vocabulary becomes increasing important for reading comprehension and for learning subject matter (Biemiller, 2006). They learn new words from reading, listening to others read, and conversations with adults and peers. Third graders begin to use words with more abstract meanings (Resnick & Snow, 2009) and to incorporate ambiguity into their speech in the form of riddles and jokes (Allen & Marotz, 2007; PBS, n.d.).

Objective 9. Uses language to express thoughts and needs
a. Uses an expanding expressive vocabulary

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Objective 9. Uses language to express thoughts and needs

b. Speaks clearly

Infants in the *red* (birth–1 year) band *babble strings of single consonant sounds and combine sounds*. During this period, infants engage in repetitive vocalizations or babbling that increasingly become more elaborate and influenced by the speech of others (Trawick-Smith, 2006). At about 11 months, they use multiple-syllable babbling such as saying "dadada" (Roskos, Tabors, & Lenhart, 2004). They soon begin to put together the familiar sounds of the languages in their environment into "expressive jargon" or "gibberish" that sounds like sentences but does not contain meaningful words (Zero to Three, 2009).

Children in the *orange* (1–2 years) and *yellow* (2–3 years) bands *use some words and word-like sounds and are understood by most familiar people*. Babies' earliest words may not be understood even by familiar people (Trawick-Smith, 2006). The more familiar the person becomes with the child and the more communicative interactions they have, the more the child's speech efforts will be understood. Some word misunderstandings result from the child's overextensions (applies a word to a wider set of objects and events than is appropriate), underextensions (applying words too narrowly), or word coinage (making up new words to replace words not yet mastered) (Berk, 2009). Around 13–24 months, a child's speech production is usually 25% to 50% intelligible (Fahey, 2000).

Children in the *green* (preschool 3 class), *blue* (preK 4 class), and *purple* (kindergarten) bands *are understood by most people; may mispronounce new, long, or unusual words*. Children now articulate clearly enough to be understood by peers (Fahey, 2000; Trawick-Smith, J., 2010), and by 47 months they can be understood by strangers most of the time (Roskos, Tabors, & Lenhart 2004). However, some mispronunciations are still common in the preschool years, primarily because of their lack of auditory discrimination (Kostelnik et al., 2004).

As children proceed to the *purple* (kindergarten) and *pink* (first grade) bands, they can *pronounce multisyllabic or unusual words correctly; speak audiby*. In general, they have mastered complicated syllable arrangements of long words (Fahey, K.R., 2000), and they pronounce most words with little difficulty (Bredekamp & Copple, 1997). Their burgeoning interest in their world propels them to ask questions, conduct explorations, and to "read" books about particular topics of interest. During project study, young investigators often copy and save words about things in which they are interested (Helm & Katz, 2011), propelling them to learn new and unusual words not part of their everyday vocabulary.

Students in the *pink* and *silver* (first and second grade) bands are able to *adjust volume and rate of speech in order to be clearly understood when speaking to individuals and groups*. In general, first and second grade children pronounce words correctly and speak clearly so they can be understood by others. As they learn to read, their pronunciation improves (Resnick & Snow, 2009). They regulate their speaking rate, volume, and pitch appropriate for the setting and audience (PBS, n.d.).

Students in the *silver* and *brown* (second and third grade) bands *speak clearly when giving a lengthy description of an event or personal experience to an individual or group; adapt word choices to be appropriate to the audience*. Children of this age speak distinctly with clear enunciation and pronunciation of familiar words (Resnick & Snow, 2009). They have mastered all speech sounds and are generally 100% intelligible (McAfee & Leong, 2007).

Students in the *brown* (third grade) band *use appropriate expression and inflection when relaying details about a story, personal experience, or specific topic to an individual or group*. In third grade, children give short, prepared talks (Resnick & Snow, 2009), and they regulate the rate, pitch, and volume as they communicate with others (PBS, n.d.). Their speech can be understood by unfamiliar listeners as well as those persons with whom they are familiar (PBS, n.d.).

Objective 9. Uses language to express thoughts and needs
b. Speaks clearly

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Objective 9. Uses language to express thoughts and needs

c. Uses conventional grammar

Children in the *orange* (1–2 years) and *yellow* (2–3 years) bands *use one- or two-word sentences or phrases* to express their thoughts and needs. Young children's development of grammatical function words (e.g., prepositions, determiners, and pronouns) emerge later in lexical development than concrete nouns (Conboy & Thal, 2006). Between the ages of 1½ and 2½ years, children can form two-word utterances as they shift from previous word-gesture combinations to joining two words such as "Daddy ball" or "More juice" (Berk, 2009; Roskos, Tabors, & Lenhart, 2004; Trawick-Smith, 2010). Children as young as 24 months can learn novel nouns in both context-rich and context-sparse settings. However, it appears that a context-rich setting is required for them to learn the meanings of novel verbs (Arunachalam & Waxman, 2011).

Children in the *yellow* (2–3 years) and *green* (preschool 3 class) bands *use three- to four-word sentences; may omit some words, or use some words incorrectly.* During these bands, children communicate using a series of simple sentences to relate their ideas (PBS, n.d.). In the third year, three-word sentences appear in which English-speaking children follow a specific word order (i.e., subject-verb-object) (Berk, 2009). Most preschoolers will still make some grammatical mistakes involving plurals (e.g., "mices") or past-tense irregular verbs ("I goed") (Tomlinson & Hyson, 2009).

Children in the *green* (preschool 3 class) and *blue* (preK 4 class) bands *use complete, four- to six-word sentences.* As children gain vocabulary and more experience with language, they are better able to use words that do grammatical work (Conboy & Thal, 2006). During this period children produce more complex constructions (Allen & Marotz, 2000; Hulit & Howard, 2002), and their language usage increasingly conforms to the grammatical rules of their home language (Berk, 2009).

Students in the *purple* (kindergarten) and *pink* (first grade) bands *use long, complex sentences and follow most grammatical rules; use common verbs and nouns (including plural nouns)*. By this age, children's language and the language of adults are similar. Their language is complex and intricate (Strickland & Morrow, 1989). They produce involved sentences (Berk, 2009) of five to seven words, and it is not uncommon for their sentences to be even longer (Allen & Marotz, 2000). Kindergartners understand much about the structure of sentences, and they use correct grammatical structures most of the time (Tomlinson, 2009). By the end of first grade, they make spontaneous modifications to their grammatical errors (Resnick & Snow, 2009).

Students in the *pink* and *silver* (first and second grade) bands *generate a variety of sentence types; match correct subject/verb agreement; use most parts of speech correctly, including nouns (common, proper, and possessive), verbs (past, present, and future), pronouns (personal, possessive, and indefinite), adjectives, conjunctions (e.g., and, but, or, so, because), articles (e.g., a, an, the), and demonstratives (e.g., this, these, that); identify root words in frequently occurring forms.* In general, the grammar of first and second graders does not differ dramatically from that of adults (Bjorklund, 2005). They decrease their use of non-mainstream English, while increasing their standard English usage (Terry & Connor, 2012; Terry, Connor, Petscher, & Conlin, 2012). Students use appropriate verb tenses, word order, and sentence structure (Allen & Marotz, 2007) as they create complex sentences comprised of long declaratives or questions containing negatives and clauses (Trawick-Smith, 2006).

Students in the *silver* and *brown* (second and third grade) bands *use multiple types of less frequently occurring nouns,including collective and irregular plural nouns; use reflexive pronouns, past tense of frequently occurring irregular verbs, adjectives, and adverbs; rearrange sentences to produce and expand compound sentences*. Adult-like sentence structures are common in the conversations of second and third grade students. Standard English usage continues to increase (Terry, Connor, Petscher, & Conlin, 2012), although children's conversations may still reflect cultural and geographical variations (Allen & Marotz, 2007). They use nouns, verbs, adjectives, and adverbs correctly (Armbruster, Lehr, & Osborn, 2006) and can indicate if sentences are grammatically correct and incorrect (Trawick-Smith, 2006).

Students in the *brown* (third grade) band *produce simple, compound, and complex sentences for multiple purposes; identify and explain the functions of nouns, pronouns, verbs, adjectives, and adverbs in a sentence; use regular and irregular verbs, plural nouns, and simple verb tenses; use correct subject-verb and pronoun-antecedent agreement; use comparative and superlative adjectives and adverbs; use coordinating and subordinating conjunctions; recognize differences between written and spoken English.* Third graders use different parts of speech accurately and adhere to grammatical rules in their conversations and writings (Allen & Marotz, 2007; Armbruster, Lehr, & Osborn, 2006). Their writings indicate their understanding of the differences between the more formal grammar used in writing and that used in everyday conversations (McAfee & Leong, 2007). They conjoin clauses to produce increasingly complex sentences. As with younger children, the word *and* is the conjunction used most frequently to join clauses (Berk, 2009; Hulit & Howard, 2002).

Objective 9. Uses language to express thoughts and needs
c. Uses conventional grammar

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Objective 9. Uses language to express thoughts and needs

d. Tells about another time or place

Children in the *orange* (1–2 years) and *yellow* (2–3 years) bands *make simple statements about recent events and familiar people and objects that are not present.* At first they comprehend words for present people or objects and actions and then understand words that represent absent people and objects (Miller, Chapman, Branston, & Reichle, 1980). "As early as 1 1/2 to 2 years, children start to talk about the past" (Berk, 2009, p. 297). This new accomplishment may be relatively simple, such as going to the classroom door and saying, "Nana!" "Nana!" when told her grandmother will be picking her up. The ability to understand what another is talking about and to communicate it when the topic of conversation is not present (Jalongo, 2008) is a major achievement in children's language and cognitive development (Allen & Marotz, 2000).

As children progress to the *yellow* (2–3 years) and *green* (preschool 3 class) bands, they *tell simple stories about objects, events, and people not present;* they *lack many details and a conventional beginning, middle, and end.* Children begin to tell about personal experiences by offering the main events, at first, leaving out much of the contextual details necessary for a non-participant to understand the story (PBS, n.d.). Early during this period their "storylike" narratives are rather primitive (Strickland & Schickendanz, 2004) and may not appear to be real stories (Hulit & Howard, 2002). Children may repeat the same words over and over and be playful or even silly as they tell their stories (Morrow, 2007).

Children in the *green* (preschool 3 class), *blue* (preK 4 class), and *purple* (kindergarten) bands *tell stories about other times and places that have a logical order and that include major details.* When children have been read many stories, their narratives begin to resemble the formal structures of stories (Schickedanz, 1999). Children begin telling stories from their personal experiences. Prompts may be required for the child to provide the major details to someone unfamiliar with the event so the child will not omit important elements or include superfluous details (PBS, n.d.). Older preschool and kindergartners will state the "who," "when," and" where" in their narratives about occurrences outside of school most of the time (Bowman, Donovan, & Burns, 2001).

Children in the *blue* (preK 4 class), *purple* (kindergarten), and *pink* (first grade) bands *tell elaborate stories that refer to other times and places.* Between the ages of 4½ and 5, children begin to create chronological narratives that build to a high point (Berk, 2009). Although the stories of kindergartners have a coherent plot, structure, and theme (Curenton, 2006), they still lack the intricate plots and particulars evidenced by older children and adults (Hulit & Howard, 2002). The setting (i.e., home, school, or car) can influence children's topics of conversation (e.g., persons, school projects, and play) and time referents (i.e., past, present, or future events) (Marvin, 1994, 1995).

Students in the *pink* and *silver* (first and second grade) bands *tell stories with clear sequence of events, including a climax and resolution*. Children in first and second grade enjoy telling stories and imaginative tales (Allen & Marotz, 2007). During this period, the length and complexity of their sentences increase, and students include all essential narrative elements (Bjorklund, 2005). Their tales have plots which include the problem, a plan for resolving the dilemma, and the results of the actions taken (Hulit & Howard, 2002). They may include traditional beginning and ending markers such as *Once upon a time* and *happily ever after* (PBS, n.d.).

Students in the *silver* and *brown* (second and third grade) bands *accurately and thoroughly retell previously heard stories or information*. Children are now well-organized as they precisely recount and provide rich details from stories (Resnick & Snow, 2009). Their stories have clearly defined plots, and they eliminate superfluous information in their retellings (Hulit & Howard, 2002; PBS, n.d.). Third graders summarize and explain what they have previously learned (PBS, n.d.).

Objective 9. Uses language to express thoughts and needs
d. Tells about another time or place

- **Allen, K. E., & Marotz, L. R. (2000).** *By the ages: Behavior & development of children pre-birth through eight*. Albany, NY: Thomson Delmar Learning.
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Objective 10. Uses appropriate conversational and other communication skills

a. Engages in conversations

Infants and toddlers in the *red* (birth–1 year) and *orange* (1–2 years) bands *engage in simple back-and forth exchanges with others*. During the first few months of life, infants participate as a conversational partner (Zero to Three, 2009) as they imitate the sounds and vocalizations made by others (Fahey, 2000). By 3 months, a time when many infants are placed in out-of-home care settings, they are quite adept at catching and maintaining the attention of familiar, responsive people. They smile, laugh, cuddle, coo, reach out, and hold tight and engage with others "in back-and-forth exchanges of gazes, grimaces, and grins" (Zero to Three, 2009, p. 55). They take vocal turns (Fahey, 2000), and during the first year, babies begin to babble with inflection (Shelov & Hannemann, 2004). During the second year, they begin to repeat the words they hear during a conversation (Shelov & Hannemann, 2004).

Children in the *orange* (1–2 years) and *yellow* (2–3 years) bands *initiate and attend to brief conversations.* Early during this period, children show an awareness of the back and forth aspects of conversational exchanges. They engage in vocal interactions by making and imitating sounds (Allen & Marotz, 2007). As they begin to participate in true conversations, these are brief, with about two exchanges per conversational topic (Hulit & Howard, 2002; McAfee & Leong, 2007). Children may maintain the conversation by repeating the words or phrases of their conversational partner.

Children in the *green* (preschool 3 class) and *blue* (preK 4 class) bands *engage in conversations of at least three exchanges*. Many preschoolers use narratives to begin a conversation (Bowman, Donovan, & Burns, 2001). Play settings may promote language that is longer and representative of preschoolers' true conversational abilities (Schober-Peterson & Johnson, 1989). They change their speech as they assume different roles (e.g., firefighter, mother, or teacher) (McAfee & Leong, 2007). Enacting scenarios, describing, and problem solving seem to elicit longer conversations with 4-year-old children than other types of situations (Schober-Peterson & Johnson, 1989).

Children in the *purple* (kindergarten) and pink (first grade) bands *engage in complex, lengthy conversations of five or more exchanges.* Children now become more skillful at sustaining conversations that are long and involved as they converse with both peers and adults (Tomlinson, 2009a). They draw upon their conversational repair abilities to maintain conversations by changing words and asking their speech partner for clarification (Hulit & Howard, 2002). During their conversations, kindergartners change or modify the topic gradually and adjust their speech to the need of the listener (e.g., adding additional information, simplifying language) (McAfee & Leong, 2007).

Students in the *pink* and *silver* (first and second grade) bands *extend conversations by responding to comments and asking questions; ask and answer questions to clarify information during grade-appropriate discussions*. Children in these bands are active participants in conversations with teachers and classmates as they give information, provide directions, and share their opinions (Armbruster, Lehr, & Osborn, 2006; McAfee & Leong, 2011). They want to be understood and will clarify their responses based on the listener's request for additional information (Hulit & Howard, 2002; PBS, n.d.). When they are unsure about something being discussed, they ask for additional explanation (Resnick & Snow, 2009).

Students in the *silver* and *brown* (second and third grade) bands *connect others' ideas shared during conversations; ask questions in order to better understand grade-appropriate discussions*. Second and third graders use a variety of strategies for maintaining conversations and discussions. They purposefully solicit the opinions and ideas of others and ask open-ended questions or those requiring more elaborate answers (Resnick & Snow, 2009). When they do not understand, they ask for further explanation, particularly when those statements or questions appear nonsensical to them (Hulit & Howard, 2002).

Students in the *brown* (third grade) band *contribute to a focused discussion on a specific topic, preparing in advance for planned discussions using multiple sources; explain ideas based on both prior knowledge and new information learned from the conversation.* Students in the third grade actively participate in lengthy class discussions (Resnick & Snow, 2009), using appropriate subject-related language as they ask questions and respond to the questions posed by others (PBS, n.d.). They know how to summarize the main points gleaned from personal experiences and their interactions with books, the Internet, and experts (Armbruster, Lehr, & Osborn, 2006; Resnick & Snow, 2009). They become more skillful during conversations at responding to indirect signals that the listener needs further clarification such as a quizzical look (Resnick & Snow, 2009).

Objective 10. Uses appropriate conversational and other communication skills
a. Engages in conversations

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Objective 10. Uses appropriate conversational and other communication skills

b. Uses social rules of language

Children in the *orange* (1–2 years) band *respond to speech by looking toward the speaker; watch for signs of being understood when communicating.* During this period, children extend their joint attention, and culturally-derived (Trawick-Smith, 2006) social interactions begun earlier (Berk, 2009). They use gestures (e.g., pointing toward the object of conversation) and other behaviors (e.g., pulling at the adult's coat sleeve) to direct attention or to clarify messages not clearly communicated (Berk, 2009). Children in this band appear to be aware of the back-and-forth aspects of conversational exchanges, and they engage in some turn-taking (Allen & Marotz, 2007).

Children in the *orange* (1–2 years), *yellow* (2–3 years), and *green* (preschool 3 class) bands *use appropriate eye contact, pauses, and simple verbal prompts when communicating*. Culture influences children's facial expressions and the meanings of timing and pauses, which may be different from those in mainstream American culture (Trawick-Smith, 2006). Children in these bands generally look at the speaker to indicate they are listening (Trawick-Smith, 2006). At about 35–40 months they begin to understand the meaning and probable consequences of short and long pauses in conversations (i.e., conversation continues or conversation ends) (Hulit & Howard, 2002). During this period, children, particularly in the younger bands, sometimes have difficulty waiting for their turn and may need verbal prompts as reminders (Bredekamp & Copple, 1997).

Children in the *green* (preschool 3 class) and *blue* (preK 4 class) bands *use acceptable language and basic social rules while communicating with others; may need reminders.* Preschoolers have learned many language conventions that govern the social situations (Strickland, 2006) of their culture (Trawick-Smith, 2006). They enjoy having their turn to talk, and they typically do not interrupt an individual speaker. However, they may find it difficult to wait their turn in group conversation (PBS, n.d.), and reminders may be needed. Preschoolers generally use acceptable volume, tone, and inflection in their conversations (PBS, n.d.). They can "use polite language forms to request (*please*), interrupt (*excuse me*), or thank others" (Fahey, 2000, p. 111).

Students in the *purple* (kindergarten) and *pink* (first grade) bands *use acceptable language and basic social rules during communication with others.* They show increasing skill at using different voice levels, phrasing, and rate of speech appropriate to the audience, purpose, and situation (Fahey, 2000; McAfee & Leong, 2007; PBS, n.d.; Tomlinson, 2009). They use suitable language when answering and talking on the telephone (Allen & Marotz, 2007) and when responding to greetings and conversational initiations such as *Hi*. and *How are you*?

Students in the *pink* and *silver* (first and second grade) bands *listen attentively while taking turns in a discussion, using nonverbal signals to show understanding and interest (e.g., nodding, using appropriate facial expressions)*. The social rules of language are more numerous and more strictly enforced in primary school settings than they are in the home and other less formal environments (Trawick-Smith, 2006). During first and second grade, children show politeness as they listen and respond to others (Resnick & Snow, 2009). They also become more skillful at perceiving the nuances of conversation and responding to subtle and indirect messages including those conveyed by eye contact and sighs (Hulit & Howard, 2002).

Students in the *silver* and *brown* (second and third grade) bands *enter discussions in respectful ways (e.g., says, "Excuse me," waits and signals for a chance to speak); identify the difference between formal and informal English*. Second and third graders make tremendous progress in their oral interactions with others. They have experienced numerous opportunities to engage in oral communication in formal and casual settings and to practice using the social rules of language appropriate for various settings and situations (Resnick & Snow, 2009). They take turns when speaking and show politeness and respect in verbal interactions (PBS, n.d.).

Students in the *brown* (third grade) band *engage politely in conversations in which both speakers present and listen to arguments respectfully.* Third graders are aware of the appropriate social conventions of language in various, familiar social settings. They show deference to adults (McAfee & Leong, 2011), and they begin and end conversations in acceptable ways (PBS, n.d.). By the end of third grade, they regularly follow the expected social customs of language, and they often remind others of these social norms. As they become more aware of the differing viewpoints of others, they learn how to diplomatically present their own views and respond appropriately to the opinions of others (Resnick & Snow, 2009).

Objective 10. Uses appropriate conversational and other communication skills
b. Uses social rules of language

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Cognitive

COGNITIVE OBJECTIVES

11 Demonstrates positive approaches to learning

12 Remembers and connects experiences

13 Uses classification skills

14 Uses symbols and images to represent something not present

Cognitive development, sometimes called intellectual development, is influenced by the child's approaches to learning as well as his or her biological makeup and the environment. 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).

What and how children learn often varies considerably from culture to culture, and variations exist in the ways children within a cultural group perform specific cognitive tasks (Trawick-Smith, 2006). Learning a second language provides dual-language learners with unique experiences that can boost or hinder certain aspects of cognitive functioning (Barac, Bialystok, Castro, & Sanchez, 2014). For some children, particular disabilities interfere with the development of their conceptual and reasoning skills (Cook, Klein, & Tessier, 2004).

The physical environment of the classroom, types of activities, and the kinds of interactions children have with adults and other children influence various aspects of cognitive development including the way children they approach learning. and influence other aspects of their cognitive development. 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; McWayne, Fantuzzo, & McDermott, 2004; Yen, Konold, & McDermott, 2004). These dispositions and behaviors are not static and must be nurtured by intentional teaching methods and effective curriculum (Hyson, 2005, 2008; Hyson, Buch, Fantuzzo, & Scott-Little, 2006).

Play is considered an important component of effective curriculum (Bergen, 2013; Bohart, Charner, & Koralek, 2015; Hirsh-Pasek & Goinkoff, 2015).The collective body of evidence points to many links between cognitive competence and play, particularly high-quality dramatic play. Some of the benefits associated with play include self-regulation; memory development; divergent thinking; problem solving; language development; and academic skill development in literacy, math, social studies, and science (Bergen, 2002; Bodrova & Leong, 2004; Charlesworth, 2008; Krafft & Berk, 1998; Fantuzzo & McWayne, 2002; Howes & Matheson, 1992; Klein, Wirth, & Linas, 2004; Newman, 1990; Nourot & Van Hoorn, 1991; O'Reilly & Bornstein, 1993; Smilansky & Shefatya, 1990; Steglin, 2005).

Notable shifts occur in the cognitive abilities and processes of children in the primary grades. They become more flexible and multidimensional in their thinking, solve a wider range of problems, mentally and symbolically manipulate concrete concepts, and think about their own mental activities (Berk, 2013; Bjorklund, 2005; Tomlinson, 2012).

Cognitive

As children progress to higher grades, more is required of them, and the ways they approach learning become increasingly important (Li-Grining, Votruba-Drzal, Maldonado-Carreño, & Haas, 2010; McDermott et al., 2014). During the school day, they use self-regulatory skills to focus on tasks, remain in their seats, and cooperate with classmates (Blair, 2002; Raver, 2002; Li-Grining et al., 2010). Their socialization to the school environment nurtures the development of goal orientation, focused attention, resourcefulness, initial engagement, and the ability to plan (Chen, Masur, & McNamee, 2011).

Objective 11. Demonstrates positive approaches to learning

a. Attends and engages

Infants and toddlers in the *red* (birth–1 year) and *orange* (1–2 years) bands *pay attention to sights and sounds.* Infants and toddlers attend to and engage with things they find interesting (Hyson, 2008; PBS, n.d.). At first infants participate in very basic engagement, such as looking (Hyson, 2008). They like to watch nearby people, objects, and activities (Allen & Marotz, 2007). Young infants will stare intently at mobiles with highly contrasting colors and geometric designs (Allen & Marotz, 2007; Berk, 2009). Human faces, including their own, capture their attention (Berk, 2009), and they enjoy unbreakable crib and wall mirrors by focusing attention on the reflection of the "baby" (Bronson, 1995). They also attend to the sounds around them. Young infants listen longer to human speech sounds than to similar non-human sounds (Berk, 2009), and they enjoy listening to live or recorded music. Many of the activities during which children of these ages attend are those experiences shared with adults (Hyson, 2008). Babies several months old become absorbed in mutual gazing, cooing, and smiling behaviors (Berk, 2009). Older infants and toddlers enjoy joint activities, such as looking at picture books (Hyson, 2008) and listening to rhymes and songs, occasionally joining in the activity (Allen & Marotz, 2007).

Children in the *yellow* (2–3 years) and *green* (preschool 3 class) bands *sustain interest in working on a task, especially when adults offer suggestions, questions, and comments.* Signs of attending include the ability to ignore distractions and to respond to adults' gestural and verbal cues for attention (McAfee & Leong, 2007). Two-year-olds look at things for long moments and become engrossed in trying to understand a situation, such as figuring out what is making a particular sound (Allen & Marotz, 2007). Children's attention is longer, and they can remain focused for longer periods of time when they select activities for themselves (Charlesworth, 2008). Adult guidance and adequate time for sustained play also contribute to children's attention and engagement (Tomlinson & Hyson, 2009). Three-year-olds are better able than younger children to ignore distractions while playing and to focus on the current task (Hyson, 2008).

Children in the *blue* (preK 4 class) and *purple* (kindergarten) bands *sustain work on age-appropriate, interesting tasks; can ignore most distractions and interruptions.* Older preschool and kindergarten children have an increased ability to focus their attention. They can ignore more distractions and interruptions than previously and can communicate to others their desire not to be interrupted (Hyson, 2008). Their attention and engagement vary as a function of different factors: global classroom quality, setting type/group configurations (i.e., whole group, small group, or individual) and teacher behaviors/interactions (e.g., positive affirmations, social talk, and directions and instructions). Children in high-quality kindergarten programs have higher behavioral engagement and spend less time "off-task" than children in programs of lower quality (Rimm-Kaufman, Curby, Grimm, Nathanson, & Brock, 2009; Rimm-Kaufman, LaParo, Downer, & Pianta, 2005), and they tend to be more engaged when they are in small- versus whole-group settings (Rimm-Kaufman et al., 2005). The teacher's positive affirmations and monitoring behaviors can increase preschool children's engagement, whereas whole-group settings where teachers mainly provide directions are less likely to encourage children's attention and engagement (Powell, Burchinal, File, & Kontos, 2008).

