

## Cognition and Knowledge of the World

Scientific research is beginning to reveal information about the physiology of our brains— nerve cells, circuitry, electrical and chemical processes – that is as fascinating as it is complex. Contrary to long-held beliefs that the brain is “hard-wired” at birth, researchers have confirmed it is actually under constant development and that the period of greatest activity is the early years. Interestingly, the brain attains 90 percent of its adult weight by the time a child reaches age five and develops faster than any other part of the body. The enormity of this physical growth aside, perhaps the most compelling finding for teachers and caregivers of young children is how significantly cognitive development can be influenced by environment and experience.

The National Scientific Council on the Developing Child analogizes cognitive development to building a house. The “blueprint” for building a brain is supplied by genetics, but it is the building materials – in this case, proper nutrition, social interactions with attentive caregivers, and absence of toxins – that brings those plans to optimal fruition. In making the house a home, builders modify blueprints to suit the needs of the family; likewise, children’s experiences define which neural connections will thrive and which will be discarded. The Council summarizes by stating:

“ . . . the quality of a child’s early environment and the availability of appropriate experiences at the right stages of development are crucial in determining the strength or weakness of the brain’s architecture, which, in turn, determines how well he or she will be able to think and regulate emotions.”<sup>1</sup>

The brain’s architecture is but one aspect of cognitive development. Historically, the term “cognitive development” is most frequently associated with the work of Jean Piaget, who theorized that children move through distinct stages of cognitive growth as the result of an adaptation process involving assimilation and accommodation. His work forwarded the idea of cognition as both the way a child thinks about something and what the child does. Learning is an active process and occurs when children interact in meaningful ways with the world around them.

Other leaders in the field of children’s cognitive development also contributed to our current beliefs about how children learn. Lev Vygotsky asserted that interaction with knowledgeable others and culture are important shapers of cognitive development. Drawing from Piaget’s model of cognitive stages and Vygotsky’s emphasis on interpersonal communication, Jerome Bruner proposed that children’s progress through four socio-cognitive stages is facilitated by interaction with adults and peers.

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<sup>1</sup> National Scientific Council on the Developing Child. “The Timing and Quality of Early Experiences Combine to Shape Brain Architecture.” (February 2008)

These models of cognitive development have spawned much discussion and unending research. Interestingly, findings have suggested that, contrary to what all three theorists believed, preschool children are capable of higher-order skills, such as hierarchical classification and quantitative reasoning. Armed with sufficient knowledge and/or experience, they can perform activities that might be considered “developmentally inappropriate” for their age or for their development in other areas. In studies by Gobbo and Chi, preschool children who knew a great deal about dinosaurs sorted them by land-living or not, meat-eating or not, etc. Researchers identified knowledge – in this case, of dinosaurs – as the key determinant of whether the pre-school children studied were able to sort by multiple criteria or not.<sup>2</sup>

Presumably, these young dinosaur “experts” acquired their vast knowledge from their interest in the topic. Parents, teachers, and other caregivers can tap into children’s natural interests and their prior knowledge to provide rich experiences that promote higher-level, abstract, and critical thinking. By facilitating conversation and purposefully asking questions, adults not only encourage children to delve deeper into a topic of interest, but also challenge them to reach the next level of thinking – essentially, implementing Vygotsky’s strategy of “scaffolding.” Open-ended questions, in particular, prompt children to not only use more language, but also require them to recall, and put into sequence, past events.<sup>3</sup> In the course of conversation, asking “Why do you think this dinosaur has such a long tail?” will elicit a far greater response than “Isn’t this dinosaur’s tail long?”

Teachers must be sure to provide age-appropriate opportunities to engage higher-order thinking. During morning hour, facilitate conversation with children about the day’s weather, the clothes they are wearing, and the items they brought to school to help them draw conclusions about the four seasons. Ask children to retell – verbally or dramatically – the story behind their own or others’ artwork. When reading aloud to a group of four-year-old children, prompt them to predict what will happen to Henny Penny. “Wonder aloud” with children about how life would be different if they were born at a different time or in a different world. For it is through such supportive, questioning, and attentive environments that children will acquire knowledge about science, fine arts, social studies, math, and about the world.

