

IDAHO EARLY LEARNING EGUIDELINES

GOAL 43: CHILDREN FURTHER ENGAGE IN EXPLORING AND MAKING SENSE OF THE NATURAL WORLD BY ASKING QUESTIONS AND MAKING PREDICTIONS ABOUT CAUSE AND EFFECT RELATIONS THAT CAN LEAD TO GENERALIZATIONS.

Domain 4: General Knowledge

Sub-Domain: Science

[Birth through 8 Months](#)

[6 to 18 Months](#)

[16 to 38 Months](#)

[36 to 60 Months](#)

[60 Months through Kindergarten](#)

DOMAIN 4: GENERAL KNOWLEDGE

SUB-DOMAIN: SCIENCE

SCIENTIFIC INQUIRY—THINKING, ASKING, ACTING, AND SOLVING PROBLEMS

GOAL 43: CHILDREN ENGAGE IN EXPLORING AND MAKING SENSE OF THE NATURAL WORLD BY ASKING QUESTIONS AND MAKING PREDICTIONS ABOUT CAUSE AND EFFECT RELATIONS THAT CAN LEAD TO GENERALIZATIONS.

| Age Range | Developmental Growth | Child Indicators | Caregiver Strategies |
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| <p>Birth through 8 Months</p> | <p>Engages and explores the physical and natural world.</p> | <ul style="list-style-type: none"> ▪ Uses senses to begin understanding cause and effect during daily experiences and routines. ▪ Uses sucking, holding, looking, touching, throwing, and dropping in sensory explorations. ▪ Kicks, reaches, rolls, and makes sounds to gain a desired object. ▪ Shows interest and surprise when events occur that do not follow expected sequences (e.g. shows surprise when a ball rolls into a tube and does not roll out at the opposite end). ▪ Watches and predicts the actions of people, objects, and events in the world around them. ▪ Shows preference or discomfort given specific sensory experiences (e.g. vigorously moving toward or away from objects and people). | <ul style="list-style-type: none"> ▪ Be certain the environment is absolutely safe for the baby to explore (e.g. make certain the crib is free of hazards, the floor during floor time is clear of hazards, mealtime environments are hygienic and clear of hazards, and adult supervision is close and constant). ▪ Offer safely suspended toys to bat and kick, especially those that make sounds. ▪ Provide toys that change colors, patterns, or sounds when rolled or moved. ▪ Take babies outside to see different light, longer distances, and feel temperature changes and breezes. ▪ Wait for child to gesture or motion or make a sound as a signal for help or assistance. ▪ Smile, nod, and verbally acknowledge the child's observations and explorations. ▪ Encourage child to try out ideas, make mistakes, and develop contradictions. ▪ Offer safe natural materials (leaves, shells, snow, and food items) for free exploration, being sure to closely supervise. ▪ Offer responsive materials to explore. ▪ Create an environment that inspires child to figure out how to do something. ▪ Offer opportunities for infants to use two or more senses simultaneously (e.g. put a rattle in a box for the baby to discover as you shake it). ▪ Provide toys and materials that can be used in different ways (balls bounce and roll and can be tossed into a container). ▪ Refrain from intervening too quickly as child explores sensory experiences. Wait for the child's looks for help or verbalizations, then, offer help immediately. ▪ Verbally describe the results of child's actions (e.g. "You dropped the spoon." or "Feel the dog's soft fur."). ▪ Encourage repetitive activities such as "peek-a-boo." ▪ Talk with child about objects and events (e.g. "Is that soft? Is that warm?"). |