Students in the *purple* (kindergarten) band *sustain attention to tasks or projects over time (days to weeks); can return to activities after interruptions.* Although older preschool children begin to carry over topics and projects from one day to the next (Copple & Bredekamp, 2006), kindergarten children are able to maintain longer-term, more complex activities and projects. They "still have limited attention spans when compared with older children or adults unless they are pursuing self-chosen goals in play, which are highly motivating" (Berk, 2006, p. 15). Advances in the brain development of fives provide them with greater cognitive inhibition that allow kindergartners to stay focused for longer periods of time without becoming distracted and drifting to alternative thoughts (Berk, 2006). They can attend and work on activities for about 20 minutes (Tomlinson, 2009) and for much longer if it is something that they have selected and in which they have great interest (Hyson, 2008), such as projects or in-depth studies (Katz & Chard, 1995). Kindergarten children can also follow through on new tasks that they themselves have chosen and that may take several days, such as learning to ride a bike (Hyson, 2008; PBS, n.d.).

Students in the *pink* (first grade) band *selectively focus attention based on task difficulty and shift attention toward teacher's goal; demonstrate concentrated effort*. First graders realize that doing well on tasks depends at least in part, on paying attention and concentrating (Berk, 2009). Although they attend for increasingly longer periods of time than younger children (Chen, Masur, & McNamee, 2011; PBS, n.d.), their concentrated efforts may be somewhat inconsistent (Allen & Marotz, 2007). They may require teacher assistance to interpret cues for attending and to maintain attention (McAfee & Leong, 2007). Teacher guidance helps them to improve their ability to focus attention when needed, to ignore distracting information, and to selectively focus on relevant material (Tomlinson, 2012).

Students in the *silver* (second grade) band *concentrate on tasks for extended periods but may become restless, especially during activities viewed as less interesting; repeatedly practice activities thought to be enjoyable.* As with younger children, the type of activity or task contributes to second graders' attention and engagement (Chen, Masur, & McNamee, 2011). They are attentive and engaged for longer periods of time when they find the task or activity interesting than when they do not find it appealing. They understand how to shift their attention in accordance with the teacher's expectations, but they may fidget if they are required to sit still for long periods of time (PBS, n.d.), Their desire to finish what they begin helps them to stay engaged until a project or task is completed (Wood, 1997).

Students in the *brown* (third grade) band *direct attention based on previous performance and concentrate on activities that require additional study.* Third graders continue to improve in their abilities to attend and concentrate. They are better able than younger children at knowing when and how to focus their attention and to ignore irrelevant material (Tomlinson, 2012). This ability helps them to concentrate on tasks that are new or that they find particularly challenging (Berk, 2009; Tomlinson, 2012). They can attend during most activities, even those that may not be particularly stimulating (PBS, n.d.).

Objective 11. Demonstrates positive approaches to learning
a. Attends and engages

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Objective 11. Demonstrates positive approaches to learning

b. Persists

Children in the *red* (birth–1 year) and *orange* (1–2 years) bands *repeat actions to obtain similar results.* Beginning in their first year, children show persistence as they repeat actions to make pleasurable sights, sounds, and interactions continue (Bredekamp & Copple, 1997; Zero to Three, 2009). Younger infants may coo or smile at people with whom they have had pleasurable communicative exchanges, or they may kick to see the mobile move and then do it over again (Zero to Three, 2009). Toddlers are intrigued by words and the responses they get when using them. They may continue to search for a hidden object in the same location where they previously found it (Allen & Marotz, 2007).

Children in the *orange* (1–2 years), *yellow* (2–3 years), and *green* (preschool 3 class) bands *practice an activity many times until successful.* One-year-old children show pleasure, such as by clapping, when they complete simple tasks (PBS, n.d.). Twos begin to persist with a wider range of tasks and will carry out an activity many times in order to master it (Hyson, 2008; PBS, n.d.). Three-year-olds repeat activities to test their skill (Copple & Bredekamp, 2006). They expand their abilities to independently complete a variety of self-help tasks and may refuse adult assistance (e.g., try repeatedly to put on a coat) (PBS, n.d.).

Children in the *blue* (preK 4 class) and *purple* (kindergarten) bands *plan and pursue a variety of appropriately challenging tasks.* Preschool and kindergarten children engage in not only tasks that are easy for them to accomplish, but they also persist at a challenging task that requires them "to tolerate frustration and to work through it to achieve a positive outcome" (Hyson, 2008, p. 17). Threes will persist in completing something that is somewhat difficult, and fours increasingly can make simple plans and complete challenging tasks (Hyson, 2008; PBS, n.d.). Four-year-olds also show interest in a variety of different things, and they increasingly engage in content-related undertakings (e.g., literacy, mathematics, and science) or other activities that may challenge their abilities (Copple & Bredekamp, 2006). Kindergartners are increasingly capable of using their planning abilities to pursue challenging tasks (Berk, 2006).

Students in the *purple* (kindergarten) and *pink* (first grade) bands *plan and pursue their own goal until it is reached.* Fives are gaining in their ability to plan ahead, and they frequently pursue activities with a result or end product in mind (Berk, 2006; Copple & Bredekamp, 2006). They can plan for familiar events (i.e., going grocery shopping), including making plans to prevent mishaps and finding solutions if they should occur (Hudson, Shapiro, & Sosa, 1995). They show interest and skill in learning tasks of their choosing and can follow them through to completion (PBS, n.d.). First graders persist for even longer periods of time than do kindergarten or younger children (Chen, Masur, & McNamee, 2011).

Students in the *silver* (second grade) band *plan and complete grade-appropriate tasks and projects with minimal adult assistance*. Second graders plan ahead and think about the steps needed to complete projects (PBS, n.d.). They work hard at tasks but like to have enough time allotted to bring them to fruition (Wood, 1997). They try to complete tasks without adult help but will ask for assistance as needed (Allen & Marotz, 2007; PBS, n.d.).

Students in the *brown* (third grade) band *finish long assignments and projects that last for days or weeks;may briefly give up on difficult tasks but return to complete them* Third graders enjoy challenges and will continue to work on lengthy projects until they are completed. They sometimes work independently and sometimes with friends (Allen & Marotz, 2007; Bronson, 1995; PBS, n.d.). When they get tired or frustrated from working on a difficult task or assignment, they may temporarily stop, only to go back to it later to complete what they have begun (Wood, 1997).

Objective 11. Demonstrates positive approaches to learning
b. Persists

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Objective 11. Demonstrates positive approaches to learning

c. Solves problems

Children in the *red* (birth–1 year) and *orange* (1–2 years) bands *react to a problem; seek to achieve a specific goal.* Problem-solving abilities generally begin during the later part of the first year of life (Bjorklund, 2005). Children use various physical or motor-based strategies to solve problems and reach simple goals (Hyson, 2008; McMullen & Darling, 2003). Although children develop new problem-solving techniques during this period, they still depend almost exclusively on trial and error (Bjorklund, 2005). Toddlers can recognize a problem and their physical limitations in reaching their desired goal. By gathering information through exploration and utilizing trial-and-error strategies, they can select the more effective solution (Berger, Adolph, & Lobo, 2005).

Children in the *yellow* (2–3 years) and *green* (preschool 3 class) bands observe and imitate how other people solve problems, ask for a solution, and use it. Children now are beginning to work out problem solutions mentally rather than by relying exclusively on trial and error (Bronson, 1995). During this period, by observing others, children can imitate the way they solve problems. For example, they may watch how an older child or adult balances a simple house of blocks and then copy the structure themselves (Bjorklund, 2005). Children begin to think more systematically, and they benefit from conversations with adults and peers (Hyson, 2008). They increasingly are able to ask for help on tasks they find demanding (Hyson, 2008), but they may not accept the assistance (PBS, n.d.).

Children in the *green* (preschool 3 class), *blue* (preK 4 class), and *purple* (kindergarten) bands *solve problems without having to try every possibility.* Preschoolers are more flexible in their thinking than younger children and can draw on varied resources to help them solve problems (Hyson, 2008). Threes begin to anticipate the consequences of their actions (Tomlinson & Hyson, 2009) and to internalize and utilize symbols to solve problems without having to rely upon sensorimotor and trial-and-error strategies (McMullen & Darling, 2003). Although older preschool children can be taught problem-solving skills (Joseph & Strain, 2010), children's play provides many dilemmas for them to solve (Smith & Dutton, 1979). Play is one of the first real opportunities for problem solving and can produce faster problem solving for innovative tasks than training can (Smith & Dutton, 1979). Toward the later part of the period, fours and kindergartners begin to employ strategies to generate solutions to problems (e.g., self-correcting, correcting others, and checking) and to monitor their success (Roskos & Christie, 2002).

Students in the *purple* (kindergarten) and *pink* (first grade) bands *think problems through, considering several possibilities and analyzing results.* Kindergarten children become increasingly able to think of different possibilities and solutions to problems. A child can "use varied and flexible approaches to solve longer-term or more abstract challenges (e.g., when planning to have friends over on a rainy day, thinks about how to deal with a limited space to play)" (Hyson, 2008, p. 137). Children can analyze multifaceted problems more precisely to identify the type of help needed (Hyson, 2008). With teacher support, they can utilize strategies to help them solve problems (e.g., think aloud, work backwards, trial and error, and breaking the problem into smaller steps (McAfee & Leong, 2007) and to find ways to record and analyze results (Linder, 2012).

Students in the *silver* (second grade) and *brown* (third grade) bands *solve a wide range of problems using a variety of strategies; attempt to solve problems independently before asking for assistance from others.* Second and third graders are able to think about the problem-solving process and can reflect on and evaluate their ideas for solutions (McAfee & Leong, 2007). They benefit from asking questions and explaining their understandings back to adults (PBS, n.d.). When they encounter difficulties, they may use overt self-talk (Winsler & Naglieri, 2003). They draw upon available information, materials, and their own resources, before seeking assistance from adults or peers (PBS, n.d.).

Students in the *brown* (third grade) band *plan, consider various alternatives, and combine skills and strategies needed to solve problems.* Third graders' problem-solving abilities are much more sophisticated than they were at younger ages (Allen & Marotz, 2007). These new capabilities may be the result of important neurodevelopmental changes which occur between second and third grades. These changes allow students to solve more challenging task-related problems (e.g., in mathematics), than previously (Rosenberg-Lee Barth & Menon, 2011). Students enjoy solving problems independently, and increasingly use logic and creative problem-solving strategies as they work systematically to find solutions to challenges (Allen & Marotz, 2007; PBS, n.d.).

Objective 11. Demonstrates positive approaches to learning
c. Solves problems

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Objective 11. Demonstrates positive approaches to learning

d. Shows curiosity and motivation

Children in the *red* (birth–1 year) and *orange* (1–2 years) bands *use senses to explore the immediate environment.* Infants and young children appear to be driven by their curiosity and an intense need to explore their world. From birth to 6 months, infants explore with their eyes and ears and then begin to investigate with their hands, feet, and mouth (Bronson, 1995). They actively participate in various sensory experiences (e.g., tastes, touches, pats, and shakes) (Hyson, 2008), and they discover that they can alter what they see, hear, or feel through their own actions (Zero to Three, 2012). Increased motor abilities during the first year allow infants to gain access to more interesting objects and events in their environment (Garner & Bergen, 2006), and they enthusiastically use their senses to purposefully explore everything within reach (Hyson, 2008). Toddlers continue to obtain information about their world through their senses (PBS, n.d.). They show curiosity by constantly experimenting with and exploring objects (Bronson, 1995).

Children in the *yellow* (2–3 years) and *green* (preschool 3 class) bands *explore and investigate ways to make something happen.* Twos continue to show curiosity and enjoyment in their daily explorations (PBS, n.d.). They become very interested in the processes involved in creative activities and exploring materials to see what they can do with them (Bronson, 1995). They now understand simple cause-and-effect relationships and enjoy acting on objects to see the results (Bronson, 1995). Threes continue to explore and investigate using all their senses, seek new challenges, and ask questions (Hyson, 2008).

Children in the *green* (preschool 3 class), *blue* (preK 4 class), and *purple* (kindergarten) bands *show eagerness to learn about a variety of topics and ideas.* Preschool and kindergarten children are curious about the things in their world. Threes like to take things apart to see what's inside and how it works, and they experiment with cause-and-effect relationships (Copple & Bredekamp, 2006). Fours want to try new experiences and may ask to participate in activities like those of other children (Hyson, 2008). They are interested in shapes, colors, and textures and want to try different ways to do things and to use tools (Copple & Bredekamp, 2006). Kindergarten children have many questions for which they want to find answers. They are eager to learn to read and write and to pursue mathematical challenges they encounter in their world (Tomlinson, 2009).

Students in the *purple* (kindergarten) and pink (first grade) bands *use a variety of resources to find answers to questions; participate in grade-appropriate research projects.* Kindergarten children can analyze complex problems fairly accurately and determine the type of help or resources they need (Hyson, 2008). As with preschoolers and younger children, they still explore firsthand, utilize books (story and informational), and ask questions. Many kindergartners and first graders are "technoliterate" and find answers to their queries by searching the Web (Spink, Danby, Mallan, & Butler, 2010). Age-appropriate Web sites and software programs provide information where children can research topics in which they are interested (Murphy, DePasquale, & McNamara, 2003). Peer collaboration and teacher input assist children's use of computer technology as a viable resource (Hyun & Davis, 2005). Digital imagery and interactive whiteboards are other resources students can use to help them record, remember, and ponder their experiences (Linder, 2012; Murphy et al., 2003).

Students in the *pink* (first grade) and *silver* (second grade) bands *show enthusiasm for learning new things and look for opportunities to gain new knowledge and skills; ask open-ended questions about surroundings and everyday events*. As children in the primary grades are taught "how to learn," they demonstrate their interest in learning subject-matter material such as how to read and do mathematics (PBS, n.d.) and in trying new things (Chen, Masur, & McNamee, 2011). They are inquisitive about their surroundings and everyday events and are eager to learn more about them (Allen & Marotz, 2007; PBS, n.d.; Wood. 1997). They also want to know more about cause-and-effect relationships and ask higher-level questions to obtain answers to their queries (PBS, n.d.).

Students in the *silver* (second grade) and *brown* (third grade) bands *show interest in an increasing range of phenomena outside of direct experiences by generating questions and researching the topic.* During the second and third grades, children's perspectives continue to expand and they become increasingly interested in persons and occurrences outside their immediate environment. This desire to know more about the broader world propels them to study and research topics related to their questions and to school content (Wood, 1997).

Students in the *brown* (third grade) band *ask thoughtful and increasingly complex questions; build knowledge through research projects; contribute to discussions by applying previously gathered information about a topic.* As children's questions become progressively more complex (PBS, n.d.), they require more detailed and sophisticated answers to appease their curiosity. They are not satisfied with what they already know and can do but want to know and be able to do more (Bjorklund, 2005). Children are able to use multimedia to assist them in obtaining answers to their inquiries and organizing and reporting their findings (Lorenz, Green, & Brown, 2009).

Objective 11. Demonstrates positive approaches to learning
d. Shows curiosity and motivation

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Objective 11. Demonstrates positive approaches to learning

e. Shows flexibility and inventiveness in thinking

Children in the *orange* (1–2 years) and *yellow* (2–3 years) bands *imitate others in using objects in new and/or unanticipated ways.* Early in this period children imitate others using materials for their intended purposes (Berk, 2009). At about 12–18 months they begin to imitate novel actions with objects, even after a long time interval (Berk, 2002). As children observe others using materials in new ways, they begin to combine objects with other objects (Bronson, 1995). Around age 2, children begin to expand the ways they use objects, art materials, and toys and to use them in novel ways (Allen & Marotz, 2007; Hyson, 2008; PBS, n.d.).

Children in the *yellow* (2–3 years) and *green* (preschool 3 class), *blue* (preK 4 class) bands *use creativity and imagination during play and routine tasks.* Two-year-olds begin to exhibit their creativity using art materials (Bronson, 1995), and they expand their use of toys and other materials in new and unanticipated ways (Hyson, 2008). Threes begin to play creatively with language and to make up nonsense words (Hyson, 2008), and they start to come up with unusual ways to approach tasks or to make something (PBS, n.d.). Four-year-olds show greater flexibility and inventiveness. Their "play is typically full of wild imaginings" (Bronson, 1995, p. 86), and they offer "creative, unusual ideas about how to do a task, how to make something, or how to get from one place to another" (Hyson, 2008, p. 138).

Children in the *green* (preschool 3 class), *blue* (preK 4 class), and *purple* (kindergarten) bands *change plans if a better idea is thought of or proposed.* Preschool and kindergarten children are increasingly capable of using intersubjectivity (i.e., a shared understanding) as they interact with partners (Goncu, 1993). They insist less frequently on sticking with their own ideas than they did previously and can accept and extend the ideas proposed by others (Berk, 2006; Goncu, 1993). Kindergarten children can mentally reorganize or change their thoughts and actions as they think of multiple ways to accomplish something, and "they can identify a possible course of action and evaluate how well a solution is working" (Golbeck, 2006, p. 42). If the first strategy doesn't work, they can modify their approach or start again with a new method (Golbeck, 2006).

Students in the *purple* (kindergarten) band *think through possible long-term solutions and take on more abstract challenges.* Kindergartners are gaining in their ability to think about and plan in advance. They brainstorm effectively about class projects and activities and engage in projects with an end result or product in mind (Copple & Bredekamp, 2006). They offer increasingly unique ideas about how to perform a task, make something, or get from one location to another (Hyson, 2008). Kindergartners' thinking becomes less rigidly fixed, and they begin to take on multiple perspectives, looking at things from different vantage points (Golbeck, 2006). Given a set of objects, they can generate interesting questions to guide their explorations (Linder, 2012). Their ability to think more abstractly than previously allows them to pursue more advanced mathematics and literacy related activities expected in kindergarten.

Students in the *purple* (kindergarten) and *pink* (first grade) bands *exhibit creative ways to complete tasks; use own perspective when describing directions or rules.* Kindergartners and first-grade students become progressively resourceful in approaching tasks. They are imaginative as they explore movement and use materials to create visual images that combine colors, forms, and lines in unique ways (PBS, n.d.). A major shift in children's mental flexibility occurs between the ages of five and seven (Smidts, Jacobs, & Anderson, 2004), but the changes occur slowly and unevenly (Tomlinson, 2012). While first graders are beginning to understand the viewpoints of others (Wood, 1997), they still consider and present most ideas from their own perspectives (Bjorklund, 2005).

Students in the *silver* (second grade) band *accept last-minute changes and require less detailed instructions; experiment with invention.* Refinement of children's mental flexibility continues during second grade (Smidts, Jacobs, & Anderson, 2004). As with younger children, they are comfortable with routines and consistency, but they tolerate ambiguity and understand that things may not always go as planned (PBS, n.d.). Second graders also exhibit their cognitive flexibility and inventiveness by their desire to discover, invent, and disassemble things to see what makes them work (Wood, 1997).

Students in the *brown* (third grade) band *reverse thoughts mentally; understand directional perspectives otherthan his or her own.* Third graders demonstrate enormous gains in flexible thinking as they mentally manipulate directions, procedures, and perspectives (Berk, 2009; PBS, n.d.; Tomlinson, 2012). This more advanced cognitive capacity contributes to their ability to give accurate directions and to understand more complex mathematical and scientific procedures (Tomlinson, 2012). Inventiveness in thinking is expressed in multiple ways including writing, drawing, singing and telling stories and jokes, (Allen & Marotz, 2007).

Objective 11. Demonstrates positive approaches to learning
e. Shows flexibility and inventiveness in thinking

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Objective 12. Remembers and connects experiences

a. Recognizes and recalls

Children in the *red* (birth–1 year), *orange* (1–2 years), and *yellow* (2–3 years) bands *recognize familiar people, places, and objects; look for a hidden object where it was last seen.* Young infants (birth–6 months) begin to recognize (i.e., show awareness that it is someone or something they have seen previously) people they see regularly (Bronson, 1995). At about 11 months, they begin to recall (i.e., generate "a mental representation of an absent stimulus" (Berk, 2009, p. 292) and look for people and objects that are out of sight (Bronson, 1995). As infants learn to crawl, their memory retrieval becomes somewhat more flexible than previously (Herbert, Gross, & Hayne, 2007). Between 12 and 18 months, children search for toys or objects in the last place where they saw them disappear (Schickedanz, Schickedanz, Forsyth, & Forsyth, 2001). Two-year-olds recognize and name familiar objects in their environment and in picture books (CDC, 2012). They notice when familiar people are not present, know where they should be, and search for them in that location (Allen & Marotz, 2007).

Children in the *yellow* (2–3 years) and *green* (preschool 3 class) bands *recall familiar people, places, objects, and actions from the past (a few months before); recall one or two items removed from view.* During this period, children can recall things that happened many weeks before (Tomlinson & Hyson, 2009). However, what young children think is important about the event may be different from what the adult thinks is important (Bjorklund, 2005). They can communicate remembered events verbally, in simple pictures, and/or reenact them in their play (Zero to Three, 2012). When items are removed from their view, they recall one or two of the missing ones (Berk, 2009).

Children in the *green* (preschool 3 class), *blue* (preK 4 class), and *purple* (kindergarten) bands *tell about experiences in order, provide details, and evaluate the experience; recall three or four items removed from view.* Children are more likely to remember accurately those things that they experience firsthand and that are meaningful to them (Tomlinson & Hyson, 2009). Three- and 4-year-olds develop "scripts" for routine events that help them relate experiences more accurately than younger children (Tomlinson & Hyson, 2009), and they remember novel information within those scripts (Bjorklund, 2005). Older fours and fives can "give chronologically organized, detailed, and evaluative accounts of personal experiences" (Tomlinson, 2009, p. 204). By age 4, children can recall about three or four items removed from sight (Berk, 2009).

Students in the *purple* (kindergarten) and *pink* (first grade) bands *use a few deliberate strategies to remember information*. Even though younger children may use very simple strategies for remembering (Barry, 2006), it is not until kindergarten age that children have some ideas about their methods of memorizing (Charlesworth, 2011). They begin to intentionally use a few memory strategies, but they need adult support (e.g., questioning, reminding of the task at hand, and modeling how to rehearse and organize for memory) to develop those strategies (Tomlinson, 2009). It is only after much practice that children can both remember to use the strategy and be able to use it successfully (Barry, 2006).

Students in the *pink* (first grade) and *silver* (second grade) bands *begin to use rehearsal strategies but may need adult prompts/cues; can describe details of people, places, things, and events from memory*. As children's attention improves, so does their use of memory strategies (Berk, 2009). They begin to use simple strategies such as rehearsal (Schleepen & Jonkman, 2012), though, they still benefit from adult suggestions for thinking about their memory functioning and strategy use (Tomlinson, 2012). First and second graders can provide information about things which occurred in the past and which will occur in the future, but their recall of autobiographical events is more accurate for recent events (i.e., within one week) than it is for events far removed from the present (Hudson & Mayhew, 2011).

Students in the *silver* (second grade) and *brown* (third grade) bands *use rehearsal strategies spontaneously to remember information; use awareness of routines to think ahead; remember about five pieces of information at a time*. Second graders can carry out multiple-step instructions having about five steps (Allen & Marotz, 2007). At around the age of 7, children improve their use of rehearsal strategies (Berk, 2009; McAfee & Leong, 2007), although they do so in a less organized manner than older children (Berk, 2009).

Students in the *brown* (third grade) band *begin to use semantic grouping strategies to help remember but may need adult cues or instruction on how to be efficient; recognize inconsistencies and incompleteness of information.* After teacher instruction and coaching, third graders begin to semantically organize information to help them remember (McAfee & Leong, 2007; Schleepen & Jonkman, 2012). As they experiment with different strategies, they begin to recognize the ones that are the most helpful and under what circumstances they should be used (Berk, 2009). Their improved memory helps them to evaluate spoken and written information and note when discrepancies occur (Markman, 1979).

Objective 12. Remembers and connects experiences
a. Recognizes and recalls

- **Allen, K. E., & Marotz, L. R. (2007).** *Developmental profiles: Pre-birth through twelve*. Clifton Park, NY: Thomson Delmar Learning.
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Objective 12. Remembers and connects experiences

b. Makes connections

Children in the *orange* (1–2 years) and *yellow* (2–3 years) bands *look for familiar persons when they are named; relate objects to events.* When asked, toddlers can point to familiar people and other familiar things (Allen & Morotz, 2000; Shelov & Hannemann, 2004). Mobile infants' imitative actions of others indicate their ability to remember and to make connections between objects and events (e.g., putting the brush to their hair) (Zero to Three, 2009). "They are developing increasingly sophisticated mental representations of the real world and mastering them through using them in play" (Zero to Three, 2009, p. 67).

Children in the *yellow* (2–3 years) and *green* (preschool 3 class) bands *remember the sequence of personal routines and experiences with teacher support.* Two-year-old children are familiar with their established daily routines. They know what comes next, how to do it, and expect it to be followed without changes (Allen & Marotz, 2007). Preschool children know their own established routines and show interest in learning about the routines of others (Beaty, 2002; Shelov & Hannemann, 2004). They know what will come next in the daily schedule, especially if the routine is consistent and the teacher offers support, such as advance notice of changes in the routine, transition reminders, and the posting of the daily schedule on the door (Beaty, 2002). Children remember experiences and events better when adults and children engage in conversations about the event while it is happening (Bjorklund, 2005; Haden, Ornestein, Eckerman, & Didow, 2001)

Children in the *green* (preschool 3 class), *blue* (preK 4 class), and *purple* (kindergarten) bands *draw on everyday experiences and apply this knowledge to a similar situation.* Preschool and kindergarten children can make predictions about what might happen in stories and connect these predictions to their own life experiences (Copple & Bredekamp, 2006). They can generate simple causal explanations of events and make comparisons (Copple & Bredekamp, 2006), drawing upon the knowledge they have acquired and constructed in their everyday experience (Golbeck, 2006). Kindergarten children's observational ability skills increase, and they are more likely than younger children to connect related information (Copple & Bredekamp, 2006).

Students in the *purple* (kindergarten) and *pink* (first grade) bands *generate a rule, strategy, or idea from one learning experience and apply it in a new context.* Kindergartners begin to combine and to relate concepts (Golbeck, 2006) and to make connections with other things they have learned (Tomlinson, 2009). Their increased experiences and observational skills assist them in noticing patterns and regularities in the things around them (Golbeck, 2006) and in making predictions with greater accuracy than they could previously. They discover principles of number as they count, and they begin to apply spatial visual strategies and mental images to solve problems in their everyday world (Golbeck, 2012). Firsthand knowledge about events and the ability to reflect upon this knowledge assist children in planning for a familiar event and in developing plans to prevent mishaps and to provide solutions to problems which might occur (Hudson, Shapiro, & Sosa, 1995).

Students in the *pink* (first grade) and *silver* (second grade) bands *connect the past with the present using general time estimates between events; connect time with specific daily events and salient events with the months and seasons*. Children use time markers to help them remember and to make connections between experiences (Friedman, 2002). First- and second-grade students have a fairly good understanding of daily routines and understand the concepts of today, tomorrow, and yesterday, (Allen & Marotz, 2007; Hudson & Mayhew, 2011). They differentiate approximate time distances between the past and present (e.g., long ago, olden days, now, close to now) using meaningful events (Friedman, 2002; Wood, 1997). The seasons and those holidays which are important to them, help children connect activities and events (Allen & Marotz, 2007). They can compare photographs representing differentiated, broad time periods with their current daily activities (Barton & Levstik, 1996).