The goal of thinking at a more critical level is infused throughout New York State’s learning standards for students in kindergarten through grade twelve. It is equally important for preschool children. It is during these early years that cognitive development and brain development are integrally linked. Young children are able to make sense of their world by acquiring, adapting, practicing,

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<sup>2</sup> Bowman, B.T., Donovan, S.M. and Burns, S.M. *Editors*; *Eager to Learn: Educating our Preschoolers*, 2000, p.41.

<sup>3</sup> National Scientific Council, Center on the Developing Child at Harvard University. (2007). *The Science of Early Childhood Development: Closing the Gap Between What We Know and What We Do*. Cambridge, MA.

applying and transferring knowledge in order to construct new or expanded concepts. It is through play, active engagement, experimenting, observing, exploring, manipulating, creating, listening, reflecting, problem solving, and using logic and reasoning that children become capable of more complex thinking.

Cognitive development occurs across all domains and supports children's learning about the world in which they live. This is reflected in the New York State PreK Learning Standards. Some examples of indicators of cognitive development and where they can be found in this document are illustrated below. *(Please note: This list is a selected group of examples and is not inclusive of all cognitive indicators.)*

### **Approaches to Learning**

- Child actively and confidently engages in play as a means of exploration and learning.
- Child uses “trial and error” method to figure out a task, problem, etc.

### **Physical Development and Health**

- Child uses description words to discuss sights, smells, sounds, tastes and textures.
- Child demonstrates awareness of spatial boundaries and the ability to work within them.

### **Social/Emotional Development**

- Child is able to recognize and discriminate among adult roles
- Child understands that other children have needs and rights
- Child demonstrates awareness of similarities and differences in habits, traits, preferences, abilities, motives, etc. among their family members and/or peers;
- Child understands how his/her own emotions impact choices (likes & dislikes).

### **Communication, Language and Literacy**

- Child makes inferences and draws conclusions based on information from visual media.
- Child understands big ideas from books and read-alouds.

## **Cognition and Knowledge of the World**

### **Math**

- Child makes inferences and predictions based on data.
- Child explains how objects are organized.
- Child compares and orders objects according to their attributes.

### **Science**

- Child makes predictions based on background knowledge and previous scientific experience.
- Child identifies cause and effect relationships.
- Child verifies predictions by explaining “how” and “why”.
- Child makes age-appropriate, logical conclusions about investigations.

### **Social Studies**

- Child uses words and phrases that differentiate between events that happen in the past, present and future, e.g., uses phrases like “when I was a baby...” or “before I moved to my new house.”

### **The Arts**

- Child compares or contrasts different forms of dance and music
- Child identifies similarities and differences among samples of visual art.

The following sections of the Cognition and Knowledge of the World Domain provide benchmarks and performance indicators for specific content areas: math, science, social studies, the arts, and technology. Learning environments and instructional practices in early childhood classrooms across settings will be immediately impacted by these expectations. Teachers will be empowered to align curriculum and assessment horizontally across domains as well as vertically to ensure continuity of learning, beginning in kindergarten. Programs for young children will use these expectations to plan professional development tailored to the needs of individual teachers, as well as, to engage parents in monitoring the progress of their children.

## Math

While walking to the bus stop, Treva counts her footsteps. “One, two, three, four – hey! That’s how old I am!” Nodding, her Nana agrees, “You’re right! Keep going. What’s the next number?” Counting is a skill that many parents and caregivers recognize as being important for their children to have when they enter school, so it is not uncommon for them to encourage their preschoolers to practice. In the everyday context of their lives, however, children are also exposed – perhaps intentionally, perhaps not – to many, many other math concepts.

Math is about numeracy, but it is also about measurement, shapes, and patterns. When a new mark is added to the wall to note the latest growth spurt, children are picking up a sense of measurement, even though no numbers are involved. In fact, this type of math occurs every time a child happily exclaims, “I built the tallest tower!” or complains, “My bag is heavier than hers.” The understanding that something is taller/shorter, heavier/lighter, full/empty, and bigger/smaller is a pre-number math concept that paves the way for later understanding of inches, pounds, volume, and mass.

