NATURE AND SCIENCE

Why nature and science are important:

Science is an active process of inquiry and investigation, not a table of collections. It is about thinking and acting, asking questions and solving problems. Children are natural scientists in everything they do, testing things out, making discoveries, squeezing a banana, picking up an earthworm, tasting dirt, looking at rocks, they use all of their senses — touch, smell, taste, hearing and sight constantly. This is emergent scientific thinking, to help this means to allow children to find the answers for themselves. When you ask questions that begin with how, why, what you help them see that there are a lot of interesting things to wonder about and all kinds of way to experiment with materials to help find the answers.

What Children Learn:

- How to identify problems
- How to make predictions
- How to experiment and find solutions
- How to observe what is happening
- How to think and talk about what we do and see
- How to understand natural processes
- Learn new vocabulary
- How to enjoy the world around us
- How to group into categories
- How to observe likenesses and differences
- How to appreciate nature and develop a sense of wonder

What materials should be available:

- Collections of natural objects; leaves, seashells, rocks, pinecones, birds nests
- Living things; plants, a garden that the classroom takes care of, class pet, window bird feeder, aquarium, ant farm, worm farm
- Nature/science books (must have realistic pictures, photos or drawings and tell facts), games (must be realistic and fact based) or toys (should realistically portray natural life like plastic sets of animals, puzzles with nature pictures or natural sequencing)
- Nature/science activities (this requires materials that encourage or allow children to experiment with scientific concepts or to observe scientific processes); magnets with objects to experiment with, magnifying glasses with things to look at, sink/float activities, racing cars down slopes, smelling/ matching cans, shaking cans with different sounds, color paddles, tasting/comparing, using thermometers/gauges, microscopes, chart/graphing, cooking projects
ECERS:

In order to achieve a score of 5 or above in nature and science materials need to be accessible for a substantial portion of the day. Materials need to be rotated, well organized and in good condition. Many (approx. 3-5 of examples of three categories, collections of natural objects, living things, nature/science books, games, toys and nature/science activities) developmentally appropriate material of various types must be available daily. Everyday events used as a basis for learning about nature and science (ex. discussing the change of seasons) must occur. Books, pictures and/or audio/visual materials need to be used to add information and extend children’s hands-on experiences. Nature and Science activities requiring more input from staff must be offered at least every two weeks (ex. Measuring rainfall).

How to expand on nature and science through conversation:

- Ask open-ended questions (that require children to think and respond): “What do you think might happen if...?” “How do you think we will find out...?” “What do you see happening when...?” “Why do you think that happened...?” “How would you describe what you see?”
- Expand vocabulary: collection, experiment, similar/different, nature, five senses, magnify, magnets, sink/float, chart/graph, compare, tracking
- Ask questions that encourage children to use information: “Which kind of sand do you think will make a bigger pile, wet or dry, why do you think that?” “Which wall is the strongest, why, how could you test that, what did you find out?”
- Reinforce nature and science using descriptive comments: Look at all of the different shapes of clouds there are today. Look at all of the colors that the leaves on that tree have turned to. See the beautiful rainbow after it has rained.
- Help children recreate the world around them by asking questions and making suggestions that help extend their ideas.
- Ask questions about the process: “What do you think might happen if we do not water one plant and water another one?” “How can we find out?” “Why do you think that happened?” Describe what will happen.

- Teach problem solving: “How can we find out what will happen?” “Why do you think that is happening?” “How could you test your thoughts?” “How can you best describe what is happening, journals, pictures, drawing, graphs?” “How could you keep track of the progress?”

When you comment on or ask children about their work, you are conveying the following to them:

- I am aware of what you are doing
- I am interested in your efforts and therefore in you
- I will help you look closely at your own work
- I am aware of your growing confidence

All of these interactions are very important in helping children develop self-confidence and self-esteem.