Students in the *silver* (second grade) and *brown* (third grade) bands *provide general descriptions of events to occur in the future; link material learned previously and in other contexts*. The more experiences children have, the better able they are to make logical connections (Tomlinson, 2012). Second and third grade children enjoy reviewing what they have learned as they connect their new understandings with material they learned previously (Tomlinson, 2012; Wood, 1997). They become more realistic and practical as they think about time and events that will occur in the future (Allen & Marotz, 2007).

Students in the *brown* (third grade) band *associate people and events with the past, present, and future; begin to organize and compile information from multiple sources to create a useful document connecting events.* Third graders make marked improvement in their abilities to connect people and events with the past, present, and future (Thornton & Vukelich, 1988) and make associations between major events and broad time periods (Barton & Levstik, 1996). As they begin to approximate how long ago events occurred, place events in sequence, and associate rough time periods with people and events, they are able to create basic chronologies of the distant past and current events (Thornton & Vukelich, 1988). Their documentations may be thorough taking photographs, conducting interviews, discussing historical art, or creating personal art to represent their understandings (Barton & Levstik, 1996).

Objective 12. Remembers and connects experiences
b. Makes connections

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Objective 13. Uses classification skills

Children in the *orange* (1–2 years) and *yellow* (2–3 years) bands *match similar objects.* Children must first notice similarities and differences among objects. They then match or separate objects from the group (Copley, 2000). Adults play a key role in helping children develop taxonomic categories during rich interactions in everyday settings (e.g., discussing storybook pictures in more detail than simple labeling) (Gelman, Coley, Rosengren, Hartman, & Pappas, 1998). Toddlers enjoy simple sorting toys. By 18 months to 2 years they begin to match or group similar objects (Bronson, 1995) and may put them in pairs (Bjorklund, 2005). Two- to 3-year-olds show increased interest in the characteristics of objects, such as color, size, shape, and texture. They may match a group of similar objects (Bronson, 1995) based on one of these characteristics, but they are not methodical or consistent in forming their groups (McAfee & Leong, 2007).

Children in the *green* (preschool 3 class) and *blue* (preK 4 class) bands *place objects in two or more groups based on differences in a single characteristic, e.g., color, size, or shape.* Preschoolers group items together based on their perceptual characteristics (Bjorklund, 2005). They organize objects into logical groups according to a given attribute to form categories, generally selecting the salient features of color or size as the basis for their early classifications as opposed to a more abstract characteristic such as function (Deak, Ray, & Pick, 2002). They may switch attributes during their sorting if they forget their categorizing "rule" (e.g., begin sorting with color and during the task switch to sorting by size) (Beaty, 2002; Clements & Sarama, 2009). However, once they begin sorting by one characteristic and have that rule in mind, it is difficult for them to switch to another attribute when asked to do so (Charlesworth, 2011).

Children in the *blue* (preK 4 class) and *purple* (kindergarten) bands *group objects by one characteristic; then regroup them using a different characteristic and indicate the reason.* Unlike younger preschool children, 4-year-olds can classify according to a single characteristic based on a more abstract "rule," such as an object's function (Deak, Ray, & Pick, 2002). They can readily switch between abstract rules even if the second rule requires ignoring obvious perceptual information (Deak, Ray, & Pick, 2004). Fives begin to more consistently group by one characteristic and then to re-classify by different attributes (Charlesworth, 2011; Clements & Sarama, 2009), giving the reason for their thinking.

Students in the *purple* (kindergarten) and *pink* (first grade) bands *group similar objects by more than one characteristic at the same time; switch sorting rules when asked, and explain the reasons.* Kindergarten children are more flexible in their thinking (Golbeck, 2006) and are able to sort and classify by more than one attribute at a time (Bronson, 1995; Tomlinson & Hyson, 2009). Not until age 5 or 6 years do children usually sort consistently by a single characteristic and then re-classify by different attributes (Clements & Sarama, 2009). They have the flexibility to switch from sorting by a simpler rule based on perception to classifying by a more difficult rule based on function (Deak, Ray, & Pick, 2004). They are able to reflect on how they know something and communicate their thinking to others (Tomlinson, 2009).

Students in the *pink* (first grade) and *silver* (second grade) bands *group objects and words in multiple ways based on physical attributes, functions, and semantic or conceptual associations.*

First and second graders progressively use multiple characteristics, including inferred attributes, in their classifications (Charlesworth, 2005; McAfee & Leong, 2007). However, they continue to place greater emphasis on physical similarity than do older children and adults (Diesendruck, Hammer, & Catz, 2003). Children's abilities to classify provide a foundation for content learning in areas such mathematics (Charlesworth, 2005; Clements & Sarama, 2009) and science (McAfee & Leong, 2011).

Students in the *silver* (second grade) and *brown* (third grade) bands *form simple hierarchical classifications.* Children of these ages like to create collections, and they spontaneously classify based on several attributes (Wood, 1997). Although students can independently shift classifications multiple times between two different dimensions, they still need structure to shift to a third category (Smidts, Jacobs, & Anderson, 2004). They benefit from adult prompting and cues when attempting to classify based on semantic groupings of less-associated items (Schleepen & Jonkman, 2012).

During third grade, children's developmental course of conceptual reasoning follows a progression which now includes the abilities to use semantic associations and hierarchical classifications. They still, however, benefit from adult prompting and cues when attempting to classify based on semantic groupings of less-associated items (Schleepen & Jonkman, 2012). As children expand their abilities to classify, they progress in their abilities to make connections, analyze data as represented in different types of graphs, and use the information to solve problems. They also become more proficient at selecting the type of graph which best represents the data and best answers the question/s posed (Clements & Sarama, 2009).

Objective 13. Uses classification skills

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

a. Thinks symbolically

Children in the *orange* (1–2 years) and *yellow* (2–3 years) bands *recognize people, objects, and animals in pictures or photographs.* Toddlers enjoy seeing pictures of themselves and things familiar to them. When requested, toddlers can point out objects in photos or illustrations of objects in books (Zero to Three, 2009). At about 18 months, toddlers begin to understand the symbolic nature of pictures (Preissler & Carey, 2004). Twos name objects they see in books and have little difficulty grasping the relationship between a picture and its referent (DeLoache, 1991; 2004).

Children in the *green* (preschool 3 class) and *blue* (preK 4 class) bands *draw or construct and then identify what it is.* Around age 3, children become aware that an object can serve both as an object in its own right and as a symbol of something else (e.g., pot as pot and pot as hat). This shift in cognitive thinking indicates a remarkable "increase in children's ability to mentally or symbolically represent concrete objects, actions, and events" (Tomlinson & Hyson, 2009, p. 134). They now realize that a symbol does not need to have a close resemblance to what it represents. Stacks of blocks and marks on paper can represent something else (Tomlinson & Hyson, 2009). For preschool children, this realization frequently happens after making their handiwork. For example, they may make marks and notice they remind them of something and decide to label it (Berk, 2009; Copple & Bredekamp, 2006; Tomlinson & Hyson, 2009). Both 3- and 4-year-old children make better drawings when they know that their drawings will be used to communicate to an adult (DeLoache, 2004).

Children in the *blue* (preK 4 class) and *purple* (kindergarten) bands *plan and then use drawings, constructions, movements, and dramatizations to represent ideas.* Older preschool and kindergarten children are beginning to plan ahead (Copple & Bredekamp, 2006). Four-year-olds enjoy representing songs through drama (Copple & Bredekamp, 2006), and about that time they start to make representational drawings (Schickedanz, Schickedanz, Forsyth, & Forsyth, 2001). Fours and fives like to write for real purposes such as making signs for play activities or writing messages to friends (Copple & Bredekamp, 2006; McAfee & Leong, 2007), and they may use their creations and constructions as part of a larger play theme (Morgenthaler, 2006). Kindergartners frequently engage in activities with an end product in mind (Copple & Bredekamp, 2006). Older preschool and kindergarten children can, with adult help, use abstract tools, such as concept maps to help them symbolically represent their understandings and ideas (Birbili, 2006).

Students in the *purple* (kindergarten) and *pink* (first grade) bands *represent objects, places, and ideas with increasingly abstract symbols.* Kindergarten children tell, retell, and dramatize stories (Copple & Bredekamp, 2006). They use increasingly abstract symbols in their play, such as words or actions to represent physical objects (Trawick-Smith, 2006). They create graphs using objects and later, more abstract symbols such as tally marks to represent the objects (McAfee & Leong, 2007; Sarama & Clements, 2006).

Students in the *silver* (second grade) and *brown* (third grade) bands *show increasing ability to interpret and record ideas and thoughts and to solve problems without concrete points of reference*. Major changes occur in children's cognition during the primary years which equip them to execute the mental operations necessary for more complex reading, mathematics, and learning in other subject matter areas (Tomlinson, 2012). They demonstrate a growing understanding of the abstract symbols used to represent spoken language. They now express their thinking more often by writing than by drawing (Wood, 1997) and progressively represent their mathematical thinking using symbols rather than relying primarily on manipulatives (Golbeck, 2012; PBS, n.d.; Tomlinson, 2012).

Students in the *brown* (third grade) band *mentally manipulate information and use logical arguments with increasing regularity; need concrete points of reference for complex concepts and text; reflect on his or her work.* Third graders can visualize and manipulate information in their heads, using gestures and written symbols as tools to help them to think (Golbeck, 2012; PBS, n.d.). Their representations of spatial relationships show advances in the implicit frames of reference they use to organize their written words and drawings (Golbeck, 2012). Although third graders can solve some abstract problems, they are not yet able to learn solely by text information and instructions or to comprehend highly complex, abstract concepts without concrete reference points (Berk, 2009; Tomlinson, 2012). They make arguments to support their positions which are situation specific and which progressively become more logical over the course of the school year (Berk, 2009).

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

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

b. Engages in sociodramatic play

Children in the *orange* (1–2 years) and *yellow* (2–3 years) bands *imitate actions of others during play; use real objects as props.* Toddlers watch others intently and copy the actions of important people in their lives. They seem especially interested in the daily activities in which they see adults engage, such as caregiving, housekeeping, and making repairs (Bronson, 1995; Zero to Three, 2009). Toddlers reenact these activities over and over again in their play (Zero to Three, 2009) using real objects (or close replicas) for play props (Garner & Bergen, 2006). Objects become increasingly important in children's play, extending social interactions and lengthening the time they engage with peers (Garner & Bergen, 2006).

Children in the *green* (preschool 3 class) and *blue* (preK 4 class) bands *act out familiar or imaginary scenarios; may use props to stand for something else*. Preschoolers continue to reenact the roles of people who are important to them and to increasingly involve other children in their play scenes (Hyson, 2008). They now take on more imaginary and fanciful roles in their pretend play (Tomlinson & Hyson, 2009). They use a variety of less realistic personal objects as props (Garner & Bergen, 2006) around which they develop a "shared understanding" with peers as to the objects' meanings (Morgenthaler, 2006). Adult scaffolding is beneficial in planning, maintaining play roles and rules, using props and language in symbolic ways, and extending play scenarios over extended time periods (Leong & Bodrova, 2015).

Children in the *blue* (preK 4 class) and *purple* (kindergarten) bands *interact with two or more children during pretend play, assigning and/or assuming roles and discussing actions; sustain play scenario for up to 10 minutes.* Four-year-olds seek out two or three children with whom to engage in their play episodes (Copple & Bredekamp, 2006). Children's imaginary play with others becomes more complex (Hyson, 2008) and can be sustained for extended periods of time (Levy, Wolfgang, & Koorland, 1992; Trawick-Smith, 2006) to create long play scenarios. Much of their time is spent in the planning of the episode (Brodova & Leong, 2006), discussing their plans, roles, and needed props (Deak, 2003).

Students in the *purple* (kindergarten) band *plan and negotiate complex role-play; join in detailed conversation about roles and actions; play may extend over several days.* Kindergarten children enjoy elaborate dramatic play (Copple & Bredekamp, 2006) and engage in collaborative discussions with their peers about their play (Hyson, 2008). Children this age "organize, direct, and sustain interactions with others, making initial suggestions about what to do, continuing suggestions about how to proceed, assigning roles or resources to participants, and laying out the rules or constraints of a proposed activity" (Tomlinson, 2009, pp. 192–193). They frequently revise their play themes and carry them over to another day or for several days (Bodrova & Leong, 2006).

Students in the *pink* (first grade) band *create rich dialogue, props, costumes, scenery, and sound effects to support role-play*. During the primary grades, children's overt make-believe play becomes less visible (Davidson, 2006), although play is still very important to them. Play becomes more complex and verbal as they create progressively elaborate texts and scripts with more organized plots for their spontaneous play and productions (Johnson, 2006). Students demonstrate their expanding cognitive and creative abilities as they devise elaborate costumes, movements, and sounds to incorporate in their dramatizations (PBS, n.d.).

Students in the *silver* (second grade) band *compose a complex play and use body, voice, and/or technology to communicate characters' personal thoughts, feelings, actions, and sounds; use symbolic play themes or props to create games with rules.* Fantasy roles begin to decline as children begin to act out increasingly realistic and complex scenarios (Bronson, 1995, PBS, n.d.). Greater knowledge of the elements of music and movement supports them in their productions as they communicate through various modes. Second graders enjoy games with rules, and their sociodramatic play themes and props may evolve into games with rules (DeVries, 2006).

Students in the *brown* (third grade) band *act out real-life (including social issues) and fanciful scenarios through improvised and planned dramatic play and performances; manage and direct play during student-created dramatizations.* Social issues are more evident in the play themes and dramatizations of third-grade students than they are in the play and productions of younger children (Bronson, 1995; PBS, n.d.). As they enact real-life situations, gender, cultural, and socio-economic differences may become increasingly apparent (Johnson, 2006; Manning, 2006; Nourot, 2006). Their dramatizations show greater concentration and refinement than those of younger children as they portray different characters and draw from a variety of sources (PBS, n.d.)

Objective 14. Uses symbols and images to represent something not present
b. Engages in sociodramatic play

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Literacy

LITERACY OBJECTIVES

15 Demonstrates phonological awareness, phonics skills, and word recognition

16 Demonstrates knowledge of the alphabet

17 Demonstrates knowledge of print and its uses

18 Comprehends and responds to books and other texts

19 Demonstrates writing skills

The early years are critical for literacy development. Children who do not learn to read and write by the end of the primary grades are at risk for school failure. Children who are especially likely to have difficulty learning to read in the primary grades are those who begin school with less prior knowledge, verbal abilities, phonological sensitivity, familiarity with the basic purposes and mechanisms of reading, and letter knowledge (National Early Literacy Panel, 2008; Snow, Burns, & Griffin, 1998). 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).

Literacy learning begins at birth. During the early childhood years, children engage in emergent reading and writing behaviors that form the foundation for conventional literacy, but many children do not receive the ongoing experiences that support this learning. By age 3, differences in children's understanding and use of literacy skills are enormous. Reading aloud to children appears to be one of the most important activities for building the understandings and skills needed for reading success (Neuman et al., 2000). Children from middle-class families have been read to for about 1,000 hours before beginning kindergarten. Children from families living in poverty have been read to for about 25 hours (Berk, 2006; Neuman, 2003). When children enjoy having books read to them and when they are excited about what they are hearing and learning, they are motivated to learn to read, and later, to read to learn (Heroman & Jones, 2004).

Listening, speaking, reading, and writing develop interdependently in children, and each contributes to development of the other. Children's literacy development may be negatively affected by factors including poverty; limited English proficiency; visual, hearing, and language impairments; cognitive deficiencies; and parents who have had difficulty reading (National Early Literacy Panel, 2008; Snow et al., 1998).

Effective instruction in the early years can have a large impact on children's literacy development. Children who would otherwise be most at risk for school failure stand to benefit the most from high–quality experiences (Campbell, Ramey, Pungello, Sparling, & Miller-Johnson, 2002). Teachers are critical and can inspire children to read, write, and learn through meaningful planning and developmentally appropriate literacy instruction (Neuman et al., 2000).

During the primary grades, most children make the transition to becoming real readers. They learn to decode unknown words, read with fluency, comprehend various types of text, and read for specific purposes as well as for pleasure (Tomlinson, 2009). Most students' reading and writing abilities improve greatly during this period when they are provided with a literacy-rich, supportive environment where teachers provide appropriate, explicit instruction and numerous opportunities for practicing newly developed skills (Snow, Burns, & Griffin, 1998; Tomlinson, 2009).

Literacy

Students' literacy skills are enhanced by reading and discussing fiction and nonfiction texts, as well as by producing various kinds of writing samples (Fountas & Pinnell, 1996). While writing is important in its own right, it also has a close relationship to reading (Kim, Al Otaiba, Sidler, & Gruelich, 2013). Exposure to a wide variety of levels and text types in primary school (e.g., literature, poetry, informational texts, reports, journals, blogs) furthers students' reading abilities as they learn strategies for decoding and comprehending the various genres (Fountas & Pinnell, 1996; McLaughlin, 2012).

Many factors need to be considered when discussing students' literacy development. Teachers must be aware of how contexts, learning environments, social interactions, cultural practices, and cultural tools inform and shape reading and writing (Castro, 2014; Hull & Moje, 2013). It is important to be cognizant of these interactions, both for English-language learners and for native English speakers.

It is important for teachers of dual-language learners to understand the similarities and differences between a student's native language and English (Hammer, Hoff, Uchikoshi, Gillanders, Castro, & Sandilos, 2014). English is more difficult to learn to read than many other languages (Juel, 2006; Vaughn, Linan-Thompson, Pollard-Durodola, Mathes, & Hagan, 2006). Phonemic awareness skills can be particularly challenging to master. In general, the same principles that are effective for native English speakers are beneficial to students learning English, but adjustments to instructional practices are necessary (August & Shanahan, 2010). Similarities between a child's native language and English, his proficiency in the native language, and his proficiency in English all influence the amount and type of instructional adjustment needed for him to learn English successfully (August & Shanahan, 2010; Hammer et al., 2014; Snow et al., 1998).

Objective 15. Demonstrates phonological awareness, phonics skills, and word recognition

a. Notices and discriminates rhyme

Children in the *orange* (1–2 years) and *yellow* (2–3 years) bands *join in rhyming songs and games.* The early vocalization play of infants gives way to enjoyment of word play such as rhyming language (Burns, Griffin, & Snow, 1999). Toddlers like being read books with simple rhyming words (Schickedanz & Collins, 2013). At about 19 months, they begin to repeat simple rhymes with adults (Bronson, 1995).

Children in the *yellow* (2–3 years), *green* (preschool 3 class), and *blue* (preK 4 class) bands *fill in the missing rhyming word; generate rhyming words spontaneously.* Children now begin to more closely attend to rhyming sounds (McAfee & Leong, 2007). They enjoy hearing stories with rhymes and participating in rhyming songs, chants, finger plays, and games (Tomlinson & Hyson, 2009). Older toddlers enjoy playing games when adults read, such as filling in the missing rhyming word in familiar books (Schickedanz, 1999). Young preschool children understand that words rhyme (Burns, Griffin, & Snow, 1999), and at about age 3, they begin spontaneous rhyming word play (Strickland & Schickedanz, 2004).

Children in the *blue* (preK 4 class) and *purple* (kindergarten) bands *decide whether two words rhyme.* Four- and 5-year-old children can identify rhymes when they are presented with several rhyming words or with rhyming words within a poem, story, or finger play (McAfee & Leong, 2007). They play around with words and will change their own names to create new names that rhyme with theirs (Schickdanz, Schickedanz, Forsyth, & Forsythe, 2001). Their sensitivity to and familiarity with rhymes (Neuman, Copple, & Bredekamp, 2000) pave the way for more advanced phonemic awareness skills (Bjorklund, 2005; Bryant, MacLean, Bradley, & Crossland, 1990).

Students in the *purple* (kindergarten) and *pink* (first grade) bands *generate a group of rhyming words when given a word*. As do younger children, kindergartners still enjoy playing with rhyming words (Copple & Bredekamp, 2006), and during this period they are expected to develop a "conscious awareness of rhyming words" (McGee & Morrow, 2005, p. 46). When they are presented with a word, kindergartners can produce another word that rhymes with it (Burns, Griffin, & Snow, 1999; McAfee & Leong, 2007; Snow, Burns, & Griffin, 1998).

Students in the *pink* (first grade) band *generate rhyming words without a prompt word; identify rhyming words in written text; use rhyme to decode text*. First graders spontaneously generate rhyming words (McAfee & Leong, 2007) during their work and play. They notice similarities not only of spoken rhyming words, but also notice similarities among the spelling patterns of rhyming words. They can use this awareness to help them make predictions about a word or to decode unfamiliar rhyming words they encounter in text (Goswami, 1990; PBS, n.d.).

Objective 15. Demonstrates phonological awareness, phonics skills, and word recognition
a. Notices and discriminates rhyme

- **Bronson, M. B. (1995).** *The right stuff for children birth to 8: Selecting play materials to support development*. Washington, DC: National Association for the Education of Young Children.
- **Burns, S. M., Griffin, P., & Snow, C. E. (Eds.). (1999).** *Starting out right: A guide to promoting children's reading success*. Washington, DC: National Academy Press.
- **Schickedanz, J. A., & Collins, M. F. (2013).** *So much more than the ABCs: The early phases of reading and writing*. Washington, DC: National Association for the Education of Young Children.

- **Burns, S. M., Griffin, P., & Snow, C. E. (Eds.). (1999).** *Starting out right: A guide to promoting children's reading success*. Washington, DC: National Academy Press.
- **McAfee, O., & Leong, D. J. (2007).** *Assessing and guiding young children's development and learning* (4th ed.). Boston: Pearson.
- **Schickedanz, J. A. (1999).** *Much more than the ABCs: The early stages of reading and writing.* Washington, DC: National Association for the Education of Young Children.
- **Strickland, D. S., & Schickedanz, J. A. (2004).** *Learning about print in preschool: Working with letters, words, and beginning links with phonemic awareness.* Newark, DE: International Reading Association.
- **Tomlinson, H. B., & Hyson, M. (2009).** Developmentally appropriate practice in the preschool years – ages 3–5. In C. Copple & S. Bredekamp (Eds.), *Developmentally appropriate practice in early childhood programs serving children from birth through age 8* (3rd ed.), (pp. 111–148). Washington, DC: National Association for the Education of Young Children.

- **Bjorklund, D. F. (2005).** *Children's thinking: Cognitive development and individual differences.* Belmont, CA: Wadsworth Thomson Learning.
- **Bryant, P. E., MacLean, M., Bradley, L. L., & Crossland, J. (1990).** Rhyme and alliteration, phoneme detection, and learning to read. *Developmental Psychology, 26*(3), 429–438.
- **McAfee, O., & Leong, D. J. (2007).** *Assessing and guiding young children's development and learning* (4th ed.). Boston: Pearson.
- **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.
- **Schickedanz, J. A., Schickedanz, D. I., Forsyth, P.D., & Forsyth, G.A. (2001).** *Understanding children and adolescents* (4th ed.). Boston: Allyn & Bacon.

- **Burns, S. M., Snow, C. E., & Griffin, P. (Eds.). (1999)**. *Starting out right: A guide to promoting children's reading success*. Washington, DC: National Academy Press.
- **Copple, C., & Bredekamp, S. (2006).** *Basics of developmentally appropriate practice: An introduction for teachers of children 3 to 6*. Washington, DC: National Association for the Education of Young Children.
- **McAfee, O., & Leong, D. J. (2007).** *Assessing and guiding young children's development and learning* (4th ed.). Boston: Pearson.
- **McGee, L. M., & Morrow, L. M. (2005).** *Teaching literacy in kindergarten*. New York: Guilford Press.
- **Snow, C. E., Burns, S. M., & Griffin, P. (Eds.). (1998).** *Preventing reading difficulties in young children*. Washington, DC: National Academy Press.

- **Goswami, U. (1990).** A special link between rhyming skill and the use of orthographic analogies by beginning readers. *Journal of Child Psychology and Psychiatry, 31*(2), 301-311.
- **McAfee, O., & Leong, D. J. (2007).** *Assessing and guiding young children's development and learning* (4th ed.). Boston: Pearson/Allyn & Bacon.
- **Public Broadcasting System (n.d.).** Child Development Tracker: Literacy. Retrieved March 4, 2013 from http://www.pbs.org/parents/childdevelopmenttracker/six/literacy.html

Objective 15. Demonstrates phonological awareness, phonics skills, and word recognition

b. Notices and discriminates alliteration

Children in the *yellow* (2–3 years) and *green* (preschool 3 class) bands s*ing songs and recite rhymes and refrains with repeating initial sounds.* Teachers can involve children in various activities that promote awareness of the sounds of language (Copple & Bredekamp, 2009) such as singing songs, reciting rhymes, chants, and finger plays. As children participate in these activities, 3-year-olds begin to pay attention to discrete and repeating sounds in language (Burns, Griffin, & Snow, 1999; Snow, Burns, & Griffin, 1998), particularly if adults scaffold their budding phonological awareness behaviors.

Children in the *blue* (preK 4 class) and *purple* (kindergarten) bands *show awareness that some words begin the same way*. Phonological awareness is related to age (Chaney, 1992), but most phonemic awareness skills do not develop automatically (Goswami, 2003). This process is difficult for some children and is related to various factors, such as general language capability, experience, and appropriate instruction (Snow, Burns, & Griffin, 1998). With adult guidance, children build on their initial understandings of phonological awareness, such as their ability to recognize that some words start with the same sound (Strickland & Schickedanz, 2004). Older preschool and kindergarten children can isolate the beginning sound of a word (McAfee & Leong, 2007).

Children in the *blue* (preK 4 class) and *purple* (kindergarten) bands *match beginning sounds of some words*. For children to match beginning sounds, they must have a basic understanding of the phonemic structure of language (Snow, Burns, & Griffin, 1998). Older preschool and kindergarten children show increasing awareness of the beginning sounds of words (Neuman, Copple, & Bredekamp, 2000) and can isolate the first sound of a salient word (McAfee & Leong, 2007).

Students in the *purple* (kindergarten) band *isolate and identify the beginning sound of a word*. With appropriate literacy-related experiences, kindergartners' phonological awareness increases as they exhibit knowledge about the beginning sounds of words (Burns, Griffin, & Snow, 1999; Charlesworth, 2011). They experiment with initial sounds, and when they delete a word's beginning sound, they can pronounce the rest of the word (McAfee & Leong, 2007).