When children notice that their bags are heavier or their towers are taller, they inevitably notice other variables, such as shape. As a math concept for preschoolers, shape and spatial relationships include recognizing and manipulating geometric forms (squares, triangles, circles, rectangles, etc.). Parents and caregivers may be surprised to learn that correctly using words such as *first*, *last*, *top*, *bottom*, *over*, and *under* can also indicate a child’s awareness of spatial relationships.

There are many other math applications hiding within “non-math” activities. What, for example, does clapping have to do with math? The answer: when there is a pattern to the clapping, i.e., teachers sometimes attracts their busy classroom’s attention with a “slow clap, slow clap, pause, fast clap, fast clap, fast clap.” Detecting patterns help children begin to understand how things work together, which is an important skill for later math development. Counting and measuring activities help children become more familiar with number concepts, equal values and an understanding of length, height and weight. Opportunities abound for promoting math learning in preschool classrooms.

## **Cognition and Knowledge of the World**

### **PreK Content Area: Mathematics**

**PreK Benchmark:** Children will demonstrate an understanding of numbers, ways to represent numbers, relationships among numbers and the number system.

**Benchmark Indicators:**

- Child distinguishes between numbers and letters.
- Child is able to understand that a number represents a quantity.
- Child is able to count to 20.
- Child uses one to one correspondence when counting to ten.
- Child is able to count with understanding and recognize “how many” in sets of objects.
- Child counts a set of objects and recognizes that the last counting word tells “how many”.
- Child recognizes and describes the concept of zero.

**PreK Benchmark:** Children will understand the beginning principles of addition and subtraction.

**Benchmark Indicators:**

- Child compares the number of objects using vocabulary such as, more, less, greater than, fewer, and/or equal.
- Child demonstrates an understanding of “adding more” items to a set of items (If we add two more apples to the three apples we have five apples).
- Child demonstrates an understanding of subtracting, (taking away) from a set of items. (If we have 5 oranges on the table and one orange is removed, we have four oranges left on the table.)
- Child accurately uses vocabulary words related to addition and subtraction (add, subtract, plus, and minus, etc.).

**PreK Benchmark:** Children demonstrate understanding of geometric and spatial relations.

**Benchmark Indicators:**

- Child points to square, triangle, rectangle, circle, rhombus, and diamond when asked.
- Child names: square, triangle, rectangle, circle, rhombus, and diamond.
- Child finds shapes in the environment.
- Child matches two items of the shape regardless of size.
- Child sorts objects by shape.
- Child builds, compares, and contrasts two and three dimensional shapes.
- Child describes whether or not two shapes are the same.
- Child sequences different shapes to make patterns.
- Child decides which piece will fit into a space in a puzzle.

**PreK Benchmark:** Children understand directionality, order, and position.

**Benchmark Indicators:**

- Child identifies first, last, and other simple words (e.g., next, second, last) related to order or position.
- Child describes object locations with spatial words such as top, bottom; up, down; in front of, behind; over and under.
- Child reproduces a simple pattern model. (Red bead is first, yellow bead is second, and blue bead is last)

**PreK Benchmark:** Children will sort, classify and organize objects by size, number, attributes and other properties.

**Benchmark Indicators:**

- Child sorts objects into equal groups.
- Child sorts, categorizes, classifies, and orders objects by one attribute.
- Child sorts, categorizes, classifies and orders objects by more than one attribute.
- Child recognizes, describes, reproduces, and extends patterns
- Child explains how objects are organized.

**PreK Benchmark:** Children will demonstrate knowledge of measurement.

**Benchmark Indicators::**

- Child describes and compares measurable attributes.
- Child uses correct vocabulary that describes length, height, weight, volume and size such as: small, big, short, tall, empty, full, heavy and light.
- Child will use standard and non-standard methods to measure and make comparisons.

## Science

Teachers in K-12 classrooms have long struggled with taking the “sigh” out of science. Too often, secondary-school student’s associate science with memorizing periodic tables, searching for mystery body parts in formaldehyde-soaked amphibians, and determining whether a rock is sedimentary, metamorphic, or igneous. While the content of this teaching is important, its decontextualized delivery does little to ignite students’ interest in the physical properties of the world around them.

Young children, on the other hand, are fueled by an innate curiosity about what works, why it works, how it works, and what’s in it that makes it work. Preschoolers are constantly asking, “Why does this rock sparkle?” “How can a frog jump so high?” “What’s in water?” When they pose the time-honored, “why is the sky blue?” question, preschoolers are not expecting a detailed explanation of the electromagnetic spectrum but they are purposefully gathering information about, and trying to explain, their observations.