| DOMAIN 4: GENERAL KNOWLEDGE | | | |
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| SUB-DOMAIN: SCIENCE | | | |
| SCIENTIFIC INQUIRY—THINKING, ASKING, ACTING, AND SOLVING PROBLEMS | | | |
| GOAL 43: CHILDREN FURTHER ENGAGE IN EXPLORING AND MAKING SENSE OF THE NATURAL WORLD BY ASKING QUESTIONS AND MAKING PREDICTIONS ABOUT CAUSE AND EFFECT RELATIONS THAT CAN LEAD TO GENERALIZATIONS. | | | |
| Age Range | Developmental Growth | Child Indicators | Caregiver Strategies |
| 6 to 18 Months | Explores cause and effect relations through observation and trial and error. | <ul style="list-style-type: none"> ▪ Uses senses to initiate trial and error problem solving. ▪ Attempts to repeat cause and effect events (e.g. pushing bowl off highchair tray). ▪ Drops objects; then looks to see where the object lands. ▪ Fills and dumps containers with objects. ▪ Observes and uses single word descriptions to explain and predict outcomes and phenomenon. ▪ Looks for other’s responses when surprised by events that do not follow expected sequences. ▪ With increased motor skills, actively pursues an object that disappears in an unusual location displaying object permanence. ▪ Solves simple problems using a series of actions, an object, or a caregiver to reach a goal (e.g. pulling a string to reach an attached toy). ▪ Imitates a caregiver’s action(s) to solve a problem. ▪ Demonstrates persistence when trying to solve a problem (e.g. fitting a puzzle piece in a space). | <ul style="list-style-type: none"> ▪ Create an environment that inspires child to have ideas and figure out how to do something to cause a reaction (e.g. stacking blocks and knocking them over). ▪ Encourage child to try out ideas, make mistakes, and develop contradictions. ▪ With supervision, offer materials for child to explore, compare, and describe (e.g. leaves, water, snow, and food items). ▪ Intentionally promote development of scientific reasoning by providing responsive materials to explore. ▪ Promote reasoning and problem-solving skills by making time for children to observe, experience, and label a variety of materials. ▪ Each day, provide containers, scoops, sponges, funnels, shovels, and such for water and other sensory play at a sensory table. ▪ Refrain from intervening too quickly as child explores problem-solving experiences and help point out, describe, and discuss the results of child’s actions. ▪ Wait for child to gesture, motion, or verbally signal for help or assistance. ▪ Acknowledge, encourage, and support explorations and attempts at problem-solving. ▪ Offer environments where children are safe and free to explore learning and solve problems independently. This means adults are attentive to the child’s actions, but do not interfere with their play, rather they intervene when the child shows frustration. ▪ Resist offering your own solutions until the child has time to explore and try out solutions. ▪ Allow and encourage repetitive activities such as dropping and picking up objects. ▪ Model problem-solving behaviors that are developmentally within child’s ability to imitate. ▪ Talk with child about natural objects and everyday events (how does food smell, taste, or feel.). |

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| Age Range | Developmental Growth | Child Indicators | Caregiver Strategies |
| 16 to 38 Months | Varies actions to see what happens as a result (cause and effect). | <ul style="list-style-type: none"> ▪ Uses senses and trial and error to solve problems. ▪ Repeats to see if results are the same. May look to caregiver for reaction or explanation. ▪ Intentionally uses a series of actions, an object, or a caregiver to reach a goal or outcome. ▪ Imitates and begins to vary a caregiver's action(s) to solve a problem. ▪ Uses trial and error to find possible solutions to a problem (moving a puzzle piece around to find the right place). ▪ Creates and uses simple tools to solve problems or test a reaction (e.g. sticks, shovel, bucket, or hammer). ▪ Initiates action/reaction scenarios (e.g. throwing rocks in a pond, stomping in a puddle). | <ul style="list-style-type: none"> ▪ Create an environment that inspires child to have ideas and figure out how to do something (e.g. provide open-ended materials, combinations of materials, and easy access to a variety of props and materials). ▪ Provide toys and surfaces where children push, pull, and transport objects. ▪ Encourage child to try out ideas, make mistakes, and develop contradictions. Talk about what happens. ▪ Encourage child to explore, compare, and describe safe natural materials (leaves, shells, snow, and food items) according to observable similarities and differences. ▪ Actively promote development of scientific reasoning by providing safe environments and responsive materials to explore, such as play dough, mud, sand, and water. ▪ Plan outdoor environments and experiences that stimulate experimentation and questions. ▪ Promote development of reasoning and problem-solving skills by making available problem-solving opportunities to observe, experience, and explore using a variety of materials that further encourage experimentation with possible solutions. ▪ Provide toys and materials that can be used in different ways to encourage intentional problem solving and exploration. ▪ Provide safe cooking experiences (e.g. stirring ingredients in a bowl, cutting a slice of cheese with a plastic or safe knife “cut some bites of cheese—how big is a bite?”). ▪ Add simple experiments to activities (e.g. during food preparation, ask: “What happens when you squeeze the empty egg shell in your hand?”). ▪ Refrain from intervening too quickly as child explores problem-solving experiences, and discuss and experiment with solutions and the results of their experiments. ▪ Wait for child to gesture, motion, or verbalize a request for help or |