Objective 15. Demonstrates phonological awareness, phonics skills, and word recognition
b. Notices and discriminates alliteration

- **Burns, S. M., Griffin, P., & Snow, C. E. (Eds.). (1999).** *Starting out right: A guide to promoting children's reading success*. Washington, DC: National Academy Press.
- **Copple, C, & Bredekamp, S. (Eds.). (2009).** *Developmentally appropriate practice in early childhood programs serving children from birth to age 8* (3rd ed.). Washington, DC: National Association for the Education of Young Children.
- **Snow, C. E., Burns, S. M., & Griffin, P. (Eds.). (1998).** *Preventing reading difficulties in young children*. Washington, DC: National Academy Press.
- **Chaney, C. (1992).** Language development, metalinguistic skills, and print awareness in 3-year-old children. *Applied Psycholinguistics, 13*(4), 485–514.
- **Goswami, U. (2003).** Early phonological development and acquisition of literacy. In S. B. Neuman & D. K. Dickinson (Eds.), *Handbook of early literacy research*, pp. 111–125. New York: Guilford Press.
- **McAfee, O., & Leong, D. J. (2007).** *Assessing and guiding young children's development and learning* (4th ed.). Boston: Pearson.
- **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.
- **Snow, C. E., Burns, S. M., & Griffin, P. (Eds.). (1998).** *Preventing reading difficulties in young children*. Washington, DC: National Academy Press.
- **Strickland, D. S., & Schickedanz, J. A. (2004).** *Learning about print in preschool: Working with letters, words, and beginning links with phonemic awareness.* Newark, DE: International Reading Association.
- **Burns, S. M., Griffin, P., & Snow, C. E. (Eds.). (1999).** *Starting out right: A guide to promoting children's reading success*. Washington, DC: National Academy Press.
- **Charlesworth, R. (2011).** *Understanding child development* (8th ed.). Belmont, CA: Cengage Learning.
- **McAfee, O., & Leong, D. J. (2007).** *Assessing and guiding young children's development and learning* (4th ed.). Boston: Pearson.

Objective 15. Demonstrates phonological awareness, phonics skills, and word recognition

c. Notices and discriminates discrete units of sound

Children in the *green* (preschool 3 class) and *blue* (preK 4 class) bands *show awareness of separate words in sentences.* During the preschool years, children develop the concept of what a word is (Strickland & Schickedanz, 2004). They may demonstrate this awareness in their early writings by using a single letter to stand for an entire word (Schickedanz & Casbergue, 2004). Fours can point to individual words or the first word in a line of text (McAfee & Leong, 2007).

Children in the *blue* (preK 4 class) and *purple* (kindergarten) bands *show awareness of separate syllables in words.* With the teacher assuming the lead, preschool children can clap out the syllables in their name (Copple & Bredekamp, 2009). Kindergartners can tap out each syllable in words, and they can take away the first syllable and say the rest of the word (McAfee & Leong, 2007). When preschool and kindergarten children write, each syllable in a word may be represented by a single letter (Schickedanz & Casbergue, 2004).

Children in the *purple* (kindergarten) band *verbally blend and separate onset and rime in one-syllable words*. Phonological tasks related to onset (i.e., the initial consonant/consonant cluster of a word – "c" in the word *cat*) and rime (i.e., the vowel and final consonant/ consonant cluster in the word – "at" in *cat*) are more difficult for kindergarten children than understanding the concepts of word and syllable (Goswami, 2003; Whitehurst & Lonigan, 2003). To successfully blend spoken onsets and rimes, children must "consciously hold smaller-than-word sound units (including single phonemes) in memory, blend them together, and retrieve from memory a meaningful word matching the blended product" (McGee & Richgels, 2003, p. 23). Although challenging, kindergarten children can be taught these skills through appropriate activities and instruction (McGee & Morrow, 2005).

Students in the *purple* (kindergarten) and *pink* (first grade) bands *verbally blend, separate, and add or substitute individual sounds in simple, consonant-vowel-consonant (CVC) words; read common high-frequency sight words.* Awareness of the individual sounds which comprise words begins to emerge during the preschool years (Schickedanz, Schickedanz, Forsyth, & Forsyth, 2001). In general, children can notice phonological information before they can manipulate it by blending and segmenting (Anthony, Lonigan, Driscoll, Phillips, & Burgess, 2003). Kindergarten children who are somewhat proficient at blending onsets with rimes may already be starting to learn how to blend phonemes (i.e., the smallest speech sounds in words) (Anthony et al., 2003). Although blending and separating tasks at the phoneme level are difficult for children under 5 ½ or 6 years of age (Schickedanz, Schickedanz, Forsyth, & Forsyth, 2001), kindergarten children can attain these phonological skills with appropriate experiences and guided instruction (McGee & Morrow, 2005; Snow, Burns, & Griffin, 1998).

Students in the *pink* (first grade) and *silver* (second grade) bands *distinguish short from long vowel sounds in one-syllable words; read grade-appropriate irregularly spelled words; use word families to read unknown words.* During first and second grade, children make tremendous progress in their ability to distinguish and manipulate the sounds and letters in words (Snow, Burns, & Griffin, 1998). By the end of first grade, students have a reading vocabulary of about 300 to 500 words that are easily sounded out or those they know by sight (Snow et al., 1998). Systematic instruction about the relationship between vowels and syllables helps them to ascertain the number of syllables in written words (McAfee & Leong, 2007). Teaching the sounds of the short vowels and focusing on the sound the letter *represents* (rather than the sound the letter *makes*) can help avoid confusion for children who are still very literal (Jones, Clark, & Reutzel, 2013).

Students in the *silver* (second grade) and *brown* (third grade) bands *read grade-appropriate irregularly spelled words; use word families and analogy of known sight words to read unknown words*. Children in the second and third grades rely on various processes to help them recognize new words (National Reading Panel, 2000). They use orthographic analogy whereby they make predictions about unknown words that share letters with known sight words (Ehri, 1995). As they progress, they recognize increasingly more irregularly spelled words (McAfee & Leong, 2007). Irregularly spelled words are somewhat challenging to read because they are not spelled according to how they sound, although they may contain some regular letter-sound correspondences (e.g., phone, yacht, and sugar).

Students in the *brown* (third grade) band *read grade-appropriate irregularly spelled words*. Third graders are expected to automatically recognize many irregularly spelled words (McAfee & Leong, 2007). During the primary grades, students have numerous opportunities to read and use grade-appropriate irregularly spelled words. These experiences along with their improved memory abilities assist third graders in recognizing and reading these words quickly and easily (National Institute for Literacy, 2006). Many of these words are those from the content areas (PBS, n.d.).

Objective 15. Demonstrates phonological awareness, phonics skills, and word recognition
c. Notices and discriminates discrete units of sound

- **McAfee, O., & Leong, D. J. (2007).** *Assessing and guiding young children's development and learning* (4th ed.). Boston: Pearson.
- **Schickedanz, J. A., & Casbergue, R. M. (2004).** *Writing in preschool: Learning to orchestrate meanings and marks*. Newark, DE: International Reading Association.
- **Strickland, D. S., & Schickedanz, J. A. (2004).** *Learning about print in preschool: Working with letters, words, and beginning links with phonemic awareness.* Newark, DE: International Reading Association.

- **Copple, C, & Bredekamp, S. (Eds.). (2009).** *Developmentally appropriate practice in early childhood programs serving children from birth to age 8* (3rd ed.). Washington, DC: National Association for the Education of Young Children.
- **McAfee, O., & Leong, D. J. (2007).** *Assessing and guiding young children's development and learning* (4th ed.). Boston: Pearson.
- **Schickedanz, J. A., & Casbergue, R. M. (2004).** *Writing in preschool: Learning to orchestrate meanings and marks*. Newark, DE: International Reading Association.

- **Goswami, U. (2003).** Early phonological development and acquisition of literacy. In S. B. Neuman & D. K. Dickinson (Eds.), *Handbook of early literacy research*, pp. 111–125. New York: Guilford Press.
- **McGee, L. M., & Morrow, L. M. (2005).** *Teaching literacy in kindergarten*. New York: Guilford Press.
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- **Whitehurst, G. J., & Lonigan, C. J. (2003).** Emergent literacy: Development from prereaders to readers. In S. B. Neuman & D. K. Dickinson (Eds.), *Handbook of early literacy research*, pp. 11–29. New York: Guilford Press.

- **Anthony, J. L., Lonigan, C. J., Driscoll, K., Phillips, B. M., & Burgess, S. R. (2003).** Phonological sensitivity: A quasi-parallel progression of word structure units and cognitive operations. *Reading Research Quarterly, 38*, 470–487.
- **McGee, L. M., & Morrow, L. M. (2005).** *Teaching literacy in kindergarten*. New York: Guilford Press.
- **Schickedanz, J. A., Schickedanz, D. I., Forsyth, P.D., & Forsyth, G.A. (2001).** *Understanding children and adolescents* (4th ed.). Boston: Allyn & Bacon.
- **Snow, C. E., Burns, S. M., & Griffin, P. (Eds.). (1998).** *Preventing reading difficulties in young children*. Washington, DC: National Academy Press.

- **Jones, C. D., Clark, S. K., & Reutzel, D. R. (2013).** Enhancing alphabet knowledge instruction: Research implications and practical strategies for early childhood educators. *Early Childhood Education Journal, 41*(2), 81-89.
- **McAfee, O., & Leong, D. J. (2007).** *Assessing and guiding young children's development and learning* (4th ed.). Boston: Pearson/Allyn & Bacon.
- **Snow, C. E., Burns, S., & Griffin, P.(Eds).** *Preventing reading difficulties in young children*. Washington, DC: National Academy Press.

- **Ehri, L. C. (1995).** Phases of development in learning to read words by sight. *Journal of Research in Reading, 18*(2), 116-125.
- **McAfee, O., & Leong, D. J. (2007).** *Assessing and guiding young children's development and learning* (4th ed.). Boston: Pearson/Allyn & Bacon.
- **National Reading Panel (2000).** *Teaching children to read: An evidence-based assessment of the scientific research literature on reading and its implications for reading instruction*. NIH Publication No. 00-4769. Washington, DC: National Institute of Child Health and Human Development.

- **McAfee, O., & Leong, D. J. (2007).** *Assessing and guiding young children's development and learning* (4th ed.). Boston: Pearson/Allyn & Bacon.
- **National Institute for Literacy (2006.).** *Put reading first kindergarten through grade 3: The research building blocks for teaching children to read* (3rd ed.). Retrieved July 20, 2013 from http://www.lincs.ed.gov/publications/pdf/PRFbooklet.pdf
- **Public Broadcasting System (n.d.).** Child Development Tracker: Literacy. Retrieved March 4, 2013 from http://www.pbs.org/parents/childdevelopmenttracker/eight/literacy.html

Objective 15. Demonstrates phonological awareness, phonics skills, and word recognition

d. Applies phonics concepts and knowledge of word structure to decode text

Children in the *blue* (preK 4 class) and *purple* (kindergarten) bands *show understanding that a specific sequence of letters represents a spoken word.* Children gradually develop the awareness that letters represent the sounds that make up spoken words (Strickland, & Schickedanz, 2004). This understanding (i.e., the alphabetic principle) is fundamental to many other literacy abilities. For most children this appreciation begins during the latter part of the preschool period, and by the end of kindergarten, children comprehend the principle (McAfee & Leong, 2007; Snow, Burns, & Griffin, 1998).

Students in the *purple* (kindergarten) and *pink* (first grade) bands *decipher a few words using the letter-sound associations of most consonants and the five major vowels (short and long sounds); notice different letter sounds in similarly spelled words.* Kindergarten children begin to demonstrate their understanding of the alphabetic principle as they make letter-sound associations in their reading and writing attempts (Snow, Burns, & Griffin, 1998). First graders build on this essential understanding and use learned phonemic analysis skills to help them decipher unfamiliar words (Neuman, Copple, & Bredekamp, 2000; Snow et al., 1998; Tomlinson, 2009).

Students in the *pink* (first grade) and *silver* (second grade) bands *decipher regularly spelled one- and two-syllable words (after breaking into syllables) using letter-sound associations (including common consonant digraphs and final -e and vowel teams), common roots, and inflectional endings; break words into syllables based on the number of vowel sounds heard.* In first grade, students decode phonetically regular one-syllable words (Tomlinson, 2009). They begin to incorporate their knowledge of consonant digraphs (pairs of consonant producing a single sound - ck, sh, wh, etc.) and inflectional endings (e.g., -ed) to help them Identify one-syllable words (McAfee & Leong, 2007; Snow, Burns, & Griffin, 1998).

Students in the *silver* (second grade) and *brown* (third grade) bands *decipher regularly spelled two-syllable words using letter-sound associations and common affixes.* Second graders become more efficient at Identifying new words (Neuman, Copple, & Bredekamp, 2000), including words having two-syllables (Tomlinson, 2009).They use the base or root words learned previously along with knowledge of common affixes to recognize many newly encountered words (Carlisle & Stone, 2005).

Students in the *brown* (third grade) band *decipher multisyllable words by applying letter-sound associations, derivational and Latin suffixes, roots, and contractions.* In third grade, students use word identification strategies appropriately and automatically when they come upon words they do not recognize (Neuman, Copple, & Bredekamp, 2000; PBS, n.d.). They use their understandings of component parts to decode more complex multisyllable words (McAfee & Leong, 2007).

Objective 15. Demonstrates phonological awareness, phonics skills, and word recognition
d. Applies phonics concepts and knowledge of word structure to decode text

- **McAfee, O., & Leong, D. J. (2007).** *Assessing and guiding young children's development and learning* (4th ed.). Boston: Pearson/Allyn & Bacon.
- **Strickland, D. S., & Schickedanz, J. A. (2004).** *Learning about print in preschool: Working with letters, words, and beginning links with phonemic awareness*. Newark, DE: International Reading Association.
- **Snow, C. E., Burns, S., & Griffin, P. (Eds). (1998).** *Preventing reading difficulties in young children*. Washington, DC: National Academy Press.

- **Snow, C. E., Burns, S., & Griffin, P. (Eds). (1998).** *Preventing reading difficulties in young children*. Washington, DC: National Academy Press.
- **Neuman, S. B., 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.
- **Tomlinson, H. B. (2009).** Developmentally appropriate practice in the primary grades-Ages 6 - 8: An overview. In C. Copple & S. Bredekamp (Eds.), *Developmentally appropriate practice in early childhood programs serving children from birth through age 8* (3rd ed.), pp. 257–288. Washington, DC: National Association for the Education of Young Children.

- **McAfee, O., & Leong, D. J. (2007).** *Assessing and guiding young children's development and learning* (4th ed.). Boston: Pearson/Allyn & Bacon.
- **Snow, C. E., Burns, S., & Griffin, P. (Eds). (1998).** *Preventing reading difficulties in young children*. Washington, DC: National Academy Press.
- **Tomlinson, H. B. (2009).** Developmentally appropriate practice in the primary grades-Ages 6 - 8: An overview. In C. Copple & S. Bredekamp (Eds.), *Developmentally appropriate practice in early childhood programs serving children from birth through age 8* (3rd ed.), pp. 257–288. Washington, DC: National Association for the Education of Young Children.

- **Carlise, J. F., & Stone, C. A. (2005).** Exploring the role of morphemes in word reading. *Reading Research Quarterly, 40*, 428-449.
- **Neuman, S. B., 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.
- **Tomlinson, H. B. (2009).** Developmentally appropriate practice in the primary grades-Ages 6 - 8: An overview. In C. Copple & S. Bredekamp (Eds.), *Developmentally appropriate practice in early childhood programs serving children from birth through age 8* (3rd ed.), pp. 257–288. Washington, DC: National Association for the Education of Young Children.

- **McAfee, O., & Leong, D. J. (2007).** *Assessing and guiding young children's development and learning* (4th ed.). Boston: Pearson/Allyn & Bacon.
- **Neuman, S. B., 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.
- **Public Broadcasting System (n.d.).** Child Development Tracker: Literacy. Retrieved March 4, 2013 from http://www.pbs.org/parents/childdevelopmenttracker/eight/literacy.html

Objective 16. Demonstrates knowledge of the alphabet

a. Identifies and names letters

Children in the *yellow* (2–3 years), *green* (preschool 3 class), and *blue* (preK 4 class) bands *recognize and name a few letters in own name.* Early on, children begin attending to print that is important to them, such as the letters in their name (Snow, Burns, & Griffin, 1998) and highly salient environmental print (Vukelich, & Christie, 2004). As the letter identification abilities of 2-year-olds begin to emerge (Strickland & Schickedanz, 2004), they are highly dependent upon their in- and out-of-home experiences that support literacy (Snow et al., 1998). Some children may recognize up to a third of the alphabet by the time they turn 3 (Vukelich & Christie, 2004), but this is not the case for most children of this age. Preschool children identify some alphabet letters (Neuman, Copple, & Bredekamp, 2000), letters in their name (Strickland, & Schickedanz, 2004), letters in the names of people important to them (McGee & Morrow, 2005), or salient letters in the environment (McGee & Morrow, 2005; Vukelich & Christie, 2004).

Children in the *green* (preschool 3 class), *blue* (preK 4 class), and *purple* (kindergarten) bands *recognize as many as 10 letters, especially those in own name.* Children's letter recognition abilities continue to increase throughout the preschool and kindergarten years (Snow, Burns, & Griffin, 1998; Strickland & Schickedanz, 2004). Preschool children can identify 10 alphabet letters (Snow et al., 1998; Strickland & Schickedanz, 2004), and kindergarten children can identify considerably more letters (Snow et al., 1998). Letters in children's names, persons special to them, and salient environmental print continue to be the most important letters for children (McAfee & Leong, 2007; McGhee & Morrow, 2005).

Students in the *purple* (kindergarten) band *identify and name 11–20 upper- and 11–20 lowercase letters when presented in random order*. When preschool children attend a literacy-rich preschool program, they may enter kindergarten with the ability to name at least 18 or 19 uppercase letters and 16 or 17 lowercase letters (Piasta, Petscher, & Justice, 2012; Schickedanz & Collins, 2013). Kindergartners recognize most letters of the alphabet (Charlesworth, 2011), but at first their abilities may be somewhat inconsistent. They may still confuse some letters that are similar in appearance, such as b and d, m and n, or p and q (McAfee & Leong, 2007). During the year they gain accuracy and proficiency.

Students in the *purple (kindergarten)* band *identify and name all upper- and lowercase letters when presented in random order.* The alphabet naming abilities of kindergarten children increase appreciably during the year (Strickland & Schickedanz, 2004). By the end of kindergarten, it is expected that children will recognize and name (McAfee & Leong, 2007) all upper- and lowercase letters with accuracy and quickness (McGee & Morrow, 2005), regardless of the order in which they are presented (Copple & Bredekamp, 2009).

Objective 16. Demonstrates knowledge of the alphabet
a. Identifies and names letters

	• **McGee, L. M., & Morrow, L. M. (2005).** *Teaching literacy in kindergarten*. New York: Guilford Press. • **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. • **Snow, C. E., Burns, S. M., & Griffin, P. (Eds.). (1998).** *Preventing reading difficulties in young children*. Washington, DC: National Academy Press. • **Strickland, D. S., & Schickedanz, J. A. (2004).** *Learning about print in preschool: Working with letters, words, and beginning links with phonemic awareness.* Newark, DE: International Reading Association. • **Vukelich, C., & Christie, J. (2004).** *Building a foundation for preschool literacy: Effective instruction for children's reading and writing development*. Newark, DE: International Reading Association.
	• **McAfee, O., & Leong, D. J. (2007).** *Assessing and guiding young children's development and learning* (4th ed.). Boston: Pearson. • **McGee, L. M., & Morrow, L. M. (2005).** *Teaching literacy in kindergarten*. New York: Guilford Press. • **Snow, C. E., Burns, S. M., & Griffin, P. (Eds.). (1998).** *Preventing reading difficulties in young children*. Washington, DC: National Academy Press. • **Strickland, D. S., & Schickedanz, J. A. (2004).** *Learning about print in preschool: Working with letters, words, and beginning links with phonemic awareness.* Newark, DE: International Reading Association.
	• **McAfee, O., & Leong, D. J. (2007).** *Assessing and guiding young children's development and learning* (4th ed.). Boston: Pearson. • **Piasta, S. B., Petscher, Y. & Justice, L. M. (2012).** How many letters should preschoolers in public programs know? The diagnostic efficiency of various preschool letter-naming benchmarks for predicting first-grade literacy achievement. *Journal of Educational Psychology, 104*, 945–958. • **Schickedanz, J. A., & Collins, M. F. (2013).** *So much more than the ABCs: The early phases of reading and writing*. 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 to age 8* (3rd ed.). Washington, DC: National Association for the Education of Young Children. • **McAfee, O., & Leong, D. J. (2007).** *Assessing and guiding young children's development and learning* (4th ed.). Boston: Pearson. • **McGee, L. M., & Morrow, L. M. (2005).** *Teaching literacy in kindergarten*. New York: Guilford Press. • **Strickland, D. S., & Schickedanz, J. A. (2004).** *Learning about print in preschool: Working with letters, words, and beginning links with phonemic awareness.* Newark, DE: International Reading Association.

Objective 16. Demonstrates knowledge of the alphabet

b. Identifies letter-sound correspondences

Children in the *green* (preschool 3 class), *blue* (preK 4 class), and *purple* (kindergarten) bands *identify the sounds of a few letters.* Preschool children begin to make some letter-sound matches (Neuman, Copple, & Bredekamp, 2000; Strickland, & Schickedanz, 2004). By the time they enter kindergarten, children are likely to be able to connect additional letters with their corresponding sounds (Copple & Bredekamp, 2009).

Children in the *blue* (preK 4 class) and *purple* (kindergarten) bands *produce the correct sounds for 10–20 letters.* Older preschool and kindergarten children can provide the sound for some initial consonants (McAfee & Leong, 2007). Once children begin to match letters to their sounds, they begin to provide other symbol-to-sound correspondences. By the end of kindergarten, children are expected to recognize most letter-sound associations (Charlesworth, 2011; McAfee & Leong, 2007; McGee & Morrow, 2005).

Students in the *purple* (kindergarten) band *produce at least one correct sound for each letter in the alphabet.* Kindergarten children use their letter-sound correspondence abilities in both self-selected and teacher-guided activities. During choice time/center activities, they may apply their knowledge as they use invented or creative spelling (Snow, Burns, & Griffin, 1998), such as writing a sign for the block center (McGee & Morrow, 2005), or they may attempt to sound out an unfamiliar word in a storybook (McGee & Richgels, 2003). During teacher-guided activities, kindergartners may demonstrate their abilities as they work with the teacher on spelling words that are important to them (Burns, Griffin, & Snow, 1999) or in activities geared at creating and reading rhyming words (McGee & Morrow, 2005).

Students in the *purple* (kindergarten) band *produce short and long vowel sounds and most frequent sounds for each consonant*. Learning letter sounds is crucial for learning to read and spell (Treiman, Tincoff, Rodriguez, Mouzaki, & Francis, 1998). Some letters and their sounds are less difficult for children to learn than others (Piasta & Wagner, 2010; Treiman et al., 1998). Vowels and letters having relationship to their sounds (e.g., b, p, f) appear to be easiest for kindergarten children to learn (Evans, Bell, Shaw, Moretti, & Page, 2006; Treiman et al., 1998; Jones, Clark, & Reutzel, 2013). Appropriate instruction is essential if kindergartners are to learn the expected letter-sound associations without confusion (Jones et al., 2013). Some researchers suggest that instruction should focus on identifying the letter name and its sound in tandem along with recognizing the letter in text, and producing the letter form (Jones et al., 2013).

Objective 16. Demonstrates knowledge of the alphabet
b. Identifies letter-sound correspondences

- **Copple, C., & Bredekamp, S. (Eds.). (2009).** *Developmentally appropriate practice in early childhood programs serving children from birth to age 8* (3rd ed.). Washington, DC: National Association for the Education of Young Children.
- **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.
- **Strickland, D. S., & Schickedanz, J. A. (2004).** *Learning about print in preschool: Working with letters, words, and beginning links with phonemic awareness.* Newark, DE: International Reading Association.
- **Charlesworth, R. (2011).** *Understanding child development* (8th ed.). Belmont, CA: Cengage Learning.
- **McAfee, O., & Leong, D. J. (2007).** *Assessing and guiding young children's development and learning* (4th ed.). Boston: Pearson.
- **McGee, L. M., & Morrow, L. M. (2005).** *Teaching literacy in kindergarten*. New York: Guilford Press.
- **Burns, S. M., Griffin, P., & Snow, C. E. (Eds.). (1999).** *Starting out right: A guide to promoting children's reading success*. Washington, DC: National Academy Press.
- **McGee, L. M., & Morrow, L. M. (2005).** *Teaching literacy in kindergarten*. New York: Guilford Press.
- **McGee, L. M., & Richgels, D. J. (2003).** *Designing early literacy programs: Strategies for at-risk preschool and kindergarten children*. New York: Guilford Press.
- **Snow, C. E., Burns, S. M., & Griffin, P. (Eds.). (1998).** *Preventing reading difficulties in young children*. Washington, DC: National Academy Press.
- **Evans, M. A., Bell, M., Shaw, D., Moretti, S., & Page, J. (2006).** Letter names, letter sounds and phonological awareness: An examination of kindergarten children across letters and of letters across children. *Reading and Writing, 19*, 959-989.
- **Jones, C.D., Clark, S. K., & Reutzel, D. R. (2013).** Enhancing alphabet knowledge instruction: Research implications and practical strategies for early childhood educators. *Early Childhood Education Journal, 41*(2), 81-89.
- **Piasta, S. B., & Wagner, R. K. (2010).** Learning letter names and sounds: Effects of instruction, letter type, and phonological processing skill. *Journal of Experimental Child Psychology, 105*(4), 324-344.
- **Treiman, R., Tincoff, R., Rodriguez, K., Mouzaki, A., & Francis, D. J. (1998).** The foundations of literacy: Learning the sounds of letters. *Child Development, 69*, 1524-1540.

Objective 17. Demonstrates knowledge of print and its uses

a. Uses and appreciates books and other texts

Children in the *red* (birth–1 year), *orange* (1–2 years), and *yellow* (2–3 years) bands *show interest in books.* Within the first few months, infants begin making eye contact and looking intently at the pictures in books that have simple pictures with sharp color contrast (Schickedanz, 1999). During the first year they may cuddle on an adult's lap or sit nearby as they look at books together (Schickedanz, 1999). Mobile infants and toddlers indicate their interest by bringing books to an adult to read (Schickedanz & Collins, 2013), and they often indicate they want the book to be read again (Schickedanz, 1999). Two-year-olds enjoy books (Strickland, & Morrow, 2000), especially those books with their photos, textures to feel, and holes where they can peek through or push their fingers into the opening (Copple & Bredekamp, 2009). Books with familiar objects and activities and repetitive text encourage the 2-year-old to participate by pointing to pictures, labeling, making sounds, answering simple questions, and repeating words and phrases (Copple & Bredekamp, 2009).

Children in the *yellow* (2–3 years), *green* (preschool 3 class), and *blue* (preK 4 class) bands *orient books correctly; turn pages from the front of the book to the back; recognize familiar books by their covers.* The book-related behaviors of twos and preschool children are appreciably more advanced than those of younger children. Two-year-olds recognize when a book is oriented correctly and when it is not, even when illustrations are intentionally placed in an upside-down position (Schickedanz, 1999). The size and the material from which book pages are made influence toddlers' abilities to independently turn book pages. Children younger than 2 usually gather several pages of the book at a time (Schickedanz & Collins, 2013) and do not turn the pages from front to back. As children have more experiences with books, they begin to look for their favorite ones (Schickedanz & Collins, 2013) and recognize them by their covers (Burns, Griffin, & Snow, 1999; McAfee & Leong, 2007).