Science is exactly that: a system of acquiring knowledge. This system uses inquiry, observation and experimentation to describe or explain phenomena. For this age group, such activity involves manipulating objects, asking questions, making predictions, developing generalizations, and learning relevant vocabulary. Scientific experiences can occur both formally and informally, but should, as much as possible, allow for hands-on activity with objects and contexts that are meaningful to the child. Teachers may present a lesson on properties of water, but explaining why popsicles drip and ice cubes melt is likely to be more meaningful to children, to have a greater impact on their understanding, and more significantly, to increase their interest in the topic at hand. By exploring the science in the child’s everyday world, science is understood not just as the work of chemists, biologists, and geologists, but as an integral and inspiring part of the real life of every child – a powerful message to be learned early and reinforced throughout life.

## **Cognition and Knowledge of the World**

### **PreK Content Area: Science -- Scientific Thinking**

**PreK Benchmark:** Children ask questions and make predictions based on observations and manipulation of things and events in the environment.

**Benchmark Indicators:**

- Child uses senses to gather, explore, and interpret information.
- Child manipulates and observes objects in his or her surroundings to develop conclusions.
- Child makes observations and describes changes in objects, living things, and natural events in the environment.
- Child organizes his or her observations of objects and events by identifying, classifying, etc..
- Child asks “why,” “how,” and “what if” questions and seeks answers through experimentation and investigation.
- Child makes predictions based on background knowledge, previous scientific experiences, and observations of objects and events in the world.

**PreK Benchmark:** Children test predictions through exploration and experimentation.

**Benchmark Indicators:**

- Child gives oral, written or graphic explanations of what he/she wants to learn.
- Child uses a variety of tools and materials to test predictions through active experimentation. (Child uses magnifying glass to examine pine needles; child puts large paper clip on water to see if it floats.)
- Child replicates or changes the experimental approach..
- Child records and organizes data using graphs, charts, science journals, or other means of recording.

**PreK Benchmark:** Children generate explanations and communicate conclusions regarding their experiments and explorations.

**Benchmark Indicators:**

- Child compares and contrasts attributes of objects, living things, and events in the environment to organize what they have learned.
- Child identifies cause and effect relationships.
- Child verifies predictions by explaining “how” and “why”.
- Child makes age appropriate, logical conclusions about investigations.
- Child shares ideas about objects, living things and other natural events in the environments through words, pictures, and other representations.

**Cognition and Knowledge of the World**  
**PreK Content Area: Science -- Earth and Space**

**PreK Benchmark:** Children observe and describe characteristics of earth and space.

**Benchmark Indicators:**

- Child investigates and identifies properties of soil, rocks, and minerals.
- Child investigates and identifies physical properties and characteristics of water (solid, liquid, and gas).
- Child makes simple observations of the characteristics and movements of sun, moon, stars, and clouds.
- Child observes and discusses changes in weather and seasons using common weather related vocabulary (rainy, sunny, snowy, windy, cloudy, etc.).
- Child expresses ways the environment provides natural resources that are needed by people (wood for lumber to build shelter, water for drinking).
- Child demonstrates ways that each person is responsible for protecting our planet (recycling plastic, glass, and cardboard, reusing a plastic container sandwich box, mending clothing rather than throwing away, etc.).

**Cognition and Knowledge of the World**  
PreK Content Area: **Science -- Living Things**

**PreK Benchmark:** Children observe and describe characteristics of living things.

**Benchmark Indicators:**

- Child observes and discusses similarities, differences, and categories of plants and animals.
- Child identifies things as living or non-living based on characteristics, such as breathes, moves by itself, grows.
- Child explains why plants and animals need water and food.
- Child describes simple life cycles of plants and animals.
- Child describes and identifies the different structures of familiar plants and animals. (Plants have stems, roots, leaves; animals have eyes, mouths, ears, etc.).
- Child recognizes that plants and animals have some characteristics of their “parents”.
- Child observes, describes, and compares the habitats of plants and animals.
- Child observes, records, and explains how plants and animals respond to changes in the environment and changes in seasons.