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| | | | <p>assistance.</p> <ul style="list-style-type: none">▪ Acknowledge, encourage, and support explorations and attempts at problem-solving and new learning.▪ Emphasize freedom to explore learning and problem-solving opportunities rather than providing or emphasizing predetermined solutions or outcomes.▪ Ask questions such as "What do you think the ball will do when you drop it?" |
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| Age Range | Developmental Growth | Child Indicators | Caregiver Strategies |
| 36 to 60 Months | Investigates unfamiliar phenomena using both trial and error and systematic trials, with assistance. | <ul style="list-style-type: none"> ▪ Creates strategies (from trial and error) to explore attributes and solve problems. ▪ Uses tools for sensory exploration in a trial and error fashion. ▪ Observes, describes, and predicts the phenomenon and outcomes. ▪ Uses everyday routines and events as springboards to systematic thinking (e.g. participates in food preparation and cooking, including mixing ingredients, measuring, kneading dough, observing and describing how ingredients change and taste.) ▪ Verbalizes observations. ▪ Uses questioning as a way to engage conversation rather than as an intended means for gathering information. ▪ Shows curiosity and interest about familiar/unfamiliar and living/nonliving things. ▪ Within cultural norms, shows awareness and respect for living things. ▪ Makes simple predictions and inferences about cause and effect relations based on observations, explorations, and experimentations with objects and events in the natural world. ▪ Compares predictions with actual observations (e.g. predicts what will | <ul style="list-style-type: none"> ▪ Create an environment that inspires child to have ideas and figure out how to do something. ▪ Provide an outdoor environment with sand, water, sand tools, wheel toys, and props to promote open-ended play and offer cause and effect moments. ▪ Encourage child to try out ideas, make mistakes, and develop contradictions and ask, “What do you think will happen if...” ▪ Encourage child to actively explore, compare, and describe safe natural materials (leaves, shells, snow, and food items) according to observable similarities and differences. ▪ Encourage child to observe patterns and offer possible predictions through questions (e.g. “What will happen if we put this flower in a vase without water?”). ▪ Provide opportunities for food preparation and cooking (e.g. pat the dough into tortillas and cook them, or pour eggs into a pan and watch them change as the eggs are scrambled, and, then, thinking about how the eggs in the muffin mix will change in the oven). ▪ Provide child with bubble solution and a variety of wands and household items (ladles with holes, spatulas, funnels, strawberry baskets, straws) and encourage them to question and predict what kind of bubbles different types of wands will make. ▪ Provide daily opportunities for child’s exploration of sand, water, mud, and pebbles, with tools for pouring and manipulating; help child question what will happen. ▪ Provide child with simple machines such as flashlights or toy cars to take apart and put back together (flashlight). ▪ Provide wheel toys and slopes and ramps to observe and question how they might move. ▪ Provide child opportunities to explore, observe, and describe the properties of magnets with different materials such as fabric, plastic toys, |