Children in the *blue* (preK 4 class) and *purple* (kindergarten) bands *know some features of a book (e.g., title, author, illustrator, front and back covers); connect specific books to authors.* As adults talk with older preschool and kindergarten children about the features of books and their functions, children begin to recognize their specific aspects (Morrow, 2007). They understand that books have titles, authors, and illustrations that convey meaning but that illustrations cannot be read (Ahola & Kovacik, 2007; Burns, Griffin, & Snow, 1999; Copple & Bredekamp, 2009; Morrow, 2007). Kindergarten children "can name some book titles and authors" (Burns et al., 1999, p. 85) and make connections with illustrations found in other books (McGee & Morrow, 2005).

Students in the *purple* (kindergarten) and *pink* (first grade) bands *use various types of books for their intended purposes.* Kindergartners and first graders demonstrate their familiarity with various types or genres of books, including storybooks, poetry, and expository or informational text (Ahola & Kovacik, 2007; Duke & Kays, 1998; Snow, Burns, & Griffin, 1998). The more experience they have with the different genres, the more they use the language specific to particular genres in their book retellings (Duke & Kays, 1998) and in other activities such as dramatic play or writing (McGee & Morrow, 2005).

Students in the *pink* (first grade) and *silver* (second grade) bands *explain differences between types of texts; locate information in text using basic text features (main headings, table of contents, glossaries, electronic menus, icons)*. First and second graders become increasingly aware of the forms, structures, and purposes of different types of text (PBS, n.d.). They understand and can use diverse text types in their literacy activities (Snow, Burns, & Griffin, 1998). Their familiarity with parts of books and text features helps them to locate and interpret information they need (PBS, n.d.).

Students in the *silver* (second grade) and *brown* (third grade) bands *locate information using text features (captions, bold print, subheadings, glossaries, indexes, electronic menus, icons) and dictionaries; understand story structure*. Second-grade students use the information they obtain from accompanying text (e.g., diagrams, charts, and graphs) to help them read and understand what they have read (Snow, Burns, & Griffin, 1998). When trying to get information, they are able to use the table of contents, subheadings, and chapter titles to assist them (PBS, n.d.).

Students in the *brown* (third grade) band *use text features and search tools (keywords, sidebars, hyperlinks) proficiently to locate information related to a specific topic; explain parts of stories, poems, and dramatic plays (chapter, verse, scene, act, etc.) and how they work together*. By third grade, students have had many experiences with stories and other literacy forms. These experiences support their understanding of story structure, and they can explain components of different text (Neuman, Copple, & Bredekamp, 2000). Their improved skill in using text features and tools helps them to locate information, make predictions about text, and understand text content (PBS, n.d.).

Objective 17. Demonstrates knowledge of print and its uses
a. Uses and appreciates books and other texts

- **Copple, C., & Bredekamp, S. (Eds.). (2009).** *Developmentally appropriate practice in early childhood programs serving children from birth to age 8* (3rd ed.). Washington, DC: National Association for the Education of Young Children.
- **Schickedanz, J. A. (1999).** *Much more than the ABCs: The early stages of reading and writing*. Washington, DC: National Association for the Education of Young Children.
- **Schickedanz, J. A., & Collins, M. F. (2013).** *So much more than the ABCs: The early phases of reading and writing*. Washington, DC: National Association for the Education of Young Children.
- **Strickland, D. S., & Morrow, L. M. (Eds.) (2000).** *Beginning reading and writing*. Newark, DE: International Reading Association.

- **Burns, S. M., Griffin, P., & Snow, C. E. (Eds.). (1999).** *Starting out right: A guide to promoting children's reading success*. Washington, DC: National Academy Press.
- **McAfee, O., & Leong, D. J. (2007).** *Assessing and guiding young children's development and learning* (4th ed.). Boston: Pearson.
- **Schickedanz, J. A. (1999).** *Much more than the ABCs: The early stages of reading and writing*. Washington, DC: National Association for the Education of Young Children.
- **Schickedanz, J. A., & Collins, M. F. (2013).** *So much more than the ABCs: The early phases of reading and writing*. Washington, DC: National Association for the Education of Young Children.

- **Ahola, D., & Kovacik, A. (2007).** *Observing and understanding child development: A child study manual*. Clifton Park, NY: Thomson/Delmar Learning.
- **Burns, S. M., Griffin, P., & Snow, C. E. (Eds.). (1999).** *Starting out right: A guide to promoting children's reading success*. Washington, DC: National Academy Press.
- **Copple, C., & Bredekamp, S. (Eds.). (2009).** *Developmentally appropriate practice in early childhood programs serving children from birth to age 8* (3rd ed.). Washington, DC: National Association for the Education of Young Children.
- **McGee, L. M., & Morrow, L. M. (2005).** *Teaching literacy in kindergarten*. New York: Guilford Press.
- **Morrow, L. M. (2007).** *Developing literacy in preschool*. New York: Guilford Press.

- **Ahola, D., & Kovacik, A. (2007).** *Observing and understanding child development: A child study manual*. Clifton Park, NY: Thomson/Delmar Learning.
- **Duke, N. K., & Kays, J. (1998).** "Can I say, 'Once upon a time'?": Kindergarten children developing knowledge of information book language. *Early Childhood Research Quarterly, 13*, 295–318.
- **McGee, L. M., & Morrow, L. M. (2005).** *Teaching literacy in kindergarten*. New York: Guilford Press.
- **Snow, C. E., Burns, S. M., & Griffin, P. (Eds.). (1998).** *Preventing reading difficulties in young children*. Washington, DC: National Academy Press.

- **PBS (n.d.).** *Child development tracker*. Retrieved March 4, 2013 from http://www.pbs.org/parents/childdevelopmenttracker/seven/literacy.html
- **Snow, C. E., Burns, S., & Griffin, P. (Eds.) (1998).** *Preventing reading difficulties in young children*. Washington, DC: National Academy Press.

- **Public Broadcasting System (n.d.).** *Child development tracker*. Retrieved March 4, 2013 from http://www.pbs.org/parents/childdevelopmenttracker/eight/literacy.html
- **Snow, C. E., Burns, S., & Griffin, P. (Eds.) (1998).** *Preventing reading difficulties in young children*. Washington, DC: National Academy Press.

- **Neuman, S. B., 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.
- **Public Broadcasting System (n.d.).** *Child development tracker*. Retrieved March 4, 2013 from http://www.pbs.org/parents/childdevelopmenttracker/eight/literacy.html

Objective 17. Demonstrates knowledge of print and its uses

b. Uses print concepts

Children in the *yellow* (2–3 years) and *green* (preschool 3 class) bands *show understanding that text is meaningful and can be read.* Children's understanding that text has meaning and can be read does not require letter naming ability or actual word reading (Schickedanz, Schickedanz, Forsyth, & Forsyth, 2001). Rather, this understanding is dependent upon the child differentiating the general features of print from other displays (Schickedanz, Schickedanz, Forsyth, & Forsyth, 2001). Older toddlers make a distinction between the print and the pictures in books (McAfee & Leong, 2007), and 3-year-old children know that what is read in stories is the print (Burns, Griffin, & Snow, 1999). Children may demonstrate their understanding of print and its uses by indicating words in their environment, such as words on signs (e.g., traffic signs or restaurants), on food (e.g., cereal boxes), or by asking, "What does this say?" (Vukelich & Christie, 2004).

Children in the *blue* (preK 4 class) and *purple* (kindergarten) bands *indicate where to start reading and the direction to follow*. Older preschool and kindergarten children understand basic print concepts, including orientation and directionality (Charlesworth, 2011). When the placement of text is conventional, they know where to begin reading, proceeding from top to bottom and left to right (Charlesworth, 2011; Copple & Bredekamp, 2009; McAfee & Leong, 2007; Neuman, Copple, & Bredekamp, 2000).

Children in the *blue* (preK 4 class) and *purple* (kindergarten) bands *show awareness of various features of print: letters, words, spaces, upper- and lowercase letters, some punctuation.* Fours and kindergarten children understand various aspects of print. They appreciate that letters are grouped together to make words, that words have separations or spaces between them, and that words make up sentences (Strickland & Schickedanz, 2004). When they pretend to read, they may point to each word as they vocalize what they think it says, stopping at the end of the sentence (McGee & Morrow, 2005) and sometimes using vocal inflection to denote punctuation.

Students in the *purple* (kindergarten) and *pink* (first grade) bands *match a written word with a spoken word, but it may not be the actual written word; track print from the end of a line of text to the beginning of the next line.* Emergent readers match spoken words with written words (Charlesworth, 2011; Neuman, Copple, & Bredekamp, 2000). They often memorize a favorite book and pretend to read it as they match the story line to the printed words (McAfee & Leong, 2007). They may "pretend read" (McGee & Morrow, 2005, p. 50) by running their fingers across the text in a sweeping motion from the end of one line to another or by "fingerpoint reading" (McGee & Morrow, 2005, p. 50) by pointing to each individual word as they articulate what they think it says (McAfee & Leong, 2007).

Students in the *pink* (first grade) band *distinguish features of a sentence, including capitalization and punctuation*. First graders use knowledge of print to support their transition from emergent readers to real readers. They understand the difference between letters, words, and sentences (McAfee & Leong, 2007) and basic punctuation (PBS, n.d.). Toward the later part of the year, they may demonstrate their understanding in their written compositions (PBS, n.d.).

Objective 17. Demonstrates knowledge of print and its uses
b. Uses print concepts

- **Burns, S. M., Griffin, P., & Snow, C. E. (Eds.). (1999).** *Starting out right: A guide to promoting children's reading success*. Washington, DC: National Academy Press.
- **McAfee, O., & Leong, D. J. (2007).** *Assessing and guiding young children's development and learning* (4th ed.). Boston: Pearson.
- **Schickedanz, J. A., Schickedanz, D. I., Forsyth, P. D., & Forsyth, G. A. (2001).** *Understanding children and adolescents* (4th ed.). Boston: Allyn & Bacon.
- **Vukelich, C., & Christie, J. (2004).** *Building a foundation for preschool literacy: Effective instruction for children's reading and writing development*. Newark, DE: International Reading Association.

- **Charlesworth, R. (2011).** *Understanding child development* (8th ed.). Belmont, CA: Cengage Learning.
- **Copple, C., & Bredekamp, S. (Eds.). (2009).** *Developmentally appropriate practice in early childhood programs serving children from birth to age 8* (3rd ed.). Washington, DC: National Association for the Education of Young Children.
- **McAfee, O., & Leong, D. J. (2007).** *Assessing and guiding young children's development and learning* (4th ed.). Boston: Pearson.
- **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.

- **McGee, L. M., & Morrow, L. M. (2005).** *Teaching literacy in kindergarten.* New York: Guilford Press.
- **Strickland, D. S., & Schickedanz, J. A. (2004).** *Learning about print in preschool: Working with letters, words, and beginning links with phonemic awareness.* Newark, DE: International Reading Association.

- **Charlesworth, R. (2011).** *Understanding child development* (8th ed.). Belmont, CA: Cengage Learning.
- **McAfee, O., & Leong, D. J. (2007).** *Assessing and guiding young children's development and learning* (4th ed.). Boston: Pearson.
- **McGee, L. M., & Morrow, L. M. (2005).** *Teaching literacy in kindergarten*. New York: Guilford Press.
- **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.

- **McAfee, O., & Leong, D. J. (2007).** *Assessing and guiding young children's development and learning* (4th ed.). Boston: Pearson.
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Objective 18. Comprehends and responds to books and other texts

a. Interacts during reading experiences, book conversations, and text reflections

Children in the *yellow* (2–3 years) and *green* (preschool 3 class) bands *contribute particular language from the book at the appropriate time*. Toddlers and young preschoolers are learning how to take part in book-reading activities (Strickland, & Morrow, 2000; Strickland & Schickedanz, 2004). When adults pause at appropriate times as they read familiar books, children often fill in the missing word or phrases (Schickedanz, 1999). They also may use the language from a particular story in other contexts, such as during play (Schickedanz & Collins, 2013).

Children in the *green* (preschool 3 class), *blue* (preK 4 class), and *purple* (kindergarten) bands *ask and answer questions about the text; refer to pictures*. Preschool and kindergarten children enjoy listening to and talking about the stories and pictures in books (Neuman, Copple, & Bredekamp, 2000). Big books (i.e., books with enlarged pictures and print) facilitate active involvement of children when the teacher reads aloud (Morrow, 2007). Preschool and kindergarten children make factual comments and ask literal questions related to the story (Vukelich & Christie, 2004), often using the illustrations as references (Snow, Burns, & Griffin, 1998).

Children in the *blue* (preK 4 class) and *purple* (kindergarten) bands *identify story-related problems, events, and resolutions during conversations with an adult.* Teachers play an important role in helping children develop a strong sense of story as they read books and discuss them with the children. When teachers use story language (e.g., characters, setting, problem, actions, and events), it helps children to "recall the main characters, identify the problem in the story, and notice changes in the settings" (McGee & Morrow, 2005, p. 71). Older preschool children talk about and retell stories putting the sequence of events in order and supplying many details. They may, however, go back and insert additional details as they organize their thoughts (PBS, n.d.). Kindergarten children, given their more advanced language and cognitive abilities, can discuss and provide story-related information more coherently and with greater detail and accuracy than preschool children (PBS, n.d.).

Students in the *purple* (kindergarten) and *pink* (first grade) bands *engage in teacher-led reading activities using emergent reader books and other simple texts; focus on major characters, events, and information; describe relationships between text and illustrations; make comparisons, inferences, and draw conclusions; identify the author's supporting points.* Kindergartners and first graders can logically retell and discuss simple stories they read or hear others read (PBS, n.d.). As they read emergent texts, they make evaluative comments (PBS, n.d.), and predictions based on inferences gleaned from the text material (McAfee & Leong, 2007) or from the illustrations (Snow, Burns, & Griffin, 1998). They enjoy dramatization (McAfee & Leong, 2007) and can reenact whole stories or parts of them as a way of showing their understanding (Burns, Griffin & Snow, 1999).

Students in the *pink* (first grade) and *silver* (second grade) bands *use print and illustrations in first-grade-level texts to describe and compare individuals, events, ideas, narration, connections, and information*. Beginning readers rely upon both text and illustrations to support their comprehension (Paris & Paris, 2007). Students' abilities to comprehend and communicate text information during reading interactions is greater when they can focus their attention on getting meaning rather than on decoding what they read (McLaughlin, 2012). Specific instruction about narrative elements (Paris & Paris, 2007) and visual literacy and picture/text interaction (O'Neil, 2011) can aid the comprehension of novice readers.

Students in the *silver* (second grade) and *brown* (third grade) bands *use second-grade-level texts to make comparisons and connections, identify the main focus/main points, ask and answer who, what, when, and how questions about key details; describe characters' points of view and responses to events; and explain how words or phrases or images/illustrations supply meaning*. Second and third graders are accustomed to talking about what they and others read, and the quality of their book talk improves greatly during this period (Resnick & Snow, 2009). They notice similarities and differences across texts of various types. They describe, answer questions, and link what they already know about a particular topic with what they are reading (McAfee & Leong, 2007; McLaughlin, 2012).

Students in the *brown* (third grade) band *use third-grade-level texts to ask and answer questions referencing appropriate illustrations and specific text; make comparisons between texts by the same author or on the same topic; explain how characters' actions contribute to events; differentiate own viewpoint with those in text*. Third graders participate in discussions around texts by asking questions, discussing details and underlying themes or messages, and making interpretive statements. They draw upon their background knowledge, information provided in the text, and reasoning abilities as they consider the hypotheses and opinions presented (Burns, Griffin, & Snow, 1999; PBS, n.d.,). If another student makes an assertion about the text which differs from their own, they may ask for text to support the claims (Resnick & Snow, 2009).

Objective 18. Comprehends and responds to books and other texts
a. Interacts during reading experiences, book conversations, and text reflections

- **Schickedanz, J. A. (1999).** *Much more than the ABCs: The early stages of reading and writing*. Washington, DC: National Association for the Education of Young Children.
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- **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.
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- **McLaughlin, M. (2012).** Reading comprehension: What every teacher needs to know. *The Reading Teacher, 65*, 432-440.
- **O'Neil, K. E. (2011).** Reading pictures: Developing visual literacy for greater comprehension. *The Reading Teacher, 65*(3), 214-223.
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- **McAfee, O., & Leong, D. J. (2007).** *Assessing and guiding young children's development and learning* (4th ed.). Boston: Pearson.
- **McLaughlin, M. (2012).** Reading comprehension: What every teacher needs to know. *The Reading Teacher, 65*, 432-440.
- **Resnick, L. B., & Snow, C. E. (2009).** *Speaking and listening for preschool through third grade* (Rev ed.). Washington, DC: International Reading Association.
- **Burns, S. M., Griffin, P., & Snow, C E. (Eds.) (1999).** *Starting out right: A guide to promoting children's reading success*. Washington, DC: National Academy Press.
- **Public Broadcasting System (n.d.).** *Child development tracker*. Retrieved March 4, 2013 from http://www.pbs.org/parents/childdevelopmenttracker/eight/literacy.html
- **Resnick, L. B,, & Snow, C. E. (2009).** *Speaking and listening for preschool through third grade* (Rev ed.). Washington, DC: International Reading Association.

Objective 18. Comprehends and responds to books and other texts

b. Uses emergent reading skills

Children in the *yellow* (2–3 years) and *green* (preschool 3 class) bands *pretend to read a familiar book, treating each page as a separate unit; name and describe what is on each page, using pictures as cues*. Toddlers and young preschoolers enjoy looking at familiar books and attempting to read (Burns, Griffin, & Snow, 1999; Neuman, Copple, & Bredekamp, 2000). They turn pages, label objects, and mimic adults' reading behaviors (McAfee & Leong, 2007). At first, their story is not formed, and children treat each page as independent of the overall story (Schickedanz, 1999; Sulzby, 1991). Their speech is guided by the pictures or "picture governed" as they use the pictures to recall the story's text, looking at each page and labeling or describing what they see (Schickedanz, 1999; Schickedanz, Schickedanz, Forsyth, & Forsyth, 2001; Sulzby, 1991).

Children in the *blue* (preK 4 class) band *pretend to read, using some of the language from the text; describe the action across pages, using pictures to order the events; may need prompts from adult*. Older preschool children engage in reading attempts (McAfee & Leong, 2007; Neuman, Copple, & Bredekamp, 2000). They begin to understand that the story comes from the print, although pictures provide clues as to story text (Schickedanz, 1999). Predictable books with repetitive text assist children in their story "reading" attempts (Schickedanz, 1999).

Children in the *blue* (preK 4 class) and *purple* (kindergarten) bands *pretend to read, reciting language that closely matches the text on each page and using reading-like intonation*. Older preschool and kindergarten children read familiar books emergently, recalling the text, although not necessarily word for word (Burns, Griffin, & Snow, 1999; McAfee & Leong, 2007; McGee & Morrow, 2005). They can read aloud a very familiar predictable book, missing only a few words printed on the page (Schickedanz, Schickedanz, Forsyth, & Forsyth, 2001), sometimes with sufficient accuracy and book-like intonation that others may think they are actually reading (Sulzby, 1991).

Students in the *purple* (kindergarten) band *try to match oral language to words on page; point to words as they read*. Kindergartners can match spoken words to print (Neuman, Copple, & Bredekamp, 2000). With familiar texts they can point to each word as they say the word (McAfee & Leong, 2007) or sweep their hand from left to right for each line of text (McGee & Morrow, 2005).

Objective 18. Comprehends and responds to books and other texts
b. Uses emergent reading skills

<table>
<tr><td></td><td>
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Objective 18. Comprehends and responds to books and other texts

c. Retells stories and recounts details from informational texts

Children in the *yellow* (2–3 years), *green* (preschool 3 class), and *blue* (preK 4 class) bands *retell some events or information from a familiar story or other text with close adult prompting*. Very basic storytelling appears at about age 2 (Strickland & Schickedanz, 2004) as children comment on the pictures and characters in the book (McAfee & Leong, 2007). Preschoolers are aware of events in stories (Burns, Griffin, & Snow, 1999; Snow, Burns, & Griffin, 1998). They can summarize the story when asked and retell it in vignettes, although their retellings may not be in the exact order as the action occurs in the story (McAfee & Leong 2007).

Children in the *green* (preschool 3 class), *blue* (preK 4 class), and *purple* (kindergarten) bands *retell familiar stories and recount details from a nonfiction text using pictures or props as prompts*. Preschool and kindergarten children enjoy acting out familiar stories, but it is not easy for all children (Morrow, 2007). Their story retellings are enhanced by adult interactions and the provision of props (Charlesworth, 2008), such as a felt board with story characters, stuffed animals, puppets, and pictures (McGee & Morrow, 2005; Morrow, 2007).

Children in the *blue* (preK 4 class) and *purple* (kindergarten) bands *retell a familiar story and recount an informational text in proper sequence, including major events and characters, as appropriate.* With increased exposure to books and practice, preschool and kindergarten children improve in their story retelling abilities. Older preschool children portray their characters in terms of physical characteristics and actions with some understanding of the beliefs and motivation behind the characters' behaviors (Nicolopoulou & Richner, 2007). Kindergarten children can dramatize stories or parts of stories (Neuman, Copple, & Bredekamp, 2000; Snow, Burns, & Griffin, 1998) and retell most familiar stories with accuracy (McAfee & Leong, 2007).

Students in the *purple* (kindergarten) and *pink* (first grade) bands *retell stories and recount informational texts with many details about characters, events, ideas. and story lines*. Kindergarten children show much progress in their story retelling abilities over the year (Sulzby, 1985). They use increasingly sophisticated vocabulary (McGee & Morrow, 2005). The characters of kindergartners and first graders are more developed than those of younger children, and much of their reenactments focus upon the beliefs, desires, intentions, and emotions that motivate or guide the characters' actions (Nicolopoulou & Richner, 2007). They read informational texts which may not relate to personal experiences and increasingly communicate the information with fewer extraneous details and greater organization around the topic (Resnick & Snow, 2009).

Students in the *pink* (first grade) and *silver* (second grade) bands *paraphrase grade-appropriate literature and informational texts and include the major points and central message*. First and second graders can summarize in their own words the main ideas and new information obtained from reading literature and informational texts (PBS, n.d.; Snow, Burns, & Griffin, 1998). They demonstrate their comprehension by answering simple written questions based on what they read (PBS, n.d.; Snow, Burns, & Griffin, 1998).

Students in the *silver* (second grade) and *brown* (third grade) bands *summarize the major points and central message in grade-appropriate literature and informational texts; make interpretive comments about text*. Second- and third-grade students can summarize the main points and provide supporting details in the literature and informational text they read (McAfee & Leong, 2007; PBS, n.d.). They begin to draw conclusions and make evaluative comments about what they read (PBS, n.d.). The more they know about a topic, the better able they are to answer questions and to reason about what they have read (Bjorklund, 2005).

Students in the *brown* (third grade) band *summarize the major points, central message, and underlying themes in grade-appropriate literature and informational texts; indicate how key points support the central idea*. Third graders elaborate upon key points presented in literature and informational texts (McAfee & Leong, 2007; PBS, n.d.). Expanding language and enhanced cognitive abilities assist them in their efforts to connect individual words and sentences and abstract them to the broader meaning in written text (Bjorklund, 2005). The role of vocabulary becomes increasingly important in children's reading comprehension (Bjorklund, 2005; Dickinson, Golinkoff, & Hirsh-Pasek, 2010), particularly when they encounter specialized content-related words and must use them to make connections and comparisons.

Objective 18. Comprehends and responds to books and other texts
c. Retells stories and recounts details from informational texts

- **Burns, S. M., Griffin, P., & Snow, C. E. (Eds.). (1999).** *Starting out right: A guide to promoting children's reading success*. Washington, DC: National Academy Press.
- **McAfee, O., & Leong, D. J. (2007).** *Assessing and guiding young children's development and learning* (4th ed.). Boston: Pearson.
- **Snow, C. E., Burns, S. M., & Griffin, P. (Eds.). (1998).** *Preventing reading difficulties in young children*. Washington, DC: National Academy Press.
- **Strickland, D. S., & Schickedanz, J. A. (2004).** *Learning about print in preschool: Working with letters, words, and beginning links with phonemic awareness.* Newark, DE: International Reading Association.

- **Charlesworth, R. (2008).** *Understanding Child Development* (7th ed.). Clifton Park, NY: Thomson/Delmar Learning.
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- **Nicolopoulou, A., & Richner, E. S. (2007).** From actors to agents to persons: The development of character representation in young children's narratives. *Child Development, 78*, 412–429.
- **Resnick, L. B,, & Snow, C. E. (2009).** *Speaking and listening for preschool through third grade* (Rev ed.). Washington, DC: International Reading Association.
- **Sulzby, E. (1985).** Children's emergent reading of favorite storybooks: A developmental study. *Reading Research Quarterly, 20*, 458–481.

- **Bjorklund, D. F. (2005).** *Children's thinking: Cognitive development and individual differences* (4th ed.). Belmont, CA: Thomson/Wadsworth.
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Objective 18. Comprehends and responds to books and other texts

d. Uses context clues to read and comprehend texts

Students in the *purple* (kindergarten) and *pink* (first grade) bands *use different strategies to make meaning from print; determine patterns in text; use known words; ask questions; sound out words; and use frequently occurring affixes and inflections.* Emergent readers rely greatly on knowledge of familiar sight words and sounding out unknown words to aid their understanding of text (Burns, Griffin, & Snow, 1999). By the end of kindergarten, children should be able to recognize some common words by sight (Tomlinson, 2009), to "read words by blending new consonant letters to familiar word families" (McGee & Morrow, 2005, p. 93) or by using symbol-to-sound correspondences (McAfee & Leong, 2007). Kindergartners and first-grade students recognize when the sentences they read do not make sense and try to determine the cause of the confusion (Burns et al., 1999).

Students in the *pink* (first grade) and *silver* (second grade) bands *use various strategies to make meaning when reading first-grade-level content; monitor for understanding; ask and answer questions; use sentence-level clues; use known affixes.* First graders "draw upon a variety of comprehension strategies to understand and enjoy texts" (PBS, n.d.). By the end of first grade, students recognize more words by sight and begin to apply comprehension strategies flexibly (PBS, n.d.). Their increasing receptive and expressive language skills support their reading comprehension (Nation, Cocksey, Taylor, & Bishop, 2010).

Students in the *silver* (second grade) and *brown* (third grade) bands *use various strategies to make meaning when reading second-grade-level content; monitor for understanding; use sentence-level clues; and use known affixes, roots, and individual words in compounds*. Second and third graders are more efficient when using comprehension strategies than they were previously (Neuman, Copple, & Bredekamp, 2000). They use their increased vocabulary, greater knowledge of affixes and root words, and other context clues such as diagrams, charts and graphs to monitor their comprehension (Burns, Griffin, & Snow, 1999; PBS, n.d., Tomlinson, 2009). When they are unsure about the meaning of a sentence, they reread it for clarification (Burns, et al., 1999).