## **Cognition and Knowledge of the World**

### **PreK Content Area: Science -- Physical Properties**

**PreK Benchmark:** Children acquire knowledge about the physical properties of the world.

#### **Benchmark Indicators:**

- Child describes, compares, and categorizes objects based on their properties.
- Child uses senses to explore different environments (classroom, playground, field trips).
- Child recognizes and describes the effect of his/her own actions on objects.
- Child describes tools and their specific functions (e.g., hammer for pounding nails).
- Child uses a variety of tools to explore the world and learn how things work (such as magnifiers and balance scales).
- Child investigates common interactions between matter and energy (butter melting in cooking activities; cream turning to butter; peanuts becoming peanut butter, etc.)
- Child describes and compares the effects of common forces (pushes and pulls) on objects, such as those caused by gravity, magnetism, and mechanical forces.
- Child explores and discusses simple chemical reactions with teacher assistance (e.g., baking soda and water, mixing oil and water).

## **Social Studies**

Today's shrinking globe presents wonderful opportunities for interaction with new people, cultures, and regions. Within these opportunities is a responsibility to appreciate the unique thoughts, beliefs, and actions of the people we meet. On a much smaller scale, pre-schoolers learn to do just that as they venture out of the familiarity of their homes into the community.

When they are very young, children begin to understand their role within their families. They learn the expectations and rules that govern this basic social structure. As they mature, their social circle enlarges to include extended family, friends, neighbors, classmates, teachers, and community helpers. Children soon realize that with new people come new rules, expectations, and ways of interacting.

It is important for children to learn how to navigate the increasing complexity of their social network. Communication and cooperation are tools of navigation that often present themselves naturally between and among individuals with similar perspectives. Reaching out to people with different backgrounds, experiences and beliefs, however, may be less comfortable, therefore requiring additional navigational tools: such as, respect and empathy.

Social studies is understanding one's role within the family and within the community, but also understanding others' roles. How do these roles interact? Older students explore the rights and responsibilities of community members in "Civics" or "Government" classes, but at the pre-school age, the focus is on sharing, taking turns, and practicing being followers and leaders.

Other areas of study traditionally associated with "social studies" are applicable to pre-school as well. History provides a sense of time, including the profound and minute changes that take place over the course of their day, week, or year. To pre-schoolers, this may mean comparing their fall self-portraits to their spring self-portraits. How are the portraits different? What occurred over the course of the school year to explain the difference? This exercise can promote children's grasp of the concept of "then" and "now," but also connect past events to present and future activities.

**Cognition and Knowledge of the World**  
PreK Content Area: **Social Studies** -- Geography

**PreK Benchmark:** Children develop a basic awareness of self as an individual.

**Benchmark Indicators:**

- Child identifies him/herself by using characteristics such as gender, ethnicity, race, religion, language and culture.
- Child discusses that each person has likes and dislikes.
- Child describes how each person is unique and important.

**PreK Benchmark:** Children will demonstrate an awareness of self within the context of family.

**Benchmark Indicators:**

- Child identifies as a member of a family.
- Child identifies family members, family characteristics and functions.
- Child adopts the roles and functions of family members.
- Child states how families are similar and different.

**PreK Benchmark:** Children develop an understanding of self within the context of community.

**Benchmark Indicators:**

- Child describes his own community and/or cultural group.
- Child describes how people within a community are alike and different (e.g. eat different foods, wear different clothing; speak different languages).
- Child recognizes some community workers and describes what they do.
- Child understands that communities are similar and different.
- Child demonstrates and describes that all people need others.

**PreK Benchmark:** Children will demonstrate awareness and appreciation of their own culture and other cultures.

**Benchmark Indicators:**

- Child talks about and/or shows items related to their family and cultural traditions to others.
- Child questions why and/or how people are similar/different.
- Child describes some of the holidays, dances, foods, costumes and special events, related to his/her own culture.
- Child demonstrates an understanding of similarities and differences between and among individual people and families.

**PreK Benchmark:** Children demonstrate knowledge of the relationship between people, places, and regions.

**Benchmark Indicators:**

- Child identifies features of own home and familiar places.
- Child names the street, neighborhood, city or town where he/she lives.
- Child uses words that indicate direction, position and relative distance.
- Child describes topographical features of familiar places (hill, river, roads, mountains, etc.).
- Child creates representations of topographical features in art work, and/or while playing with blocks, sand or other materials.
- Child is aware of his/her surroundings.

