Principles of Child Development and Learning and Implications That Inform Practice

NAEYC's guidelines and recommendations for developmentally appropriate practice are based on the following nine principles and their implications for early childhood education professional practice. These principles reflect an extensive research base that is only partially referenced here.[13] Because these principles are interrelated, this linear list does not fully represent their overall complexity.

1. **Development and learning are dynamic processes that reflect the complex interplay between a child's biological characteristics and the environment, each shaping the other as well as future patterns of growth.**

Advances in neuroscience over the last two decades have provided new insights regarding the processes of early brain development and their long-term implications for development and learning. The findings provide robust evidence supporting the importance of high-quality early learning experiences for young children for promoting children's lifelong success.

Neural connections in the brain—which are the basis for all thought, communication, and learning—are established most rapidly in early childhood.[14] The processes of forming new neural connections and pruning the neural connections that are not used continue throughout a person's lifespan but are most consequential in the first three years.[15] When adults are sensitive and respond to an infant's babble, cry, or gesture, they directly support the development of neural connections that lay the foundation for children's communication and social skills, including self-regulation. These "serve and return" interactions shape the brain's architecture.[16] They also help educators and others "tune in" to the infant and better respond to the infant's wants and needs.

The interplay of biology and environment, present at birth, continues through the preschool years and primary grades (kindergarten through grade 3). This has particular implications for children who experience adversity. In infancy, for example, a persistent lack of responsive care results in the infant experiencing chronic stress that may negatively impact brain development and may delay or impair the development of essential systems and abilities, including thinking, learning, and memory, as well as the immune system and the ability to cope with stress.[17] Living in persistent poverty can also generate chronic stress that negatively affects the development of brain areas associated with cognitive and self-regulatory functions.[18]

No group is monolithic, and data specific to communities provides a deeper understanding of children's experiences and outcomes. It is important to recognize that although children of all races and ethnicities experience poverty and other adverse childhood experiences (ACEs), Black and Latino/a children, as well as children in refugee and immigrant families, children in some Asian-American families, and children in Native American families, have been found to be more likely to experience ACEs than White non-Latino/a and other Asian-American populations of children,[19] reflecting a history of systemic inequities.[20] Moreover, racism itself must be recognized not only for its immediate and obvious impacts on children, but also for its long-term negative impacts, in which the repetitive trauma created by racism can predispose individuals to chronic disease.[21] It should be noted that these stressors and

trauma affect adults as well as children, including family members and early childhood educators themselves, who, despite their skills and importance, often earn wages that place them into poverty.

Some children appear to be more susceptible than others to the effects of environmental influence—both positive and negative—reflecting individual differences at play. For children facing adverse circumstances, including trauma, the buffering effects of caring, consistent relationships—with family and other community members but also in high-quality early childhood programs—are also important to note.[22] This emerging science emphasizes the critical importance of early childhood educators in providing consistent, responsive, sensitive care and education to promote children's development and learning across the full birth-through-8 age span. The negative impacts of chronic stress and other adverse experiences can be overcome. High-quality early childhood education contributes substantially to children's resilience and healthy development.

2. **All domains of child development—physical development, cognitive development, social and emotional development, and linguistic development (including bilingual or multilingual development), as well as approaches to learning—are important; each domain both supports and is supported by the others.**

Early childhood educators are responsible for fostering children's development and learning in all these domains as well as in general learning competencies and executive functioning, which include attention, working memory, self-regulation, reasoning, problem solving, and approaches to learning. There is considerable overlap and interaction across these domains and competencies. For example, sound nutrition, physical activity, and sufficient sleep all promote children's abilities to engage in social interactions that, in turn, stimulate cognitive growth. Children who experience predictable, responsive relationships and responsive interactions with adults also tend to demonstrate improved general learning competencies and executive functioning.[23]

Changes in one domain often impact other areas and highlight each area's importance. For example, as children begin to crawl or walk, they gain new possibilities for exploring the world. This mobility in turn affects both their cognitive development and their ability to satisfy their curiosity, underscoring the importance of adaptations for children with disabilities that limit their mobility. Likewise, language development influences a child's ability to participate in social interaction with adults and other children; such interactions, in turn, support further language development as well as further social, emotional, and cognitive development. Science is clear that children can learn multiple languages as easily as one, given adequate exposure and practice, and this process brings cognitive advantages.[24] In groups in which children speak different home languages, educators may not be able to speak each language, but they can value and support maintaining all languages.[25]