Students in the *brown* (third grade) band *use a variety of strategies to make meaning when reading third-grade-level content; monitor for understanding; use sentence-level clues; and use known affixes, roots, and individual words in compounds; distinguish literal from non-literal content.* Competent readers use a variety of strategies when comprehension breaks down. They may reread, change the pace of reading, use context clues, and cross-check cueing systems (McLaughlin, 2012). In addition to using word parts to infer meaning, they draw upon their expanding background knowledge, surrounding text, and understanding of figurative language to help them comprehend the passages they read (PBS, n.d.).

Objective 18. Comprehends and responds to books and other texts
d. Uses context clues to read and comprehend texts

- **Burns, S. M., Griffin, P., & Snow, C E. (Eds.) (1999).** *Starting out right: A guide to promoting children's reading success*. Washington, DC: National Academy Press.
- **McAfee, O., & Leong, D. J. (2007).** *Assessing and guiding young children's development and learning* (4th ed.). Boston: Pearson.
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Objective 18. Comprehends and responds to books and other texts

e. Reads fluently

Students in the *purple* (kindergarten) and *pink* (first grade) bands *read and comprehend emergent reader texts and other print materials*. Kindergartners and first graders read simple, familiar text emergently (Burns, Griffin, & Snow, 1999; Snow, Burns, & Griffin, 1998). Although they may recognize many of the words, their reading is likely to be effortful with focused attention on the mechanics of reading rather than obtaining meaning (National Reading Panel, 2000; Phillips & Torgesen, 2006; Snow et al., 1998). For example, they may read an unfamiliar grade-level book haltingly the first several readings, but with teacher support, read it more fluently on subsequent readings. With appropriate literacy experiences and instruction, they begin to read with greater purpose and comprehension.

Students in the *pink* (first grade) and *silver* (second grade) bands *fluently read and comprehend first-grade-level texts.* The ability to read fluently is a central component in becoming a skilled reader and allows children to focus greater attention on understanding (Kuhn, Schwanenflugel, & Meisinger, 2010). Fluency involves several components: accuracy, automaticity (i.e., speed and ease), and prosody (i.e., reading with appropriate expression and intonation) (Kuhn et al., 2010; Miller & Schwanenflugel, 2008; National Reading Panel, 2000; Philips & Torgesen, 2006). First graders become true readers of both fiction and non-fiction texts (Burns et al., 1999; Snow et al., 1998), but fluency develops slowly as children build a repertoire of known words and word-attack strategies through guided instruction, successive readings, and reading widely (Kuhn et al., 2013; National Reading Panel, 2000).

Students in the *silver* (second grade) and *brown* (third grade) bands *fluently read and comprehend second-grade-level texts*. Toward the end of second grade and in third grade, students use a conversational style with few irrelevant pauses as they read familiar texts (Snow et al., 1998). As with younger children, extensive opportunities to read widely and repeatedly can assist them in their ability to read fluently by freeing them to focus on meaning rather than the conscious attention to the mechanics of reading (Kuhn et. al, 2010; Miller & Schwanenflugel, 2008).

Students in the *brown* (third grade) band *fluently read and comprehend third-grade-level texts.* Children's ability to read fluently improves tremendously during the third-grade year (Snow et al., 1998; Tomlinson, 2009). They can read a wide variety of text representing various genres, different media, and increasing complexity as well as longer stories and chapter books (Snow et al., 1998). "Repeated oral reading with feedback and guidance leads to meaningful improvement in reading expertise for students" (National Reading Panel, 2000, p. 3-3).

Objective 18. Comprehends and responds to books and other texts
e. Reads fluently

- **Burns, S. M., Griffin, P., & Snow, C E. (Eds.) (1999).** *Starting out right: A guide to promoting children's reading success*. Washington, DC: National Academy Press.
- **National Reading Panel (2000).** *Teaching children to read: An evidence-based assessment of the scientific research literature on reading and its implications for reading instruction*. NIH Publication No. 00-4769. Washington, DC: National Institute of Child Health and Human Development.
- **Phillips, B. M., & Torgesen, J. K. (2006).** Phonemic awareness and reading: Beyond the growth of initial reading accuracy. In D. K. Dickinson & S. B. Neuman (Eds.), *Handbook of early literacy research: Volume 2* (pp. 101-112). New York: Guilford Press.
- **Snow, C. E., Burns, S., & Griffin, P. (Eds.) (1998).** *Preventing reading difficulties in young children*. Washington, DC: National Academy Press.

- **Burns, S. M., Griffin, P., & Snow, C E. (Eds.) (1999).** *Starting out right: A guide to promoting children's reading success*. Washington, DC: National Academy Press.
- **Kuhn, M. R., Schwanenflugel, P. J., & Meisinger, E. B. (2010).** Aligning theory and assessment of reading fluency: Authomaticity, prosody, and definitions of fluency. *Reading Research Quarterly, 45*(2), 230-251.
- **Miller, J., & Schwanenflugel, P. J. (2008).** A longitudinal study of the development of reading prosody as a dimension of oral reading fluency in early elementary school children. *Reading Research Quarterly, 43*(4), 336-354.
- **National Reading Panel (2000).** *Teaching children to read: An evidence-based assessment of the scientific research literature on reading and its implications for reading instruction*. NIH Publication No. 00-4769. Washington, DC: National Institute of Child Health and Human Development.
- **Phillips, B. M., & Torgesen, J. K. (2006).** Phonemic awareness and reading: Beyond the growth of initial reading accuracy. In D. K. Dickinson & S. B. Neuman (Eds.), *Handbook of early literacy research: Volume 2* (pp. 101-112). New York: Guilford Press.
- **Snow, C. E., Burns, S., & Griffin, P. (Eds.) (1998).** *Preventing reading difficulties in young children*. Washington, DC: National Academy Press.

- **Kuhn, M. R., Schwanenflugel, P. J., & Meisinger, E. B. (2010).** Aligning theory and assessment of reading fluency: Authomaticity, prosody, and definitions of fluency. *Reading Research Quarterly, 45*(2), 230-251.
- **Miller, J., & Schwanenflugel, P. J. (2008).** A longitudinal study of the development of reading prosody as a dimension of oral reading fluency in early elementary school children. *Reading Research Quarterly, 43*(4), 336-354.
- **Snow, C. E., Burns, S., & Griffin, P. (Eds.) (1998).** *Preventing reading difficulties in young children*. Washington, DC: National Academy Press.

- **National Reading Panel (2000).** *Teaching children to read: An evidence-based assessment of the scientific research literature on reading and its implications for reading instruction*. NIH Publication No. 00-4769. Washington, DC: National Institute of Child Health and Human Development.
- **Snow, C. E., Burns, S., & Griffin, P. (Eds.) (1998).** *Preventing reading difficulties in young children*. Washington, DC: National Academy Press.
- **Tomlinson, H. B. (2009).** Developmentally appropriate practice in the primary grades-Ages 6 - 8: An overview. In C. Copple & S. Bredekamp (Eds.), *Developmentally appropriate practice in early childhood programs serving children from birth through age 8* (3rd ed.), pp. 257–288. Washington, DC: National Association for the Education of Young Children.

Objective 19. Demonstrates writing skills

a. Writes name

Children in the *orange* (1–2 years) and *yellow* (2–3 years) bands make *scribbles or marks.* Children's names hold special meaning for them (Haney, 2002), and the ability to write their first name is generally one the first writing attempts in which children engage (Mayer, 2007). At first, however, children's attention is focused on the activity itself rather than on the product which they are producing (Baghban, 2007). The early writing of toddlers involves primarily experimentation with writing tools and surfaces as they create scribbles and marks (Baghban, 2007). Later they may point to their creation and indicate that it is their name.

Children in the *yellow* (2–3 years) and *green* (preschool 3 class) bands make *controlled linear scribbles.* During this period, children's scribbling becomes more purposeful (Snow, Burns, & Griffin, 1998). With practice and greater fine-motor control, children's scribbles take on a linear appearance with repeated features (McAfee & Leong, 2007) more closely resembling the left to right progression of name writing. Three-year-olds seem to comprehend the differences between writing and drawing and will demonstrate their newfound understanding as they show you how they "wrote" their name (Schickedanz & Casbergue, 2009).

Children in the *green* (preschool 3 class) and *blue* (preK 4 class) bands write *mock letters or letter-like forms.* Children gradually evolve from producing scribble marks to forming marks that have a letter-like quality (McAfee & Leong, 2007). The name-writing abilities of preschool children vary (Saracho, 2006; Snow, Burns, & Griffin, 1998), but at about age 3 children begin to make mock letters and approximations of some of the letters in their names (Neuman, Copple, & Bredekamp, 2000).

Children in the *green* (preschool 3 class) and *blue* (preK 4 class) bands *write letter strings.* By this time, children have a greater awareness of the numerous functions of writing and aspects of its form, such as linearity (Bloodgood, 1999). They experiment with forming random strings of letters (Snow, Burns, & Griffin, 1998) and with individual forms arranged in a line (Berk, 2009; Schickedanz & Collins, 2013).

Children in the *blue* (preK 4 class) and *purple* (kindergarten) bands write a *partially accurate first name.* By this time, children know how their names should look (Schickedanz & Collins, 2013). They attempt to write their names (Baghban, 2007), although their skills may be limited in various ways. Some of the letters may be oriented in the wrong direction, the size of the letters may vary, and their print directionality may be inaccurate (McGee & Morrow, 2005; Schickedanz & Casbergue, 2004; Schickedanz & Collins, 2013).

Students in the *purple* (kindergarten) band *write accurate first name*. As the kindergarten year progresses, children's writing becomes more accurate, and they are expected to print their first name independently (McAfee & Leong, 2007; Roskos, Tabors, & Lenhart, 2004; Strickland & Schickedanz, 2004). By the end of the kindergarten year, most children can write all upper- and lowercase letters (Copple & Bredekamp, 2009).

Students in the *pink* (first grade) band *write accurate first and last name.* By the time students enter first grade, most have had numerous experiences writing their names as well as those of family members, friends, or pets (Snow, Burns, & Griffin, 1998). Handwriting quality increases rapidly, and most students accomplish this skill early in the year. Children with lengthy names or those with difficult letters, dual-language learners, and children with disabilities may take longer to learn how to write their names correctly (Overvelde & Hulstijn, 2011).

Objective 19. Demonstrates writing skills
a. Writes name

- **Baghban, M. (2007).** Scribbles, labels, and stories: The role of drawing in the development of writing. *Young Children 62*(1), 22–26.
- **Haney, M. R. (2002).** Name writing: A window into the emergent literacy skills of young children. *Early Childhood Education Journal, 30*(2), 101–105.
- **Mayer, K. (2007).** Research in review: Emerging knowledge about emergent writing. *Young Children 62*(1), 34–40.

- **McAfee, O., & Leong, D. J. (2007).** *Assessing and guiding young children's development and learning* (4th ed.). Boston: Pearson.
- **Schickedanz, J. A., & Casbergue, R. M. (2009).** *Writing in preschool: Learning to orchestrate meaning and marks* (2nd ed.). Newark: DE: International Reading Association.
- **Snow, C. E., Burns, S. M., & Griffin, P. (Eds.). (1998).** *Preventing reading difficulties in young children*. Washington, DC: National Academy Press.

- **Berk, L. E. (2009).** *Child development* (8th ed.). Boston: Pearson/Allyn & Bacon.
- **Bloodgood, J. W. (1999).** What's in a name? Children's name writing and literacy acquisition. *Reading Research Quarterly*, *34*, 342–367.
- **McAfee, O., & Leong, D. J. (2007).** *Assessing and guiding young children's development and learning* (4th ed.). Boston: Pearson.
- **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.
- **Saracho, O. N. (2006).** Developmental sequences in three-year-old children's writing. *Early Child Development and Care, 56*(1), 1–10.
- **Schickedanz, J. A., & Collins, M. F. (2013).** *So much more than the ABCs: The early phases of reading and writing*. Washington, DC: National Association for the Education of Young Children.
- **Snow, C. E., Burns, S. M., & Griffin, P. (Eds.). (1998).** *Preventing reading difficulties in young children*. Washington, DC: National Academy Press.

- **Baghban, M. (2007).** Scribbles, labels, and stories: The role of drawing in the development of writing. *Young Children 62*(1), 22–26.
- **McGee, L. M., & Morrow, L. M. (2005).** *Teaching literacy in kindergarten*. New York: Guilford Press.
- **Schickedanz, J. A., & Casbergue, R.M. (2004).** *Writing in preschool: Learning to orchestrate meaning and marks* (2nd ed.). Newark: DE: International Reading Association.
- **Schickedanz, J. A., & Collins, M. F. (2013).** *So much more than the ABCs: The early phases of reading and writing*. 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 to age 8* (3rd ed.). Washington, DC: National Association for the Education of Young Children.
- **McAfee, O., & Leong, D. J. (2007).** *Assessing and guiding young children's development and learning* (4th ed.). Boston: Pearson.
- **Roskos, K., Tabors, P., & Lenhart, L. (2004).** *Oral language and early literacy in preschool*. Newark: DE: International Reading Association.
- **Strickland, D. S., & Schickedanz, J. A. (2004).** *Learning about print in preschool: Working with letters, words, and beginning links with phonemic awareness.* Newark, DE: International Reading Association.

- **Overvelde, A., & Hulstijn, W. (2011).** Handwriting development in grade 2 and grade 3 primary school children with normal, at risk, or dysgraphic characteristics. *Research in Developmental Disabilities, 32*, 540-548.
- **Snow, C. E., Burns, S. M., & Griffin, P. (Eds.) (1998).** *Preventing reading difficulties in young children.* Washington, DC: National Academy Press.

Objective 19. Demonstrates writing skills

b. Writes to convey ideas and information

Children in the *orange* (1–2 years) and *yellow* (2–3 years) bands *use drawing, dictation, and scribbles or marks to convey a message* . As children begin to write to convey meaning, it is difficult to distinguish the marks they intend to be pictures and those they mean as writing (Schickedanz & Casbergue, 2009). Children may point to their creations and ask, "What did I write?" This is an important step in development and signals understanding that their "writing" carries meaning rather than simply being a pleasurable physical activity (Baghban, 2007).

Children in the *yellow* (2–3 years) and *green* (preschool 3 class) bands *use drawing, dictation, and controlled linear scribbles to convey a message.* Children's scribbling now becomes more purposeful. It may take on characteristics of the writing they see in the environment such as a linear arrangement (Schickedanz & Casbergue, 2004; Snow, Burns, & Griffin, 1998). During play, they may "write" out a grocery list, take phone messages, or ask the teacher to label or write down what they say (Schickedanz & Collins, 2013; Vukelich & Christie, 2004).

Children in the *green* (preschool 3 class) and *blue* (preK 4 class) bands *use drawing, dictation, and mock letters or letter forms to convey a message,*. Preschool children have a greater awareness of the various functions of writing than they did previously (Bloodgood, 1999). "As children begin to notice print in their environments, they try to create products that look like real writing in an attempt to communicate messages" (Mayer, 2007, p. 34). They may write as part of play (Snow, Burns, & Griffin, 1998) and experiment with mock letters and mock words (Schickedanz & Casbergue, 2009). They frequently show off their writing attempts by asking others to look at what they wrote (Snow, et al., 1998).

Children in the *green* (preschool 3 class) and *blue* (preK 4 class) bands *use drawing, dictation, and letter strings to convey a message.* Preschool children use known letters and letter approximations to represent written language (Neuman, Copple, & Bredekamp, 2000). Once children begin making mock letters and simple approximations of a few letters, they begin to put their letter-like marks together to make "words" (Schickedanz & Casbergue, 2009). They may string together words copied from their environment (McAfee & Leong, 2007) or the letters in their name, which they repeat over and over again (Schickedanz & Casbergue, 2004).

Children in the *blue* (preK 4 class) and *purple* (kindergarten) bands use *drawing, dictation, and early invented spelling to convey a message.* Older preschool and kindergarten children distinguish between writing and drawing, but they still incorporate drawings as part of their writings (Baghban, 2007; McAfee & Leong, 2007). By age 4, children attempt to spell words as they write to communicate their thoughts and ideas (Roskos, Tabors, & Lenhart, 2004). Most preschool children will not progress beyond semiphonemic spelling (Schickedanz & Casbergue, 2004), and kindergarten children who are early phonemic spellers will continue to represent only the most prominent sounds in words (Schickedanz & Casbergue, 2009). Children may ask the teacher how to write a particular letter or spell a specific word if they are unsure of how to do it for themselves (Burns, Griffin, & Snow, 1999).

Students in the *purple* (kindergarten) and *pink* (first grade) bands *produce very simple compositions (narrative, informative/explanatory, and opinion) using writing, drawing, and dictation to supply information about a topic and narrate an event, incorporating feedback from others as needed.* Kindergartners and first graders write about topics that have special meaning for them (Neuman, Copple, & Bredekamp, 2000). They frequently incorporate drawings with their written text (Baghban, 2007). They integrate phonemic spelling and meaningful, conventionally spelled words to express their thoughts and ideas (McAfee & Leong, 2007; Schickedanz & Casbergue, 2004). Handwriting fluency and spelling support their early writing efforts (Puranik & Al Otaiba, 2012). Feedback from others helps them to clarify their compositions, and they may request specific assistance from another child or the teacher if needed.

Students in the *pink* (first grade) and *silver* (second grade) bands *produce simple compositions (narrative, informative/explanatory, and opinion) to supply information about a topic and narrate a sequence of events that include key components (reasons for opinions, facts, some closure), incorporating feedback from others as needed.* Much of the writing compositions of first-grade students are based on their personal experiences (PBS, n.d.). Their spelling abilities play an important in the writing process as these skills may support or constrain children's creation of text (Kim, Al Otaiba, Sidler, & Gruelich, 2013). During second grade, drawing becomes less important in children's writing, although they may illustrate their composition, using it as inspiration for longer, more detailed writing creations (Baghban, 2007). First and second graders have a strong desire to communicate, and they "clarify and refine their writings with help" (Graham, McKeown, Kiuhara, & Harris, 2012; McAfee & Leong, 2007, p. 236).

Students in the *silver* (second grade) and *brown* (third grade) bands *produce longer, more detailed compositions (narratives, informative/explanatory,and opinion pieces) that have a clear structure (beginning, middle, and conclusion), revising and editing by incorporating feedback from others as needed.* The written compositions of second and third graders show variety as they produce a range of types of compositions and write for various purposes (PBS, n.d.; Snow, Burns, & Griffin, 1998). They find discussions about their writing helpful, and they use collaboration, conferencing, revision, and editing in productive ways to refine their writing (Graham, McKeown, Kiuhara, & Harris, 2012; Snow et al., 1998). Teachers can support students' writing efforts by providing increased opportunities for writing different types of text, pre-writing activities, and explicit instruction about how to plan, edit, and revise their writings (Graham et al., 2012).

Students in the *brown* (third grade) band *produce more complex and lengthy compositions (narratives, informative/explanatory, opinion pieces, and research projects) using vocabulary and sentence structure appropriate to composition type and audiences; plan, revise, and edit writing by incorporating feedback from others as needed; write over short and extended time frames as appropriate for the task and purpose.* Third graders create a variety of written compositions of different genres and formats, incorporating multiple sources of information into their works (PBS, n.d.; Snow, Burns, & Griffin, 1998; Tomlinson, 2009; Wood, 1994). Their considerable reading experiences support their writing, and they use rich vocabulary, language patterns, and sentence structures appropriate to the type of text (Neuman, Copple, & Bredekamp, 2000) and the audiences for whom they are writing (PBS, n.d.). They are now better able to plan and gauge how long it will take them to write a particular piece. They clarify and refine their own writing and may use digital tools to assist them in producing and publishing their work (Snow et al., 1998).

Objective 19. Demonstrates writing skills
b. Writes to convey ideas and information

- **Baghban, M. (2007).** Scribbles, labels, and stories: The role of drawing in the development of writing. *Young Children 62*(1), 22–26.
- **Schickedanz, J. A., & Casbergue, R. M. (2009).** *Writing in preschool: Learning to orchestrate meaning and marks* (2nd ed.). Newark: DE: International Reading Association.

- **Schickedanz, J. A., & Casbergue, R.M. (2009).** *Writing in preschool: Learning to orchestrate meaning and marks* (2nd ed.). Newark: DE: International Reading Association.
- **Schickedanz, J. A., & Collins, M. F. (2013).** *So much more than the ABCs: The early phases of reading and writing*. Washington, DC: National Association for the Education of Young Children.
- **Snow, C. E., Burns, S. M., & Griffin, P. (Eds.). (1998).** *Preventing reading difficulties in young children*. Washington, DC: National Academy Press.
- **Vukelich, C., & Christie, J. (2004).** *Building a foundation for preschool literacy: Effective instruction for children's reading and writing development*. Newark, DE: International Reading Association.

- **Bloodgood, J. W. (1999).** What's in a name? Children's name writing and literacy acquisition. *Reading Research Quarterly*, *34*, 342–367.
- **Mayer, K. (2007).** Research in review: Emerging knowledge about emergent writing. *Young Children, 62*(1), 34–40.
- **McAfee, O., & Leong, D. J. (2007).** *Assessing and guiding young children's development and learning* (4th ed.). Boston: Pearson.
- **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.
- **Schickedanz, J. A., & Casbergue, R. M. (2004).** *Writing in preschool: Learning to orchestrate meaning and marks*. Newark: DE: International Reading Association.
- **Schickedanz, J. A., & Casbergue, R.M. (2009).** *Writing in preschool: Learning to orchestrate meaning and marks* (2nd ed.). Newark: DE: International Reading Association.
- **Snow, C. E., Burns, S. M., & Griffin, P. (Eds.). (1998).** *Preventing reading difficulties in young children*. Washington, DC: National Academy Press.

- **Baghban, M. (2007).** Scribbles, labels, and stories: The role of drawing in the development of writing. *Young Children 62*(1), 22–26.
- **Burns, S. M., Griffin, P., & Snow, C. E. (Eds). (1999).** *Starting out right: A guide to promoting children's reading success.* Washington, DC: National Academy Press.
- **Copple, C., & Bredekamp, S. (Eds.). (2009).** *Developmentally appropriate practice in early childhood programs serving children from birth to age 8* (3rd ed.). Washington, DC: National Association for the Education of Young Children.
- **McAfee, O., & Leong, D. J. (2007).** *Assessing and guiding young children's development and learning* (4th ed.). Boston: Pearson.
- **Roskos, K., Tabors, P., & Lenhart, L. (2004).** *Oral language and early literacy in preschool*. Newark: DE: International Reading Association.
- **Schickedanz, J. A., & Casbergue, R. M. (2004).** *Writing in preschool: Learning to orchestrate meaning and marks* (2nd ed.). Newark: DE: International Reading Association.
- **Schickedanz, J. A., & Casbergue, R. M. (2009).** *Writing in preschool: Learning to orchestrate meaning and marks* (2nd ed.). Newark: DE: International Reading Association.

- **Baghban, M. (2007).** Scribbles, labels, and stories. The role of drawing in the development of writing. *Young Children*, *61*(1), 20-26.
- **McAfee, O., & Leong, D. J. (2007).** *Assessing and guiding young children's development and learning* (4th ed.). Boston: Pearson.
- **Neuman, S. B., 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.
- **Puranik, C. A., & Al Otaiba, S. (2012).** Examining the contribution of handwriting and spelling to written expression in kindergarten children. *Reading and Writing*, *25*, 1523-1546.
- **Schickedanz, J. A., & Casbergue, R. M. (2004).** *Writing in preschool: Learning to orchestrate meaning and marks* (2nd ed.). Newark: DE: International Reading Association.

- **Baghban, M. (2007).** Scribbles, labels, and stories: The role of drawing in the development of writing. *Young Children 62*(1), 22–26.
- **Graham, S., McKeown, D., Kiuhara, S., & Harris, K. R. (2012).** A meta-analysis of writing instruction for students in the elementary grades. *Journal of Educational Psychology*, *104*(4), 879-896.
- **Kim, Y-S., Otaiba, S. A., Sidler, J. F., & Gruelich, L. (2013).** Language, literacy, attentional behaviors, and instructional quality predictors of written composition for first graders. *Early Childhood Research Quarterly, 28*, 461–469.
- **McAfee, O., & Leong, D. J. (2007).** *Assessing and guiding young children's development and learning* (4th ed.). Boston: Pearson.
- **Public Broadcasting System (n.d.).** *Child development tracker*. Retrieved March 4, 2013 from http://www.pbs.org/parents/childdevelopmenttracker/six/literacy.html

- **Graham, S., McKeown, D., Kiuhara, S., & Harris, K. R. (2012).** A meta-analysis of writing instruction for students in the elementary grades. *Journal of Educational Psychology*, *104*(4), 879-896.
- **Public Broadcasting System (n.d.).** *Child development tracker*. Retrieved March 4, 2013 from http://www.pbs.org/parents/childdevelopmenttracker/six/literacy.html
- **Snow, C. E., Burns, S., & Griffin, P. (Eds.) (1998).** *Preventing reading difficulties in young children*. Washington, DC: National Academy Press.

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- **Public Broadcasting System (n.d.).** *Child development tracker*. Retrieved March 4, 2013 from http://www.pbs.org/parents/childdevelopmenttracker/eight/literacy.html
- **Snow, C. E., Burns, S., & Griffin, P. (Eds.) (1998).** *Preventing reading difficulties in young children*. Washington, DC: National Academy Press.
- **Tomlinson, H. B. (2009).** Developmentally appropriate practice in the primary grades-Ages 6 - 8: An overview. In C. Copple & S. Bredekamp (Eds.), *Developmentally appropriate practice in early childhood programs serving children from birth through age 8* (3rd ed.), pp. 257–288. Washington, DC: National Association for the Education of Young Children.
- **Wood, C. (1994).** *Yardsticks: Children in the classroom ages 4-14: A resource for parents and teachers*. Greenfield, MA: Northeast Foundation for Children.

Objective 19. Demonstrates writing skills

c. Writes using conventions

Students in the *purple* (kindergarten) and *pink* (first grade) bands *print many upper- and lowercase letters; write a letter or combination of letters for most consonants and short vowel sounds; use basic capitalization (first word in a sentence and the pronoun I); write simple words phonetically based on knowledge of sound-letter relationships.* Kindergarten children recognize that writing must follow certain conventions if others are to read their writing. Spelling becomes increasingly important to them. As children progress from semiphonemic spelling, they begin to incorporate additional sounds (e.g., medial sounds and long vowels) into the words they write (McAfee & Leong, 2007; Schickedanz & Casbergue, 2004). They are aware of simple capitalization and integrate it into their writings (PBS, n.d.; Snow, Burns, & Griffin, 1998).