**Cognition and Knowledge of the World**  
PreK Content Area: **Social Studies – History**

**PreK Benchmark:** Children will develop an understanding of how people and things change over time and how to relate past events to their present and future activities.

**Benchmark Indicators:**

- Child identifies routines and common occurrences in his/her life.
- Child identifies changes over time in themselves, their families, and in their wider community.
- Child retells important events in sequential order.
- Child demonstrates interest in current events that relate to family, culture, and community.
- Child uses words and phrases that differentiate between events that happen in the past, present and future, e.g., uses phrases like “when I was a baby...” or “before I moved to my new house.”

**Cognition and Knowledge of the World**  
PreK Content Area: **Social Studies -- Civics, Citizenship, and Government**

**PreK Benchmark:** Children demonstrate an understanding of roles, rights, and responsibilities.

**Benchmark Indicators:**

- Child recognizes that all children and adults have roles, rights, and responsibilities at home, school, in the classroom and in the community.
- Child expresses that rules are for everyone.
- Child identifies rules that protect him/herself and others.
- Child explains that rules affect children and adults.
- Child describes possible consequences when rules are not followed.

**PreK Benchmark:** Children begin to learn the basic civic and democratic principles.

**Benchmark Indicators:**

- Child participates in making group rules and/or rules for daily routines and transitions.
- Child follows rules and may remind others of the rules.
- Child applies the skills of communication, cooperation, respect and empathy with others.
- Child demonstrates preferences and choices by participating when the class votes to make simple decisions.

**Cognition and Knowledge of the World**  
**PreK Content Area: Social Studies -- Economics**

**PreK Benchmark:** Children develop a basic understanding of economic concepts within a community.

**Benchmark Indicators:**

- Child demonstrates an understanding that money is needed to exchange for some goods and services.
- Child demonstrates understanding that money comes in different forms, i.e., coins and paper money.
- Child recognizes the roles/contributions of community workers as they produce goods/services that people need.
- Child recognizes that goods and services may be purchased using different forms of payment, (e.g., coins, paper money, checks, electronic payment, credit cards).

**Cognition and Knowledge of the World**  
**PreK Content Area: Social Studies -- Career Development**

**PreK Benchmark:** Children demonstrate interest and awareness about a wide variety of careers and work environments.

**Benchmark Indicators:**

- Child asks questions about and shows an interest in the jobs of his/her family members and/or “community helpers”.
- Child recognizes that people depend on “community helpers” to provide goods and services.
- Child identifies the tools and equipment that correspond to various roles and jobs.
- Child takes on the role of a “community helper”, e.g., dramatic play or in acting out a story or song.
- Child indicates an interest in a future career by making statements like, “I want to be a firefighter when I grow up.”
- Child talks about a parent’s, a relative’s or a neighbor’s job.

## **The Arts**

Young children engage in pretend play to process their ideas about their world and the people in it. Research findings link dramatic play to children's cognitive, language, and social development, so it is important for caregivers to provide not only props and space, but also unstructured time, encouragement and positive feedback for dramatic play to occur. Fortunately, there are many forms of art through which children can express their thoughts, ideas, feelings, and wishes. Therapists have long used the arts to help children identify and resolve their emotions through media such as drawing, painting, and sculpting. The same is true for music and movement. Exposing children to music, in all its forms, has many benefits for cognitive, physical, social, and emotional development. Experts agree that actively participating in music – whether singing, playing an instrument, or dancing – helps children perform better in reading and math, play more cooperatively with others, control their bodies in space, and build their self-esteem. Even listening to music has its benefits, such as honing a child's ability to detect patterns, which is critical for emergent reading. And, listening to the most basic instrument – one's own voice – can help children distinguish between playground voices, inside voices, whispers, and silence, attributed to strengthening discrimination skills.

Cognition and Knowledge of the World  
PreK Content Area: **The Arts** -- Visual Arts

**PreK Benchmark:** Children will express themselves and represent what they know, think, believe and feel through visual arts.