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| | | <p>happen as different sized toy cars roll down a ramp, and then shows interest and perhaps surprise at what happens).</p> <ul style="list-style-type: none"> ▪ Makes drawings of observed events. ▪ Makes predictions about observed changes in the environment that lead to generalizations. ▪ Connects math to science by using measurement tools and counting phenomenon or events. | <p>nuts and bolts, or coins).</p> <ul style="list-style-type: none"> ▪ Offer many natural experiences that encourage child to explore, describe, and classify according to interests (e.g. "Which of these insects crawl and which ones fly?"). ▪ Encourage children to act on their own observations of patterns and make predictions (e.g. add varying amounts of milk to pancake batter to see what happens when pancakes are cooked and eaten). ▪ Offer ways for children to document the outcomes of their predictions with what they see (e.g. "What happened with the pancakes? Did they look, taste, or cook the way you thought they would as you changed the amount of milk you put in the batter?"). ▪ Provide opportunities for child to mix colors and make predictions using paint, play dough, colored water). ▪ Provide a variety of measurement tools to explore attributes such as weight, lengths, and volume. |
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| Age Range | Developmental Growth | Child Indicators | Caregiver Strategies |
| 60 Months through Kindergarten | Plan and conduct intentional investigations to explore questions or problems. | <ul style="list-style-type: none"> ▪ Combines sensory exploration with intentional, specific strategies to solve problems and make predictions that lead to generalizations about phenomenon and objects. ▪ Uses investigative tools (magnifiers, magnets, pulleys, and string) to gather information and extend understanding. ▪ Uses books and electronic information to gather information about a favorite topic (e.g. spiders, cranes, recipes). ▪ Makes inferences, predictions, and generalizations based on observations and experiences. ▪ Makes drawings with some labels and dictates words for adult to write about events and observations. ▪ Makes observations and notes over several days of an experiment (beans sprouting). ▪ Increasingly tries an experiment more than once or twice. ▪ Compares predictions with actual observations. ▪ Asks questions about objects, organisms, and events in the environment. ▪ Makes predictions about the environment and generalizes outcomes to the natural world. | <ul style="list-style-type: none"> ▪ Create an environment that inspires child to have ideas and figure out how to do something. ▪ Encourage child to try out ideas, make mistakes, and develop contradictions. ▪ Provide child with an assortment of investigative tools and devices to explore and make predictions and generalizations about observations (magnifiers, binoculars, telescopes, and microscopes; weights and balancing scales; tubes and funnels; bicycle chain and gear sprockets; animal guide books). ▪ Offer sensory table play with increasingly complex tools and measuring options (e.g. things with holes that float and sink, tubes and pipes, containers with marked measure, or variety of sizes and styles of squirt bottles). ▪ Offer recipes in word and picture formats and help children alter or vary the recipe ingredients, based on predictions about what they might like to combine, or add to a recipe (e.g. raisins to a bread recipe, or items to include for making a pizza or taco). ▪ Encourage child to act on their own observations of patterns, make predictions, draw pictures, and write stories or recipes that reflect outcomes (how to make thicker pancakes; how to make thinner pancakes). ▪ Provide opportunities and resources for getting more information (e.g. books and computer resources). ▪ Ask questions for further explorations, “What will happen to the cars if you make the block ramp higher or longer?” Provide child with an assortment of investigative tools to draw and write about their observations, predictions, and generalizations (“Which items are magnetic and which items are not?”). ▪ Support persistence and trying an experiment over and over to get same or different results. Ask real questions and listen to children’s answers. Record their ideas and post these near the |

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| | | <ul style="list-style-type: none"> ▪ Displays curiosity and interest to organize and plan observations, explorations, and experiments with living and nonliving things and events in the environment. ▪ Takes responsibility for living things in keeping with expectations of the culture. ▪ Uses gathered information (data) to construct and communicate reasonable explanations. | <p>experiment.</p> <ul style="list-style-type: none"> ▪ Take digital pictures and videos and help children put the pictures in sequence and suggest narration for the sequences. Display the results. ▪ Listen to and discuss stories that illustrate everyday changes from the environment (e.g. seasons, growing plants, animals, food) and then make material available for children to illustrate their thoughts and dictate their stories. Help children think about what specific things they saw and discussed and then help them make generalizations about general situations that are similar. |
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