Students in the *pink* (first grade) and *silver* (second grade) bands *print all upper- and lowercase letters; use basic capitalization and punctuation; spell using learned spelling, phonemic awareness, and spelling conventions; make simple edits to drafts.* Children begin to pay closer attention to the conventions of writing than they did at younger ages. They continue to spell phonemically, and now incorporate high-frequency words and words which are important to them (Burns, Griffin, & Snow, 1999; McAfee & Leong, 2007; Neuman, Copple, & Bredekamp, 2000). After re-reading, they can make simple corrections and edits to their work (Snow, Burns, & Griffin, 1998; Tomlinson, 2009). Teaching children how to use alternative methods of composing, such as word processing, can assist them in their writing efforts (Graham, McKeown, Kiuhara, & Harris, 2012).

Students in the *silver* (second grade) and *brown* (third grade) bands *use capitalization and punctuation with increasing accuracy; spell using learned spelling, phonemic awareness, word families, and basic affixes and syllable patterns; make edits using suggestions from others or after proofreading.* The conventions of formal language become more evident in the writings of second- and third-grade students (McAfee & Leong, 2007; PBS, n.d.; Snow, Burns, & Griffin, 1998). They incorporate appropriate capitalization more often and use a wider range of punctuation. Their spelling becomes more accurate as they apply sounding out words, spelling patterns, and known spellings in their writings (McAfee & Leong, 2007).

Students in the *brown* (third grade) band *use increasingly complex capitalization and punctuation; spell most words accurately or with a close approximation; clarify and edit own writing during and after composing to create a fairly polished final draft.* Third graders become more consistent in using print conventions as they write (PBS, n.d.). Learned skills and exposure to texts of various types aid them as they independently edit and revise their work with attention to spelling, grammar, capitalization, punctuation, and the mechanics of writing (e.g., margins and spacing) (PBS, n.d.; Tomlinson, 2009). They also utilize suggestions of teachers and peers and may offer help to improve the overall writing products of others (Snow, Burns, & Griffin, 1998).

Objective 19. Demonstrates writing skills
c. Writes using conventions

- **McAfee, O., & Leong, D. J. (2007).** *Assessing and guiding young children's development and learning* (4th ed.). Boston: Pearson.
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Mathematics

MATHEMATICS OBJECTIVES

20 Uses number concepts and operations

21 Explores and describes spatial relationships and shapes

22 Compares and measures

23 Demonstrates knowledge of patterns

Children slowly construct informal mathematical knowledge, beginning in the first few months of life. First-hand exploration is important for learning mathematics. As infants, children begin to use their everyday experiences to construct a variety of fundamental mathematical concepts and strategies. The knowledge children acquire informally provides the foundation for the concepts and skills that they later learn formally in school. Through the essential process skills of problem solving, reasoning, communicating, making connections, and representing, children learn mathematics content (Copley, 2000; Geist, 2009).

Research has made a clear link between early math skills and later school reading and math achievement. An analysis of six longitudinal studies showed that early math skills have the greatest predictive power, followed by reading and then attention skills (Duncan et al., 2007). Children's 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).

Regardless of social class, culture, or disability, most children develop mathematical skills. However, there are gaps in some children's informal knowledge that make it difficult for them to understand school mathematics (Benigno & Ellis, 2004; Klein & Starkey, 2004).

Language plays a central role in teaching and learning mathematics. For a child with a disability, the environment or materials may need to be adapted, routines adjusted, or an activity modified. The teacher's role is to determine what special supports a child needs to participate fully (Copley, Jones, & Dighe, 2007).

Adults play a significant role in helping children learn mathematical vocabulary, concepts, and process skills. If children are to develop the knowledge needed for later formal learning, they need frequent practice with materials in play settings and adult-guided activities that include meaningful discussions and applications (Varol & Farran, 2006).

"More so than in other subject areas, mathematics is a sequential discipline in which earlier understandings provide an essential foundation on which later skills and concepts build" (Tomlinson, 2009). Children who enter first grade with mathematical learning gaps or those who struggle with mathematics in first grade will likely continue to have problems unless steps are taken to help them to be successful (Baroody, Lai, & Mix, 2006; Clements & Sarama, 2009). One of the major sources of learning difficulties is disconnected formal instruction that does not build on children's existing knowledge or strengths (Baroody et al., 2006; Geary et al., 2009).

Early identification is key for learners who struggle with mathematics (Baroody et al., 2006; Jordan, 2007), and identifying children's procedural and conceptual knowledge is important for understanding their mathematical development (Canobi, 2004; Siegler et al., 2010) and for planning appropriate instruction. Helping children understand the overarching, connected concepts of mathematics (the "big ideas") can assist them in solving applied mathematics problems presented in various contexts (Baroody et al., 2006; Clements & Sarama, 2009; Cross, Woods, & Schweingruber, 2009). Appropriate technology integrated into everyday classroom experiences can be an important tool in enhancing mathematics instruction for young children (Clements, 2004b; Linder, 2012).

In the last few years researchers have examined the development of mathematics knowledge and skills in young children (Cross, Woods, & Schweingruber, 2009). The National Research Council (Cross et al., 2009), in particular, has focused on the importance of establishing learning goals for young children and improving the quality of instruction that they receive. Many organizations (the National Council of Teachers of Mathematics, the National Association for the Education of Young Children) and individual researchers have furthered our understanding of the foundational knowledge young children acquire before formal schooling as well as the need to focus on the core concepts of number, geometry, and measurement in the early years, whether in child care or public school settings (National Council of Teachers of Mathematics, 2006). This research informed Teaching Strategies' development of the mathematics objectives and enabled us to create a sequence of development and learning with clear expectations for each age and grade level. The important process skills necessary for mathematics learning are addressed as part of the cognitive objectives because they are essential for learning across all content areas.

Objective 20. Uses number concepts and operations

Numbers are abstract symbols used to describe and explain objects and events. In order to understand numbers, children need to learn about counting, quantity, and how to represent numbers in the form of numerals (Cross, Woods, & Schweingruber, 2009). Children's understanding of counting, number operations, and number symbols is fundamental to their success with more complex mathematics (Ginsburg & Baroody, 2003; Zur & Gelman, 2004). Just as early literacy development requires that children learn to recognize and name the letters of the alphabet, understand the alphabetic principle, and develop phonological awareness, early mathematical development requires that children build their understanding of numbers by learning to recognize numbers (numerals) and associate each one with a particular quantity, thus connecting the symbol with its meaning (Copley, 2000).

a. Counts

Toddlers in the *orange* (1–2 years) and *yellow* (2–3 years) bands *verbally count (not always in the correct order)*. When children begin to demonstrate oral language skills, they begin to use number words (Clements & Sarama, 2009). At first, they do not understand the quantity associated with the words (Clements & Sarama, 2009). Toward the later part of the period, they may begin to associate verbalizations of "one" and "two" with quantity (PBS, n.d.).

Young children in the *yellow* (2–3 years) and *green* (preschool 3 class) bands *verbally count to 10; count up to five objects accurately, using one number name for each object*. When children first begin to count, they learn the counting sequence as a memory task without understanding its meaning (Clements, 2004; Clements & Sarama, 2009; Cross et al., 2009); next, they can learn to count small sets accurately (Clements, 2004).

Children in the *blue* (preK 4 class) and *purple* (kindergarten) bands *verbally count to 20; count 10–20 objects accurately; know the last number states how many in all; tell what number (1–10) comes next in order by counting.* The teen numbers are a new challenge for young children and the preK year sees the beginning of this skill developing (PBS, n.d.). Starting around age 4 and continuing through the kindergarten year, young children can be expected to develop the concept of cardinality (Clements & Sarama, 2009): that is, the last number named when counting objects tells how many there are in all (Clements, 2004).

Students in the *purple* (kindergarten) and *pink* (first grade) bands *use number names while counting to 100 by ones and tens; count 30 objects accurately; tell what number comes before and after a specified number up to 20.* By the end of the kindergarten and first-grade years, children can be expected to know the counting sequence to 100 (Clements, 2004; Clements & Sarama, 2009). If they have learned strategies to keep track of what they have counted, they can demonstrate one-to-one correspondence as they count objects and are able to count objects accurately to 30 (Clements & Sarama, 2009). With many opportunities to count and talk about numbers, they demonstrate their understanding of the counting sequence and teen numbers by identifying the number that comes before or after numbers to 20 (PBS, n.d.).

Students in the *pink* (first grade) and *silver* (second grade) bands *count to 120 to determine how many; use skip counting by 2s, 5s, and 10s; begin counting forward at any number between 1 and 120; count backward from 20.* In addition to memorized sequences, first and second graders use rule-governed patterns (e.g., decades, teens) as they count (Baroody, 1987; Clements, 2004). Similar to younger children, the size and arrangement of groups of objects influence counting accuracy (Cross et al., 2009). The ability to tell the number that comes before another is somewhat more difficult than providing the number that comes after another in a sequence. When children understand both relationships, they can count backwards beginning with a given number up to 20 (Baroody, 1987; Clements, 2004).

Students in the *silver* (second grade) and *brown* (third grade) bands *count to 1,000 to determine how many; use skip counting (2s, 5s, 10s, and 100s); begin counting at any number between 1 and 1,000; switch between skip counts.* Second and third graders increasingly use number patterns to help them count large sets/groups of objects (Clements, 2004). They can shift counting patterns when asked to skip count another way or when they realize using another counting pattern may be more efficient (e.g., begin counting by 2s and switch to counting by 10s) (Baroody, 1987).

Students in the *brown* (third grade) band *count to more than 1,000 using number word patterns (e.g., tens, teens) and skip counting; use skip counting by 2s, 4s, 5s, 6s, 10s, and 100s.* Some variation in children's counting ability is still evident at the beginning of third grade (PBS, n.d.). As the year progresses, their memorized count sequences involving higher numbers become much more proficient. They use various strategies to help them count including newly learned skip counts and improved estimation abilities (Clements, 2004).

Objective 20. Uses number concepts and operations
a. Counts

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Objective 20. Uses number concepts and operations

b. Quantifies

Children in the *orange* (1–2 years) and *yellow* (2–3 years) bands *demonstrate understanding of the concepts of one, two, and more*. Infants begin to distinguish very small collections of objects such as when they indicate they want "more." Between two and three years they may quickly recognize a very small collection of up to three objects without counting (perceptual subitizing) and tell its quantity (Clements, 2004).

Children in the *green* (preschool 3 class) and *blue* (preK 4 class) bands *recognize and name the number of items in a small set (up to five) instantly; combine and separate up to five objects and describe the parts.* As preschool children have experiences in which small groups of objects are labeled with number names (e.g., "You have 4 peas"), they learn the meaning of number words and they compare quantities (Clements & Sarama, 2009). They begin to combine and separate whole numbers and use their understanding of number words to describe the parts (PBS, n.d.). Preschoolers recognize increasingly more objects presented in small groups. Objects arranged in a straight line are the easiest for them to quantify. They then begin to recognize pairs of objects arranged in rows and then domino arrangements. Scrambled arrangements are the most difficult for them to perceptually quantify (Clements, 2004; Clements & Sarama, 2009).

Children in the *blue* (preK 4 class) and *purple* (kindergarten) bands *make sets of 6–10 objects and then describe the parts; identify which part has more, less, or the same (equal); count all or count on to find out how many.* In the prekindergarten and kindergarten years, children subitize and use learned strategies as they determine quantities (Cross, Woods, & Schweingruber, 2009). They use drawing (Clements, 2004) and concrete objects (manipulatives) as they pair (match one-to-one), touch, and count to determine "how many" or which group has more, less, or the same amount (Clements, 2004; McAfee & Leong, 2007).

Students in the *purple* (kindergarten) and *pink* (first grade) bands *solve simple equal share problems; make sets of 11–20 objects and then describe the parts.* By the end of the kindergarten and first grade years, children learn the patterns of counting (particularly teen numbers). They also learn additional strategies that enable them to work with quantities above 10, such as counting by groups, skip counting, or counting on beginning with a number other than one (Clements, 2004; McAfee & Leong, 2007; Sarama & Clements, 2006).

Students in the *pink* (first grade) and *silver* (second grade) bands *answer "how much" questions about wholes partitioned into equal-size shares of two and four; verbally label each part and describe its relationship to the whole.* First and second graders develop foundational understandings of equal partitioning as they receive and give equal/fair shares (Baroody, 2004; PBS, n.d.; Siegler, Carpenter, Fennell, Geary, Lewis, Okamoto et al., 2010). Half is an important partitioning concept (Baroody, 2004) and the one which children understand first (Siegler et al., 2010). By the end of second grade, students have a good grasp of halves and fourths.

Students in the *silver* (second grade) and *brown* (third grade) bands *answer "how much" questions about wholes partitioned into equal-size shares of two (halves), four (fourths), and three (thirds); verbally label each part and describe its relationship to the whole.* In second and third grade, children continue to develop their understandings of equal partitioning (Baroody, 2004; PBS, n.d.). During this period they learn vocabulary associated with fractions and work with fractions at the concrete level (Charlesworth, 2005).

Students in the *brown* (third grade) band *compare fractions and explain them using physical models, pictorial representations, and number lines.* In third grade, students discuss and compare fractions as they subdivide wholes into an increasing numbers of parts. By the end of the year, most children can compare fractional parts and tell which parts are larger (PBS, n.d.). Children's early counting experiences influence this ability. Varied counting activities, such as counting composite units (e.g., number of families) and parts (how many rungs on the climber), helps them to understand that larger numbers do not necessarily represent greater amounts (i.e., 1/4 is not greater than 1/2) (Sophian, 2013).

Objective 20. Uses number concepts and operations
b. Quantifies

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Objective 20. Uses number concepts and operations

c. Connects numerals with their quantities

Children in the *yellow* (2–3 years) and *green* (preschool 3 class) bands *recognize and name a few numerals.* Children's abilities to connect numerals with their quantities vary greatly largly depending upon their experiences with spoken-word, symbol, and quantity relationships (Cross, Woods, & Schweingruber, 2009). Older toddlers and young preschool children are just beginning to show an interest in recognizing letters and numbers (Cross et al., 2009). They may notice a numeral in their environment and say its number name or ask what the symbol says or means (PBS, n.d.).

Children In the *green* (preschool 3 class) and *blue* (preK 4 class) bands *identify numerals to 5 by name and connect each to counted objects*. Simply learning to connect the written symbol with its spoken name is not an extremely difficult task for preschool children (Cross et al., 2009). When children have many opportunities to connect set sizes with numerals, they can learn to identify numerals and to make the connection between the written number name and the amount it represents (Clements, 2004; Cross et al., 2009).

Children in the *blue* (preK 4 class) and *purple* (kindergarten) bands *identify numerals to 10 by name and connect each to counted objects.* Older preschool and kindergarten children can be expected to learn to read the numerals to 10 (Clements, 2004). The ability to connect verbal and written symbols with each other and with their amounts represents important abstract mathematical thinking (Clements, 2004; Clements & Sarama, 2009). It is helpful for children to learn to count objects and connect the numeral with the counted objects at the same time. This helps with learning the correct language of counting and with a conceptual understanding of the cardinality principle.

Students in the *purple* (kindergarten) and *pink* (first grade) bands *identify numerals to 20 by name and connect each to counted objects; represent "how many" by writing one-digit numerals and some two-digit numerals.* Learning to write numerals is a more difficult skill than simply "reading" numerals, but one which children accomplish during the kindergarten year (Cross et al., 2009). Numerals serve an important purpose by helping children keep track of their counting and recording counting information (Clements & Sarama, 2009).

Students in the *pink* (first grade) and *silver* (second grade) bands *represent "how many" by writing one-, two-, and three-digit numerals to 120; use relational symbols (<, >, =) to indicate relationships between whole numbers.* Most children enter first grade with the ability to write one-digit numbers (Baroody, 1987). During first and second grade they gain in their abilities to use mathematical symbols such as numerals and relational symbols to represent meaning (Baroody, 1987; 2004).This use of symbols indicates children's abilities to think about mathematics increasingly abstractly (Clements, 2004).

Students in the *silver* (second grade) and *brown* (third grade) bands *represent "how many" by writing one-, two-, three-, and four-digit numerals to 1,000; use relational symbols to compare and order whole numbers.* Second graders write three-digit numerals (Clements, 2004). They use symbols to indicate the equivalence or non-equivalence of two collections representing single-digit numbers (Clements, 2004).

Students in the *brown* (third grade) band *represent fractional quantities (a/2, a/3, a/4, a/6 a/8); use relation symbols (<, >, =) to show fractional comparisons.* Children need to have an adequate conceptual understanding of fractions before beginning formal instruction using abstract symbols (Baroody, 2004). They must understand that a fraction represents a single number along the number line (Siegler et al., 2010). Children need many experiences dividing wholes into equal parts and dividing sets of objects into equal amounts before they are ready to use written symbols to compare fractions (Siegler et at., 2010). By the end of the year, most third graders not only can represent whole numbers, but they also begin to indicate fractional parts and relationships between fractional amounts (Baroody, 2004).

Objective 20. Uses number concepts and operations
c. Connects numerals with their quantities

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Objective 20. Uses number concepts and operations

d. Understands and uses place value and base ten

Students in the *purple* (kindergarten) and *pink* (first grade) bands *indicate base-ten equivalents for numbers 11 to 19 using objects and drawings; may use simple equations.* Children In kindergarten and first grade engage in activities where they group items to make a larger unit or take the group apart to create smaller units. These activities provide the conceptual basis for place value and base-ten concepts (Clements, 2004). As children gain experience in composing and decomposing, they begin to think about numbers in terms of tens and ones (Cross, Woods, & Schweingruber, 2009; Tomlinson, 2009).

Students in the *pink* (first grade) and *silver* (second grade) bands *use place-value understanding to represent and write two-digit numbers, add one- and two-digit numbers (within 100), and subtract multiples of 10 from multiples of 10 (10–90).* Children's conceptual understanding of the number system and place value supports their ability to accurately write two-digit numbers (e.g., avoid reversals; write forty-three as 43, not 403) (Clements, 2004; PBS, n.d.). They represent multi-digit numbers using various forms and use shortcuts based on their understandings of place value to add and subtract (PBS, n.d.). They may use decomposition when it is helpful in solving a computational problem (Clements & Sarama, 2009).

Students in the *silver* (second grade) and *brown* (third grade) bands *use place-value understanding to represent and write three-digit numbers (including expanded form); add up to four two-digit numbers; add and subtract three-digit numbers (within 1,000).* Children have an easier time conceptualizing smaller numbers than larger ones with which they are less familiar. Therefore, classroom experience is essential to students' understanding of place value concepts, particularly as they begin to work with larger numbers (Clements & Sarama, 2009). Second and third graders draw upon their understanding of place value as they write multi-digit numbers (Tomlinson, 2009). They use expanded notation to represent the value of each number depending upon the position in which the digit is written (Clements & Sarama, 2009).

Students in the *brown* (third grade) band *use place-value understanding to represent and write four-digit numbers; multiply one-digit whole numbers by 10s (10–90); round three-digit whole numbers to the nearest ten or hundred.* Children's numerous experiences with grouping help prepare them for multiplication and for computations using larger numbers (Clements & Sarama, 2009). Third graders spontaneously round numbers up and down and use rounding as a strategy in number operations (Lemaire & Lecacheur, 2011; PBS, n.d.).

Objective 20. Uses number concepts and operations
d. Understands and uses place value and base-ten

- **Clements, D. H. (2004).** Major themes and recommendations. In D. H. Clements, J. Sarama, J., & A-M. DiBiase (Eds.), *Engaging young children in mathematics: Standards for early childhood mathematics education* (pp. 7-72). Mahwah, NJ: Lawrence Erlbaum Associates.
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Objective 20. Uses number concepts and operations

e. Applies properties of mathematical operations and relationships

Students in the *purple* (kindergarten) and *pink* (first grade) bands *solve addition and subtraction word problems of whole numbers within 10 using a variety of strategies (counting objects or fingers, counting on, counting back); make number pairs within 10.* During kindergarten and first grade, children draw upon their informal mathematical knowledge as they begin to solve simple addition and subtraction problems (Clements, 2004; PBS, n.d.). "Learning to mathematize and model addition and subtraction situations with objects, fingers, and drawings is the foundation for algebraic problem solving (Cross, Woods, & Schweingruber, 2009, p. 165). As students compose and decompose, finding partners within a numbers can give children the understanding that a total is any number that has partners (addends) that make up the number (Cross et al., 2009). This understanding is helpful as they begin to solve simple addition and subtraction problems.

Students in the *pink* (first grade) and *silver* (second grade) bands *solve three-number word problems with answers within 20 using addition properties (associative, commutative, and additive); solve addition and subtraction equations of different types with unknowns in various positions for amounts up to 20.* As first and second graders begin to understand properties of operations, they use their understanding to help them solve arithmetic problems efficiently (PBS, n.d.; Tomlinson, 2009). Mathematical problems represented as addition and subtraction equations are now commonplace, and children are capable of solving equations presented in different formats (Clements, 2004). When they are given opportunities to practice using various nontraditional problem formats (e.g., __= 9+2), they make connections (Clements, 2004) and improve their understanding of mathematical equivalence, an essential concept (McNeil, Fyfe, Petersen, Dunwiddie, & Brletic-Shipley, 2011).

Students in the *silver* (second grade) and *brown* (third grade) bands *solve one- and two-step word problems of various types using addition and subtraction (within 100) and explain strategies; use repeated addition to find the number of objects presented in rectangular arrays (up to five rows and five columns)*. Children invent and use a variety of strategies as they attempt to solve addition and subtraction problems (PBS, n.d.; Tomlinson, 2009). Although second and third graders generally use more sophisticated and symbolic methods than younger children, the strategies they employ depends upon various factors such as problem difficulty, the numbers in the problem (e.g., quantity and size), situational demands, and classroom teaching strategies (Fuson, 2004; Lemaire & Lecacheur, 2011). Children's explanations of their thinking helps teachers identify misconceptions and can help children clarify their understandings (Fuson, 2004).

Students in the *brown* (third grade) band *solve, represent, and explain two-step word problems of various types (equal-sized groups, arrays, measurement quantities) using properties of whole number operations and multiplication/division inverse relationships; use estimation strategies (mental number line, rounding) to determine if answers are reasonable.* During third grade, children learn the formal mathematical operations of multiplying and dividing (Baroody, 2004). They draw upon their understandings of composing and decomposing equal size groups and their knowledge of properties of addition to help them solve multiplication and division problems (Tomlinson, 2009) and apply estimation strategies to ascertain the reasonableness of their answers (Lemaire & Lecacheur, 2011).

Objective 20. Uses number concepts and operations
e. Applies properties of mathematical operations and relationships

- **Clements, D. H. (2004).** Major themes and recommendations. In D. H. Clements, J. Sarama, J., & A-M. DiBiase (Eds.), *Engaging young children in mathematics: Standards for early childhood mathematics education* (pp. 7-72). Mahwah, NJ: Lawrence Erlbaum Associates.
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Objective 20. Uses number concepts and operations

f. Applies number combinations and mental number strategies in mathematical operations

Students in the *purple* (kindergarten) and *pink* (first grade) bands *add and subtract whole numbers fluently within five.* Numerous opportunities abound in early childhood classrooms for children to explore number combinations (Copley, 2010). Through these varied experiences they develop flexibility, speed, and accuracy (i.e., fluency) in adding and subtracting small amounts (Cross, Woods, & Schweingruber, 2009).

Students in the *pink* (first grade) and *silver* (second grade) bands *add and subtract whole numbers fluently within 10 using mental strategies (counting on, making ten, decomposing/recomposing, addition/subtraction relationship, and easier equivalent known sums).* As children regularly use various strategies to solve real world addition and subtraction problems, they begin to develop automaticity for number combinations up to ten (Fuson, 2004). Knowledge of basic arithmetic combinations helps them to solve more advanced mathematical problems without having to stop and think about the computational process (Clements & Sarama, 2009; Cross et al., 2009).

Students in the *silver* (second grade) and *brown* (third grade) bands *add and subtract whole numbers fluently within 20 using previously learned mental strategies; know all the addition combinations of two, one-digit numbers from memory.* Children's conceptual and procedural understandings of mathematics are interconnected and support their mathematical problem-solving abilities (Fuson, 2004). During second and third grade, children's fluency continues to increase as they use self-generated and explicitly taught strategies for mathematical operations (Fuson, 2004; PBS, n.d.).

Students in the *brown* (third grade) band *add and subtract whole numbers fluently within 1,000; multiply and divide whole numbers fluently within 100 using previously learned mental strategies, the relationships between addition/subtraction and multiplication/division, and algorithms based on place value; identify the products of all one-digit numbers from memory.* Third graders spontaneously use various computational strategies (e.g., estimation, rounding) to help them solve mathematical problems (PBS, n.d.). Their fluency continues to increase, and they will exhibit even better strategy selection and increased accuracy and speed throughout the year and as they progress into the upper grades (Lemaire & Lecacheur, 2011).

Objective 20. Uses number concepts and operations
f. Applies number combinations and mental number strategies in mathematical operations

- **Copley, J. V. (2010).** *The young child and mathematics* (2nd ed.). Washington, DC: National Association for the Education of Young Children.
- **Cross, C. T., Woods, T. A., & Schweingruber, H. (Eds.), (2009).** *Mathematics learning in early childhood: Paths toward excellence and equity*. Washington, DC: National Academies Press.
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Objective 21. Explores and describes spatial relationships and shapes

In order to navigate the world successfully, children need to learn to think spatially. Navigation requires knowing which way, how far, and where to go, as well as considering the objects relative position of people and/or objects along, or perhaps, in the way (McAfee & Leong, 2011). Children eventually learn to mathematize their spatial knowledge (Cross, Woods, & Schweingruber, 2009) as they "precisely specify directions, routes, and locations " (Clements, 2004, p. 47). Learning about shapes helps children identify objects in their environment and is a "fundamental concept in cognitive development" (Clements & Sarama, 2009, p. 123). "The goal of increasing children's knowledge of geometry and space is second in importance only to numerical goals, and all these are (or should be) strongly interrelated" (Clements & Sarama, 2009, p. 116).

a. Understands spatial relationships

Children in the *orange* (1–2 years) and *yellow* (2–3 years) bands *follow simple directions related to position (in, on, under, up, down)*. As young children in the *orange* and *yellow* bands explore their environment, they learn about the relationship of their bodies and other objects in space (Clements, 2004; Cross et al., 2009). If they hear language that describes objects in space, they develop the vocabulary associated with spatial relationships (Cross et al., 2009).

Children in the *yellow* (2–3 years) and *green* (preschool 3 class) bands *follow simple directions related to proximity (beside, between, next to)*. Language continues to play an important role in young children's spatial understandings (Cross et al., 2009). In an environment where children have many sensory opportunities, older toddlers and young preschoolers can learn to follow simple directions related to objects around them (McAfee & Leong, 2007).

Children in the *blue* (preK 4 class) and *purple* (kindergarten) bands *use and respond appropriately to positional words indicating location, direction, and distance.* In the prekindergarten year and beyond, children gain increasing sophistication in the language they use about objects in space (McAfee & Leong, 2007). They use mental imagery, boundaries, and landmarks to assist them as they move themselves and objects in space (Clements & Sarama, 2009).