**Benchmark Indicators:**

- Child experiments with a variety of mediums and methods of using art materials (such as: using a big brush to paint broad strokes, combining colors, etc.).
- Child shows an interest in what can be created with tools, texture, color and technique.
- Child uses materials to build and create “pieces” that represent another item (blocks become a castle; clay becomes a snake)
- Child chooses materials and subjects with intent and purpose.
- Child paints, draws and constructs models based on observations.

Cognition and Knowledge of the World  
PreK Content Area: **The Arts** -- Visual Arts

**PreK Benchmark:** Children respond and react to visual arts created by themselves and others.

**Benchmark Indicators:**

- Child expresses an interest in drawings, sculptures, models, paintings, and art creations of others.
- Child identifies similarities and differences among samples of visual art.
- Child share opinions about visual arts, creations, and experiences.

Cognition and Knowledge of the World  
PreK Content Area: **The Arts** -- Music

**PreK Benchmark:** Children will express themselves by engaging in musical activities

**Benchmark Indicators:**

- Child participates with increasing interest and enjoyment in a variety of music activities including listening to music, singing songs, performing finger plays, and experimenting with various musical instruments.
- Child enjoys singing, making up silly and rhyming verses, imitating rhythmic patterns, and using music to tell stories and express feelings.
- Child engages in music activities having different moods, tempos, and rhythms.
- Child uses and explore traditional and non traditional sound sources including those that are electronic.
- Child creates sounds using traditional instruments (bells, drums, recorders, etc) and non-traditional instruments (tin cans, oatmeal boxes, containers filled with water).

Cognition and Knowledge of the World  
PreK Content Area: **The Arts** -- Music

**PreK Benchmark:** Children will respond and react during musical activities.

**Benchmark Indicators:**

- Child observes a variety of musical performances, both vocal and instrumental.
- Child moves and keeps rhythm to different kinds of music.
- Child reacts to music through oral, written or visual expression.
- Child compares and contrasts different samples of music.
- Child expresses his/her preference for certain kinds of music.
- Child repeats, responds and/or reacts to lyrics and/or melodies.

Cognition and Knowledge of the World  
PreK Content Area: **The Arts** -- Theater/Dramatic Play

**PreK Benchmark:** Children will participate in a variety of dramatic play activities to represent fantasy and real life experiences.

**Benchmark Indicators:**

- Child represents fantasy, real-life, imagination, and literature through dramatic play.
- Child assumes the role of something or someone else and be able to speak in the appropriate manner and tone.
- Child participates in teacher-guided and/or spontaneous dramatic play activities such as acting out a story.
- Child uses basic props, and costume pieces to establish time, setting, and character

Cognition and Knowledge of the World  
PreK Content Area: **The Arts** -- Theater/Dramatic Play

**Pre-K Benchmark:** Children will respond and react to theater and drama productions.

**Benchmark Indicators:**

- Child demonstrates age-appropriate behavior when observing theatre and drama.
- Child expresses his/her feelings about theatrical or dramatic productions or experiences through oral, written or visual expressions.

Cognition and Knowledge of the World  
PreK Content Area: **The Arts** -- Dance/Creative Movement

**PreK Benchmark:** Children will express what they know, think, feel and believe through dance and creative movement.

**Benchmark Indicators:**

- Child demonstrates concepts (feelings, directions, words, ideas, etc.) through creative movement.
- Child uses movement to interpret or imitate feelings, animals, and such things as plants growing, or a rainstorm.
- Child uses creativity using his/her body (dance, march, hop, jump, sway, clap, snap, stomp, twist, turn, etc.).
- Child uses creative movement props such as crepe paper, streamers, hoops, and scarves to create special movements and dances.
- Child demonstrates a wide variety of movements and positions.
- Child learns simple, repetitive dance steps and routines.
- Child moves in spontaneous and imaginative ways to music, songs, rhythm, and silence.

Cognition and Knowledge of the World  
PreK Content Area: **The Arts** -- Dance/Creative Movement

**PreK Benchmark:** Children will respond and react to dance and creative movement.

**Benchmark Indicators:**

- Child imitates parts of dance or movement activity that he/she enjoys.
- Child compares and contrasts different forms of dance.
- Child demonstrates age appropriate audience behavior when observing dance and creative movement productions.
- Child describes interpretations and reactions to dance and movement experience (e.g., drawing a picture, acting it out, retelling a story).