A growing body of work demonstrates relationships between social, emotional, executive function, and cognitive competencies[26] as well as the importance of movement and physical activity.[27] These areas of learning are mutually reinforcing and all are critical in educating young children across birth through age 8. Intentional teaching strategies, including, and particularly, play (both self-directed and guided), address each domain. Kindergartens and grades 1-3 tend to be considered elementary or primary education, and, as such, may have increasingly prioritized cognitive learning at the expense of physical, social, emotional, and linguistic development. But integrating cognitive, emotional, social, interpersonal skills and self-regulatory competencies better prepares children for more challenging academic content and

learning experiences.[28] In brief, the knowledge base documents the importance of a comprehensive curriculum and the interrelatedness of the developmental domains for all young children's well-being and success.

3. **Play promotes joyful learning that fosters self-regulation, language, cognitive and social competencies as well as content knowledge across disciplines. Play is essential for all children, birth through age 8.**

Play (e.g., self-directed, guided, solitary, parallel, social, cooperative, onlooker, object, fantasy, physical, constructive, and games with rules) is the central teaching practice that facilitates young children's development and learning. Play develops young children's symbolic and imaginative thinking, peer relationships, language (English and/or additional languages), physical development, and problem-solving skills. All young children need daily, sustained opportunities for play, both indoors and outdoors. Play helps children develop large-motor and fine-motor physical competence, explore and make sense of their world, interact with others, express and control their emotions, develop symbolic and problem-solving abilities, and practice emerging skills. Consistently, studies find clear links between play and foundational capacities such as working memory, self-regulation, oral language abilities, social skills, and success in school.[29]

Indeed, play embodies the characteristics of effective development and learning described in principles 4 and 5—active, meaningful engagement driven by children's choices. Researchers studying the pedagogy of play have identified three key components: choice (the children's decisions to engage in play, as well as decisions about its direction and its continuation), wonder (children's continued engagement as they explore, gather information, test hypotheses, and make meaning), and delight (the joy and laughter associated with the pleasure of the activity, making discoveries, and achieving new things).[30] Play also typically involves social interaction with peers and/or adults.

Although adults can be play partners (for example, playing peekaboo with an infant) or play facilitators (by making a suggestion to extend the activity in a certain way), the more that the adult directs an activity or interaction, the less likely it will be perceived as play by the child. When planning learning environments and activities, educators may find it helpful to consider a continuum ranging from children's self-directed play to direct instruction.[31] Neither end of the continuum is effective by itself in creating a high-quality early childhood program. Effective, developmentally-appropriate practice does not mean simply letting children play in the absence of a planned learning environment, nor does it mean predominantly offering direct instruction. In the middle of the continuum is guided play. Educators create learning environments that reflect children's interests; they provide sustained time and opportunities for children to engage in self-directed play (individually and in small groups). Educators also strategically make comments and suggestions and ask questions to help move children toward a learning goal, even as children continue to lead the activity.[32]

Guided play gives educators opportunities to use children's interests and creations to introduce new vocabulary and concepts, model complex language, and provide children with multiple opportunities to use words in context in children's home languages as well as in English. These meaningful and engaging experiences help children—including those in kindergarten and the primary grades—build knowledge and vocabulary across subject areas and in purposeful contexts (which is more effective than memorization of word lists).[33]

Despite evidence that supports the value of play, not all children are afforded the opportunity to play, a reality which disproportionately affects Black and Latino/a children.[34] Play is often viewed as being at odds with the demands of formal schooling, especially for children growing up in under-resourced communities.[35] In fact, the highly didactic, highly controlling curriculum found in many kindergarten and primary grades, with its narrow focus on test-focused skill development, is unlikely to be engaging or meaningful for children; it is also unlikely to build the broad knowledge and vocabulary needed for reading comprehension in later grades. Instead, the lesson children are likely to learn is that they are not valued thinkers or successful learners in school. For example, studies suggest that students who are taught math primarily through memorization and rote learning are more than a year behind those who have been taught by relating math concepts to their existing knowledge and reflecting on their own understanding.[36]

Even if not called play, cross-curricular and collaborative approaches such as project-based learning, inquiry learning, or making and tinkering share characteristics of playful learning.[37] Giving children autonomy and agency in how they approach problems, make hypotheses, and explore potential solutions with others promotes deeper learning and improves executive functioning.[38] In sum, self-directed play, guided play, and playful learning, skillfully supported by early childhood educators, build academic language, deepen conceptual development, and support reflective and intentional approaches to learning—all of which add up to effective strategies for long-term success.