Students in the *purple* (kindergarten) band *use and make simple sketches, models, or pictorial maps to locate objects.* In the kindergarten year, children can begin to locate objects on simple maps by using previously learned language to explain location, direction, distance, and proximity (Cross et al., 2009). They can create their own maps and models of familiar environments. Although simple, they are meaningful representations of spatial relationships which can be used by the creator and others (Clements, 2004; Cross et al., 2009).

Objective 21. Explores and describes spatial relationships and shapes
a. Understands spatial relationships

	• **Clements, D. H. (2004).** Major themes and recommendations. In D. H. Clements, J. Sarama, J., & A-M. DiBiase (Eds.), *Engaging young children in mathematics: Standards for early childhood mathematics education* (pp. 7-72). Mahwah, NJ: Lawrence Erlbaum Associates. • **Cross, C. T., Woods, T. A., & Schweingruber, H. (Eds.), (2009).** *Mathematics learning in early childhood: Paths toward excellence and equity*. Washington, DC: National Academies Press.
	• **Cross, C. T., Woods, T. A., & Schweingruber, H. (Eds.), (2009).** *Mathematics learning in early childhood: Paths toward excellence and equity*. Washington, DC: National Academies Press. • **McAfee, O., & Leong, D. J. (2007).** *Assessing and guiding young children's development and learning* (4th ed.). Boston: Pearson/Allyn and Bacon.
	• **Clements, D. H., & Sarama, J. (2009).** *Learning and teaching early math: The learning trajectories approach.* New York: Routledge. • **McAfee, O., & Leong, D. J. (2007).** *Assessing and guiding young children's development and learning* (4th ed.). Boston: Pearson/Allyn and Bacon.
	• **Clements, D. H. (2004).** Major themes and recommendations. In D. H. Clements, J. Sarama, J., & A-M. DiBiase (Eds.), *Engaging young children in mathematics: Standards for early childhood mathematics education* (pp. 7-72). Mahwah, NJ: Lawrence Erlbaum Associates. • **Cross, C. T., Woods, T. A., & Schweingruber, H. (Eds.), (2009).** *Mathematics learning in early childhood: Paths toward excellence and equity*. Washington, DC: National Academies Press.

Objective 21. Explores and describes spatial relationships and shapes

b. Understands shapes

Children in the *orange* (1–2 years) and *yellow* (2–3 years) bands *match two identical shapes*. During this period, children are beginning the process of comparing shapes and classifying them based on their obvious physical characteristics. This enables them to begin to match identical shapes of the same size and orientation, With experience and support, they progress to matching shapes of different sizes presented in various orientations (Clements, 2004; Clements & Sarama, 2009).

Children in the *green* (preschool 3 class) band *identify a few basic shapes (circle, square, triangle).* By the end of the 3-year-old year, children who have been exposed to a variety of shapes and to their names can both match a variety of shapes and name basic ones (Clements, 2004; Clements & Sarama, 2009). They identify prototypical shapes (e.g., equilateral triangle) before they identify less typical ones (Clements & Sarama, 2009; Cross, Woods, & Schweingruber, 2009).

Children in the *blue* (preK 4 class) and *purple* (kindergarten) bands *describe basic two and three-dimensional shapes by using own words; recognize basic shapes when they are presented in a new orientation.* During the prekindergarten year and beyond, the goal is to help children learn to "…name, describe, analyze, and classify shapes" (Clements & Sarama, 2009, p. 136). It is important for children to be exposed to many different examples of a given shape, e.g., not just equilateral triangles with an angle on top. They need to learn that a shape has constant characteristics (McAfee & Leong, 2007), and that a square is a particular kind of rectangle and be able to explain why.

Students in the *purple* (kindergarten) and *pink* (first grade) bands *show that shapes remain the same when they are moved, turned, flipped, or slid; break apart or combine shapes to create different shapes and sizes.* Children now understand that shapes remain the same regardless of their orientation (Clements, 2004; McAfee & Leong, 2007). By the end of the kindergarten year, children can identify and explore a variety of shapes and can compose, combine, and build shapes using other shapes and the classification skills they have been taught (Clements, 2004; PBS, n.d.).

Students in the *pink* (first grade) and *silver* (second grade) bands *distinguish essential attributes of triangles, rectangles, squares, trapezoids, half circles, and quarter circles; visualize and create known shapes.* First and second graders make a distinction between the essential and non-essential features of common geometric shapes (Clements, 2004; Sera & Millett, 2011). They compose, decompose, and name various shapes and recognize them from different perspectives and directions (Clements & Sarama, 2009; Clements, Wilson, & Sarama, 2004; Tomlinson, 2009). They draw or create these known shapes from memory (PBS, n.d.).

Students in the *silver* (second grade) and *brown* (third grade) bands *use essential attributes to label and create quadrilaterals, pentagons, hexagons, and cubes; visualize and predict the results of combining and taking apart two-dimensional and three-dimensional shapes.* During the second and third grades, children use congruence and symmetry to help them analyze shapes, and they become familiar with less common two-dimensional and three-dimensional geometric figures (Tomlinson, 2009). They can find basic shapes embedded within other shapes (Clements, 2004; Clements & Sarama, 2009) and can predict what will happen if shapes are transformed (Clements, 2004).

Students in the *brown* (third grade) band *classify known shapes into higher and subordinate categories; provide rationale for classifications; divide shapes into parts with equal areas and express the parts as unit fractions.* In third grade, students become increasingly better at providing a rationale for shape classifications, attending to line curvature and angles and using mathematical terms in their classifications and discussions (Clements & Sarama, 2009). Their ability to focus on relationships between a wider category and two specific categories at the same time allows them to assign shapes to broader and subordinate categories (Berk, 2009; McAfee & Leong, 2007). Previous experiences dividing common shapes into equal parts help them make connections between fractions and area (Siegler et al., 2010).

Objective 21. Explores and describes spatial relationships and shapes
b. Understands shapes

- **Clements, D. H. (2004).** Major themes and recommendations. In D. H. Clements, J. Sarama, J., & A-M. DiBiase (Eds.), *Engaging young children in mathematics: Standards for early childhood mathematics education* (pp. 7-72). Mahwah, NJ: Lawrence Erlbaum Associates.
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- **Clements, D. H., Wilson, D. C., & Sarama, J. (2004).** Young children's composition of geometric figures: A learning trajectory. *Mathematical Thinking and Learning, 6*(2), 163-184.
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- **Sera, M. D., & Millett, K. G. (2011).** Developmental differences in shape processing. *Cognitive Development, 26*, 40–56.
- **Tomlinson, H. B. (2009).** Developmentally appropriate practice in the primary grades - Ages 6–8. In C. Copple & S. Bredekamp (Eds.), *Developmentally appropriate practice in early childhood programs serving children from birth through age 8* (3 ed.), (pp. 257–288). Washington, DC: National Association for the Education of Young Children.

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Objective 22. Compares and measures

"Measurement is one of the main real-world applications of mathematics" (Clements, 2004, p. 43). Children learn about measurement as they make comparisons in length, area, volume, weight, time, and money (Clements, 2004; Fuson, 2004). Through the study of measurement, they make connections about and expand their understanding of both number concepts and geometry (Cross, Woods, & Schweingruber, 2009). As they describe the attributes of objects, they make comparisons, use words related to number, and represent data using graphs (Clements, 2004; Clements & Sarama, 2009).

a. Measures objects

Children in the *orange* (1–2 years), *yellow* (2–3 years), and *green* (preschool 3 class) bands *make simple comparisons between two objects.* The early measurement abilities of young children are simplistic and perceptually bound (Clements, 2004; McAfee & Leong, 2007). They can judge gross differences between the size, length, area, or volume of two objects by looking at the objects, although they may be deceived by appearance if the objects are moved or rearranged (Clements & Stephan, 2004). Older toddlers and young preschoolers can indicate which is bigger/smaller, longer/shorter, or has more/less (Allen & Marotz, 2007).

Children in the *green* (preschool 3 class) and *blue* (preK 4 class) bands *compare and order a small set of objects as appropriate according to size, length, weight, area, or volume*. Children initially make gross comparisons as they measure (Charlesworth & Lind, 2013). At first, they make direct comparisons as they place two objects or a small group of objects side by side or on top of one another and observe their equality or inequality (Clements, 2004; Clements & Stephan, 2004).

Children in the *blue* (preK 4 class) and *purple* (kindergarten) bands *use multiples of the same unit to measure; use numbers to compare; know the purpose of standard measuring tools.* Older preschool and kindergarten children know the purpose of many common, standard measuring tools such as rulers and scales, although they may not know the appropriate measurement language and how to accurately use them. They may use standard measuring instruments such as a ruler along with self-selected manipulative units such as snapping cubes and unit blocks (Clements, 2004). They repeatedly place the selected measuring unit end to end (iterations) beside the object to be measured. Their iterations may initially leave gaps or spaces between the units before they realize the importance of accuracy (Clements, 2004; Clements & Stephan, 2004; Cross, Woods, & Schweingruber, 2009). In addition to measurement terms, they may use numbers as they indicate "how much" or "how many" units (Clements, 2004; Clements & Stephan, 2004).

Students in the *purple* (kindergarten) and *pink* (first grade) bands *use measurement words and some standard measurement tools accurately.* Kindergarten and first-grade children use informal measurement and measurement terms as they intuitively compare objects in their environment (Cross et al., 2009; PBS, n.d.). They use words such as length, weight, and area as they talk about their measurement activities although they may do so in nonstandard ways (McAfee & Leong, 2007), When given the choice of using manipulative units or conventional measurement tools (e.g., a simple ruler), they may prefer using the conventional tool (Clements, 2004).

Students in the *pink* (first grade) and *silver* (second grade) bands *measure length accurately and express the measurement in whole numbers*. Measurement requires that children use different units and type of tools to accomplish their goals (Fuson, 2004). First and second graders can now effectively measure length and explain the relationship between different measurements using whole numbers (Greenes, 1999).

Students in the *silver* (second grade) and *brown* (third grade) bands *measure and compare the length of two objects using standard length units*. Children need many experiences comparing and measuring objects shorter than a standard unit measure prior to measuring objects longer than the standard tool (Charlesworth & Lind, 2013). By the end of second grade, students have had many informal and focused experiences with length, and they use a simple standard ruler to compare length. These important experiences can support children's understanding of our number system (Fuson, 2004).

Students in the *brown* (third grade) band *solve one-step word problems related to measurement of liquid volume, mass, area, and perimeter.* Third graders' many prior school experiences with measurement lead to more advanced understanding of measurement concepts (Fuson, 2004). Students use their understandings to solve simple word problems. Some measurement concepts continue to be challenging. Although they have initial understandings of area and perimeter, children may still confuse the two (Clements, 2004).

Objective 22. Compares and measures
a. Measures objects

- **Allen, K. E., & Marotz, L. R. (2007).** *Developmental profiles: Pre-birth through twelve* (5th ed.). Clifton Park, NY: Thomson/Delmar Learning.
- **Clements, D. H. (2004).** Major themes and recommendations. In D. H. Clements, J. Sarama, J., & A-M. DiBiase (Eds.), *Engaging young children in mathematics: Standards for early childhood mathematics education* (pp. 7-72). Mahwah, NJ: Lawrence Erlbaum Associates.
- **Clements, D. H., & Stephan, M. (2004).** Measurement in pre-k to grade 2 mathematics. In D. H. Clements, J. Sarama, J., & A-M. DiBiase (Eds.), *Engaging young children in mathematics: Standards for early childhood mathematics education* (pp.299-317). Mahwah, NJ: Lawrence Erlbaum Associates.
- **McAfee, O., & Leong, D. J. (2007).** *Assessing and guiding young children's development and learning* (4th ed.). Boston: Pearson/Allyn and Bacon.

- **Charlesworth, R., & Lind, K. (2013).** *Math and science for young children* (7th ed.). Belmont, CA: Wadsworth.
- **Clements, D. H. (2004).** Major themes and recommendations. In D. H. Clements, J. Sarama, J., & A-M. DiBiase (Eds.), *Engaging young children in mathematics: Standards for early childhood mathematics education* (pp. 7-72). Mahwah, NJ: Lawrence Erlbaum Associates.
- **Clements, D. H., & Stephan, M. (2004).** Measurement in pre-k to grade 2 mathematics. In D. H. Clements, J. Sarama, J., & A-M. DiBiase (Eds.), *Engaging young children in mathematics: Standards for early childhood mathematics education* (pp.299-317). Mahwah, NJ: Lawrence Erlbaum Associates.

- **Clements, D. H. (2004).** Major themes and recommendations. In D. H. Clements, J. Sarama, J., & A-M. DiBiase (Eds.), *Engaging young children in mathematics: Standards for early childhood mathematics education* (pp. 7-72). Mahwah, NJ: Lawrence Erlbaum Associates.
- **Clements, D. H., & Stephan, M. (2004).** Measurement in pre-k to grade 2 mathematics. In D. H. Clements, J. Sarama, J., & A-M. DiBiase (Eds.), *Engaging young children in mathematics: Standards for early childhood mathematics education* (pp.299-317). Mahwah, NJ: Lawrence Erlbaum Associates.
- **Cross, C. T., Woods, T. A., & Schweingruber, H. (Eds.), (2009).** *Mathematics learning in early childhood: Paths toward excellence and equity*. Washington, DC: National Academies Press.

- **Clements, D. H. (2004).** Major themes and recommendations. In D. H. Clements, J. Sarama, J., & A-M. DiBiase (Eds.), *Engaging young children in mathematics: Standards for early childhood mathematics education* (pp. 7-72). Mahwah, NJ: Lawrence Erlbaum Associates.
- **Cross, C. T., Woods, T. A., & Schweingruber, H. (Eds.), (2009).** *Mathematics learning in early childhood: Paths toward excellence and equity*. Washington, DC: National Academies Press.
- **McAfee, O., & Leong, D. J. (2007).** *Assessing and guiding young children's development and learning* (4th ed.). Boston: Pearson/Allyn and Bacon.
- **PBS (n.d.).** *Child development tracker: Mathematics*. Retrieved March 4, 2013 from http://www.pbs.org/parents/childdevelopmenttracker/six/mathematics.html/

- **Fuson, K. C. (2004).** Pre-k to grade 2 goals and standards: Achieving 21st-century mastery for all. In D. H. Clements, J. Sarama, J., & A-M. DiBiase (Eds.), *Engaging young children in mathematics: Standards for early childhood mathematics education* (pp. 105-148). Mahwah, NJ: Lawrence Erlbaum Associates.
- **Greenes, C. (1999).** Ready to learn: Developing young children's mathematical powers. In J. V. Copley (Ed.), Mathematics In the early years (pp. 39-47). Reston, VA: National Council of Teachers of Mathematics.

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- **Fuson, K. C. (2004).** Pre-k to grade 2 goals and standards: Achieving 21st-century mastery for all. In D. H. Clements, J. Sarama, J., & A-M. DiBiase (Eds.), *Engaging young children in mathematics: Standards for early childhood mathematics education* (pp. 105-148). Mahwah, NJ: Lawrence Erlbaum Associates.

Objective 22. Compares and measures

b. Measures time and money

Children in the *green* (preschool 3 class) and *blue* (preK 4 class) bands know the usual sequence of basic daily events. Four-year-olds begin to understand time concepts such as morning, night, earlier, later, and soon (PBS, n.d.).

Children in the *blue* (preK 4) and *purple* (kindergarten) bands *relate time to daily routines and schedule.* Children develop early beginnings of time measurement as they talk with adults and other children about the daily schedule and meaningful events in their lives. Through these experiences, they begin to understand the time characteristics of sequence (order of events) and duration (how long events take). The class schedule portrayed in pictures and words helps children further develop their time sequence and duration concepts (Charlesworth, 2012). Kindergartners relate clock time with the daily class schedule and know the purpose of the calendar (Allen & Marotz, 2007).

Students in the *purple* (kindergarten) and *pink* (first grade) bands *use some time measurement words and tools.* The abstract nature of time makes it more difficult for children to grasp than concepts involving the direct measurement of concrete objects (Copley, 2010). Sand timers and calendars provide students with more tangible depictions of time duration and sequence, and students may use them independently in daily activities. Hearing adults correctly model formal time language helps them to incorporate time vocabulary with increasing accuracy (Copley, 2010). They use words such as such as o'clock, yesterday, and tomorrow, although they still may sometimes use them in nonstandard ways (McAfee & Leong, 2007).

Students in the *pink* (first grade) and *silver* (second grade) bands *tell and write time in hours and half-hours using both analog and digital clocks; make amounts using pennies (P), nickels (N),and dimes (D).* Children must learn specific units if they are to measure time and money (Fuson, 2004). Time concepts continue to develop gradually (Cross et al., 2009), and digital clock reading may come more easily than analog reading (Burny, Valcke, & Desoete, 2012). First graders understand simple concepts of time duration involving speed and second graders begin to understand speed and distance as they relate to duration (Allen & Marotz, 2007). Understanding money also develops slowly. First graders can identify familiar coins, but the relationship between coin value and size is deceptive. Students may focus on coin size rather than its value. When children learn coin names and values, different skip counts (e.g., by 5's, 10,s), and can switch among types of counting, they can make amounts with coins (Fuson, 2004).

Students in the *silver* (second grade) and *brown* (third grade) bands *tell and write time to the nearest five minutes; indicate a.m. and p.m.; solve word problems involving coins (P, N, D, Q) and dollar bills and express the answer using currency symbols.* Because time measurement involves complex cognitive skills, time is more deeply understood by the end of second grade (Fuson, 2004). Children's increased memory, understanding of symbolic representation, and improved writing abilities allow them to tell and record time with increased precision. Second and third grade children enjoy counting money, and they may save for small purchases (Allen & Marotz, 2007). Although many students identify coins and bills at younger ages, money values are more fully understood at the end of third grade (Charlesworth, 2005).

Students in the *brown* (third grade) band *solve one-step word problems related to time to the nearest minute*. It takes years to develop time concepts deeply and meaningfully (Fuson, 2004). Problem-solving abilities also develop gradually as children have experiences using a variety of problem-solving strategies (Charlesworth & Lind, 2013). New knowledge, along with increased problem solving abilities, allow third graders to solve simple time word problems to the nearest minute (Charlesworth & Lind, 2013).

Objective 22. Compares and measures
b. Measures time and money

	• **PBS (n.d.)** *Preschool & kindergarten math milestones.* Retrieved Feb 18, 2016 from http://www.pbs.org/parents/education/math/milestones/preschool-kindergarten/#measurement
	• **Allen, K. E., & Marotz, L. R. (2007).** *Developmental profiles: Pre-birth through twelve* (5th ed.). Clifton Park, NY: Thomson/Delmar Learning. • **Charlesworth, R. (2012).** *Experiences in math for young children* (6th ed.). Boston: Wadsworth.
	• **Copley, J. V. (2010).** *The young child and mathematics* (2nd ed.).Washington, DC; National Association for the Education of Young Children. • **McAfee, O., & Leong, D. J. (2007).** *Assessing and guiding young children's development and learning* (4th ed.). Boston: Pearson/Allyn and Bacon.
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	• **Allen, K. E., & Marotz, L. R. (2007).** *Developmental profiles: Pre-birth through twelve* (5th ed.). Clifton Park, NY: Thomson/Delmar Learning. • **Charlesworth, R. (2005).** *Experiences in math for young children* (5th ed.). Clifton Park, NJ: Thomson/Delmar Learning. • **Fuson, K. C. (2004).** Pre-k to grade 2 goals and standards: Achieving 21st-century mastery for all. In D. H. Clements, J. Sarama, J., & A-M. DiBiase (Eds.), *Engaging young children in mathematics: Standards for early childhood mathematics education* (pp. 105-148). Mahwah, NJ: Lawrence Erlbaum Associates.
	• **Charlesworth, R., & Lind, K. (2013).** *Math and Science for young children* (7th ed.). Belmont, CA: Wadsworth. • **Fuson, K. C. (2004).** Pre-k to grade 2 goals and standards: Achieving 21st-century mastery for all. In D. H. Clements, J. Sarama, J., & A-M. DiBiase (Eds.), *Engaging young children in mathematics: Standards for early childhood mathematics education* (pp. 105-148). Mahwah, NJ: Lawrence Erlbaum Associates.

Objective 22. Compares and measures

c. Represents and analyzes data

Children in the *green* (preschool 3 class) and *blue* (preK 4 class) bands know a few ordinal numbers. Four-year-olds can learn to use the ordinal words *first, second*, and *last* before learning *first* through *tenth* in later years (Wood & Schweingruber, 2009). By the end of preschool, most children can use the verbal ordinal terms, "first" to "fifth" as they compare and order collections (Clements, 2004).

Students in the *purple* (kindergarten) and *pink* (first grade) bands *create and read simple graphs; use simple comparison and ordinal terms to describe findings.* When children first begin to create graphs to answer simple questions, they should use real objects with limited categories (Friel, Curcio, & Bright, 2001). Teachers can help the transition from using real objects to using more abstract representations such as manipulatives, pictures, or paper squares (Charlesworth, 2005; Clements, 2004; Copley, 2010; Friel et al., 2001). During first grade, children learn to read simple graphs of different types (picture, bar) and orientations (e.g., horizontal and vertical bar graphs) (Clements & Sarama, 2009).

Students in the *pink* (first grade) and *silver* (second grade) bands *organize, represent, and analyze data with up to three categories; use simple numerical summaries (counts, tallies) and use ordinal terms to describe findings.* First and second-grade students use graphs as a tool to help them to answer questions and to make decisions of personal importance (Clements, 2004; PBS, n.d.). They frequently use written symbols in addition to verbalizations as they present the findings represented in graphs (McAfee & Leong, 2007).

Students in the *silver* (second grade) and *brown* (third grade) bands *organize, represent, and interpret data with up to four categories; describe data points; ask and answer questions related to the total data set and to its parts.* Second and third graders continue to use graph types introduced in the earlier grades (Friel et al., 2001; PBS, n.d). It is important that they now see how the same data can be presented in different types of graphs (Copley, 2010). Their graphing abilities become more complex as they create and interpret graphs having more data points and categories (Friel et al., 2001). They discuss their representations by comparing parts of the data, the data as a whole, and deciding if the data answers the questions asked (Clements, 2004).

Students in the *brown* (third grade) band *read and create scaled picture or bar graphs where each picture/bar represents more than one data point; use the graph to ask and answer questions*. Students increasingly encounter graphs as they study in disciplines such as science and social studies (Friel, Curcio, & Bright, 2001).These graphs are more complex than the ones they experienced at lower grade levels. Their experiences with a variety of graph types help prepare them for interpreting data using increasingly complex graphs. As students gain cognitive abilities such as classification (Berk, 2009) and mathematical understanding of number (e.g., skip counting), they can be introduced to and use scale in graphs where several data points are represented by one point on the graph (Friel et al., 2001).

Objective 22. Compares and measures
c. Represents and analyzes data

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Objective 23. Demonstrates knowledge of patterns

"Mathematics is the science and language of patterns" (Copley, 2000, p. 83). The concept of patterns is an enormous part of all domains of mathematics, and children must be taught to look for patterns throughout their mathematical explorations. The kinds of specific pattern work typically explored in early childhood classrooms, the sequential repeated patterns done with small colored blocks or other objects, is but one aspect of this larger study of patterns (Clements & Sarama, 2009). In the previous mathematics objectives there were references to counting and number patterns, spatial and shape patterns, and the patterns found in organizing objects for seriation. Familiarity with patterning helps children make predictions and is thought to be the beginning of algebra (Whitin & Whitin, 2012). Children learn to recognize relationships and form generalizations. When children explain their patterns by naming them (e.g., AB, AB, AB or AAB,AAB,AAB), they are having one thing stand for another (Clements & Sarama, 2009).

Children in the *orange* (1–2 years) and *yellow* (2–3 years) bands *show interest in simple patterns in everyday life.* Young children begin to attend to patterns at any early age. They notice repeating patterns in typical routines, in stories, and in their environment (Charlesworth, 2005; Copley, 2010; PBS, n.d.). However, they may not be accurate in their judgments of what is or is not a pattern, and they are not yet able to copy patterns (PBS, n.d.).

Children in the *green* (preschool 3 class) and *blue* (preK 4 class) bands *copy simple repeating patterns*. Preschool children are very attentive to the patterns in their lives. They are aware of changes in their schedules, such as not going outside after snack or not hearing a story read aloud after lunch (Copley, 2010). At that point, they are ready for an important next step: to go from recognizing patterns to being able to copy patterns (PBS, n.d.). Teachers engage children in physically copying patterns by demonstrating and asking them to join in hand patterns, e.g., clap, tap; clap, tap; clap, tap (Taylor-Cox, 2003). Next, teachers are likely to start repeating color patterns.

Children in the *blue* (preK 4 class) and *purple* (kindergarten) bands *extend and create simple repeating patterns*. Older preschool and kindergarten children demonstrate an understanding of the structure of the pattern (it is comprised of repeating units). Toward the later part of the period, children can identify the smallest core unit in simple repeating patterns (PBS, n.d.) and re-create them using different mediums (Sarama & Clements, 2006). This important step shows a new level of conceptual knowledge involving generalizing and abstracting relationships (Rittle-Johnson, Fyfe, Loehr, & Miller, 2015).

Students in the *purple* (kindergarten) and *pink* (first grade) bands *recognize, create, and explain more complex repeating and simple growing patterns.* Children now demonstrate the ability to use language to explain more complex patterns. They can describe the core unit and translate the pattern from one set of objects or materials to another or use different attributes, e.g., from color to size (PBS, n.d.; Sarama & Clements, 2006). During the kindergarten year, children begin to notice simple growing patterns in numbers (PBS, n.d.).

Students in the *pink* (first grade) and *silver* (second grade) bands *notice more complex patterns in numbers; identify the core unit of patterns; represent patterns using numerical and letter symbols.* First and second graders discover regularities or patterns in numbers such as odd and even numbers (PBS, n.d.). Awareness of number patterns, such as the decades, teens, hundreds, can facilitate students' abilities to determine the number of items in a group (Clements, 2004). Patterns are particularly useful in helping first graders solve arithmetic tasks involving quantities of ten or less (McClain & Cobb, 1999). Second graders can switch to using a different pattern in mathematical tasks when asked or when they notice that another pattern may be more effective in solving a particular problem (McClain & Cobb, 1999; Whitin & Whitin, 2012).

Students in the *silver* (second grade) and *brown* (third grade) bands *use number patterns to count and to solve problems; use and explain patterns in counting and addition*. Second and third graders increasingly use patterns to solve mathematical problems (Clements, 2004). They represent their growing understanding of numerical patterns in various ways. They explain their thinking through talking, gesturing, drawing, and writing (Whitin & Whitin, 2012). During third grade, they can recognize composite patterns (units of units) and can apply them to extend a pattern to create new units and describe it using number or mathematical language (Clements & Sarama, 2009).

Students in the *brown* (third grade) band *recognize arithmetic patterns and explain them using properties of operations.* Third graders look for patterns as a way to make predictions (Charlesworth, 2005), solve mathematical problems, and to justify solutions. At first, they explain these patterns using their everyday language and gradually begin to use appropriate mathematical language and properties of operations in their explanations (PBS, n.d.).

Objective 23. Demonstrates knowledge of patterns

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