Cognition and Knowledge of the World  
PreK Content Area: **The Arts** – Cultural Differences

**PreK Benchmark:** Children will express an understanding of artistic difference among cultures.

**Benchmark Indicators:**

- Child compares his/her artistic creations with those from other cultures.
- Child describes similarities and differences in dance and creative movements from other cultures.
- Child distinguishes between different sounds of music and types of instruments from other cultures.
- Child discusses dances and dramatizations from various cultures.

## **Technology**

There was a time when preschoolers were well prepared for school if they had a new art smock and a box of crayons. Today, technology is changing the way in which children learn and develop literacy, math, language, communication, social and problem solving skills. Children must ultimately be prepared to function as knowledgeable, productive, independent, creative thinkers in a technology-based society.

Technology is the systematic application of knowledge, materials, tools, and skills that extend human capabilities. It is a visible part of children's every day lives and it includes a broad range of tools (computers, telephones, MP3 players, cameras). While important, computers and instructional tools that use computers are only a few of the many technological advances we use today. Technologies developed through engineering include the systems that power our neighborhoods and schools and extend learning in our classrooms. Prekindergarten "play" has always included building with blocks, woodworking, playing with water, digging in sand, and molding clay. These activities still make up a part of the preschoolers day but involve a broader understanding of the concepts of engineering and technology. When a child constructs an object with wood and glue or can explain how a see-saw works, he or she is demonstrating an understanding of technology. Technology tools in the classroom (both traditional and digital technology) support a learner-centered and play-oriented early childhood curriculum.

Computers and other digital technology are powerful tools for supporting all learning in the early childhood classroom and can be integrated into classroom curricula, not merely as isolated curriculum components or centers. Children should be taught how to use technology and be provided opportunities to use it independently or cooperatively as in other learning centers. Computer and digital technology have provided many new tools to assist teachers as a means of supporting educational goals and outcomes.

Cognition and Knowledge of the World  
PreK Content Area: Technology

**PreK Benchmark:** Children describe types of materials and how they're used.

**Benchmark Indicators:**

- Child describes characteristics of materials in the environment.
- Child explains some uses for materials, e.g., wood, fur, plastic.
- Child constructs structures with various materials to determine which do/don't work to achieve the desired purpose, (e.g., glue, tape; paper, cardboard, foam, plastic, wood; straws, spools).

**PreK Benchmark:** Children explore and use various types of tools appropriately.

**Benchmark Indicators:**

- Child identifies the functions of certain tools (e.g. cell phone, pulley, hammer, hearing aid, microwave).
- Child follows simple directions for appropriate use of tools and demonstrates how they are used (e.g. computer, hammer, digital media or simple machine).
- Child describes and uses a variety of tools independently or with assistance (e.g. scissors, nut and bolt, incline plane, or lever).
- Child uses common tools to create simple objects or structures.
- Child invents and/or constructs simple objects or structures using common tools and materials in a safe manner (e.g., wood, glue, rulers, sandpaper, hammer, etc.).

**PreK Benchmark:** Children express an understanding of how technology affects them in daily life, and how it can be used to solve problems.

**Benchmark Indicators:**

- Child identifies examples of technology used in daily life (e. g., telephone, computers, see-saw, car or wagon).
- Child describes how technology can make finding information, completing tasks and solving problems faster and easier.
- Child explains the purpose of specific technologies.
- Child identifies examples of how technology affects the environment, including home and school environments.

**PreK Benchmark:** Children understand the operation of technology systems.

**Benchmark Indicators:**

- Child uses input and output devices to successfully operate technology systems (e.g. keyboard, monitor, printer, vending machine).
- Child uses appropriate vocabulary when describing the nature and operation of a technological system (e.g. pedal power moves a bicycle, gas moves a car, batteries operate a toy).
- Child gives examples of how technological systems are used (e.g. internet)

**PreK Benchmark:** Children use their understanding of technology to increase their learning.

**Benchmark Indicators**

- Child uses computer to write, draw, and explore concepts.
- Child learns basic skills by using age appropriate computer programs

Child uses technology tools independently (e.g. interactive digital media, instructional media games, digital camer