4. **Although general progressions of development and learning can be identified, variations due to cultural contexts, experiences, and individual differences must also be considered.**

A pervasive characteristic of development is that children's functioning, including their play, becomes increasingly complex—in language, cognition, social interaction, physical movement, problem solving, and virtually every other aspect. Increased organization and memory capacity of the developing brain make it possible for children to combine simple routines into more complex strategies with age.[39] Despite these predictable changes in all domains, the ways that these changes are demonstrated and the meanings attached to them will vary in different cultural and linguistic contexts. For example, in some cultures, children may be encouraged to satisfy their growing curiosity by moving independently to explore the environment; in other cultures, children may be socialized to seek answers to queries within structured activities created for them by adults.[40] In addition, all children learn language through their social interactions, but there are important distinctions in the process for monolingual, bilingual, and multilingual children.[41] Rather than assuming that the process typical of monolingual children is the norm against which others ought to be judged, it is important for educators to recognize the differences as variations in strengths (rather than deficits) and to support them appropriately.[42]

Development and learning also occur at varying rates from child to child and at uneven rates across different areas for each child. Children's demonstrated abilities and skills are often fluid and may vary from day to day based on individual or contextual factors. For example, because children are still developing the ability to direct their attention, a distraction in the environment may result in a child successfully completing a puzzle one day but not the next. In addition, some regression in observed skills is common before new developments are fully achieved.[43] For all of these reasons, the notion of "stages" of development has limited utility; a more helpful concept may be to think of waves of development that allow for considerable overlap without rigid boundaries.[44]

5. **Children are active learners from birth, constantly taking in and organizing information to create meaning through their relationships, their interactions with their environment, and their overall experiences.**

Even as infants, children are capable of highly complex thinking.[45] Using information they gather through their interactions with people and things as well as their observations of the world around them, they quickly create sophisticated theories to build their conceptual understanding. They recognize patterns and make predictions that they then apply to new situations. Infants appear particularly attuned to adults as sources of information, underscoring the importance of consistent, responsive caregiving to support the formation of relationships.[46] Cultural variations can be seen in these interactions, with implications for later development and learning. For example, in some cultures, children are socialized to quietly observe members of the adult community and to learn by pitching in (often through mimicking the adults' behaviors).[47] In other cultures, adults make a point of getting a child's attention to encourage one-on-one interactions. Children socialized to learn through observing may quietly watch others without asking for help, while those socialized to expect direct interaction may find it difficult to maintain focus without frequent adult engagement.

Throughout the early childhood years, young children continue to construct knowledge and make meaning through their interactions with adults and peers, through active exploration and play, and through their observations of people and things in the world around them. Educators recognize the importance of their role in creating a rich, play-based learning environment that encourages the development of knowledge (including vocabulary) and skills across all domains. Educators understand that children's current abilities are largely the result of the experiences—the opportunities to learn—that children have had. As such, children with disabilities (or with the potential for a disability) have capacity to learn; they need educators who do not label them or isolate them from their peers and who are prepared to work with them and their families to develop that potential.

In addition to learning language and concepts about the physical phenomena in the world around them, children learn powerful lessons about social dynamics as they observe the interactions that educators have with them and other children as well as peer interactions. Well before age 5, most young children have rudimentary definitions of their own and others' social identities that can include awareness of and biases regarding gender and race.[48]

Early childhood educators need to understand the importance of creating a learning environment that helps children develop social identities which do not privilege one group over another. They must also be aware of the potential for implicit bias that may prejudice their interactions with children of various social identities.[49] Educators must also recognize that their nonverbal signals may influence children's attitudes toward their peers. For example, one recent study found that children will think a child who receives more positive nonverbal signals from a teacher is perceived as a "better" or "smarter" reader than a child who receives more negative nonverbal signals, regardless of that child's actual reading performance.[50]