

Grade 3 – 5 Science Standards and Benchmarks

Standard 1: Students will understand atmospheric processes and the water cycle

Benchmarks:

Level II 3-5

- 1.1 Knows that water exists in the air in different forms (e.g., in clouds and fog as tiny droplets; in rain, snow, and hail) and changes from one form to another through various processes (e.g., freezing, condensation, precipitation, evaporation)
- 1.2 Knows that the Sun provides the light and heat necessary to maintain the temperature of the Earth
- 1.3 Knows that air is a substance that surrounds us, takes up space, and moves around us as wind
- 1.4 Knows that most of Earth's surface is covered by water, that most of that water is salt water in oceans, and that fresh water is found in rivers, lakes, underground sources, and glaciers

Standard 2: Students will understand Earth's composition and structure

Benchmarks:

- 2.1 Knows how features on the Earth's surface are constantly changed by a combination of slow and rapid processes (e.g., weathering, erosion, transport, and deposition of sediment caused by waves, wind, water, and ice; landslides, volcanic eruptions, earthquakes, drought)
- 2.2 Knows that smaller rocks come from the breakage and weathering of larger rocks and bedrock
- 2.3 Knows that rock is composed of different combinations of minerals
- 2.4 Knows the composition and properties of soils (e.g., components of soil such as weathered rock, living organisms, products of plants and animals; properties of soil such as color, texture, capacity to retain water, ability to support plant growth)
- 2.5 Knows that fossils provide evidence about the plants and animals that lived long ago and the nature of the environment at that time

Grade 3 – 5 Science Standards and Benchmarks

Standard 3: Students will understand the composition and structure of the universe and the Earth's place in it

Benchmarks:

- 3.1 Knows that night and day are caused by the Earth's rotation on its axis
- 3.2 Knows that the Earth is one of several planets that orbit the Sun and that the Moon orbits the Earth
- 3.3 Knows that the patterns of stars in the sky stay the same, although they appear to slowly move from east to west across the sky nightly and different stars can be seen in different seasons
- 3.4 Knows that planets look like stars, but over time they appear to wander among the constellations
- 3.5 Knows that astronomical objects in space are massive in size and are separated from one another by vast distances (e.g., many stars are more massive than our Sun but so distant they look like points of light)
- 3.6 Knows that telescopes magnify distant objects in the sky (e.g., the Moon, planets) and dramatically increase the number of stars we can see

Standard 4: Students will understand the principles of heredity and related concepts

Benchmarks:

- 4.1 Knows that many characteristics of an organism are inherited from its parents (e.g., eye color in human beings, fruit or flower color in plants), and other characteristics result from an individual's interactions with the environment (e.g., people's table manners, ability to ride a bicycle)

Standard 5: Students will understand the structure and function of cells and organisms

Benchmarks:

- 5.1 Knows that plants and animals progress through life cycles of birth, growth and development, reproduction, and death; the details of these life cycles are different for different organisms

Grade 3 – 5 Science Standards and Benchmarks

- 5.2 Knows that living organisms have distinct structures and body systems that serve specific functions in growth, survival, and reproduction (e.g., various body structures for walking, flying, or swimming)
- 5.3 Knows that the behavior of individual organisms is influenced by internal cues (e.g., hunger) and external cues (e.g., changes in the environment), and that humans and other organisms have senses that help them to detect these cues

Standard 6: Students will understand relationships among organisms and their physical

- 6.1 Knows the organization of simple food chains and food webs (e.g., green plants make their own food with sunlight, water, and air; some animals eat the plants; some animals eat the animals that eat the plants)
- 6.2 Knows that the transfer of energy (e.g., through the consumption of food) is essential to all living organisms
- 6.3 Knows that an organism's patterns of behavior are related to the nature of that organism's environment (e.g., kinds and numbers of other organisms present, availability of food and resources, physical characteristics of the environment)
- 6.4 Knows that changes in the environment can have different effects on different organisms (e.g., some organisms move in, others move out; some organisms survive and reproduce, others die)
- 6.5 Knows that all organisms (including humans) cause changes in their environments, and these changes can be beneficial or detrimental

Standard 7: Students will understand biological evolution and the diversity of life

Benchmarks:

- 7.1 Knows that fossils can be compared to one another and to living organisms to observe their similarities and differences
- 7.2 Knows different ways in which living things can be grouped (e.g., plants/animals, bones/no bones, insects/spiders, live on land/live in water) and purposes of different groupings

Grade 3 – 5 Science Standards and Benchmarks

Standard 8: Students will understand the structure and properties of matter

Benchmarks:

- 8.1 Knows that matter has different states (i.e., solid, liquid, gas) and that each state has distinct physical properties; some common materials such as water can be changed from one state to another by heating or cooling
- 8.2 Knows that the mass of a material remains constant whether it is together, in parts, or in a different state
- 8.3 Knows that substances can be classified by their physical and chemical properties (e.g., magnetism, conductivity, density, solubility, boiling and melting points)
- 8.4 Knows that materials may be composed of parts that are too small to be seen without magnification

Standard 9: Students will understand the sources and properties of energy

- 9.1 Knows that heat is often produced as a byproduct when one form of energy is converted to another form (e.g., when machines and living organisms convert stored energy to motion)
- 9.2 Knows that heat can move from one object to another by conduction and that some materials conduct heat better than others
- 9.3 Knows the organization of a simple electrical circuit (e.g., battery or generator, wire, a complete loop through which the electrical current can pass)
- 9.4 Knows that light can be reflected, refracted, or absorbed
- 9.5 Knows that the pitch of a sound depends on the frequency of the vibration producing it

Grade 3 – 5 Science Standards and Benchmarks

Standard 10: Students will understand forces and motion

- 10.1 Knows that magnets attract and repel each other and attract certain kinds of other materials (e.g., iron, steel)
- 10.2 Knows that the Earth's gravity pulls any object toward it without touching it
- 10.3 Knows that electrically charged material pulls on all other materials and can attract or repel other charged materials
- 10.4 Knows that an object's motion can be described by tracing and measuring its position over time
- 10.5 Knows that when a force is applied to an object, the object either speeds up, slows down, or goes in a different direction
- 10.6 Knows the relationship between the strength of a force and its effect on an object (e.g., the greater the force, the greater the change in motion; the more massive the object, the smaller the effect of a given force)

Standard 11: Students will understand the nature of scientific knowledge Benchmarks:

- 11.1 Knows that although the same scientific investigation may give slightly different results when it is carried out by different persons, or at different times or places, the general evidence collected from the investigation should be replicable by others
- 11.2 Knows that good scientific explanations are based on evidence (observations) and scientific knowledge
- 11.3 Knows that scientists make the results of their investigations public; they describe the investigations in ways that enable others to repeat the investigations
- 11.4 Knows that scientists review and ask questions about the results of other scientists' work

Grade 3 – 5 Science Standards and Benchmarks

Standard 12: Students will understand the nature of scientific inquiry

- 12.1 Knows that scientific investigations involve asking and answering a question and comparing the answer to what scientists already know about the world
- 12.2 Knows that scientists use different kinds of investigations (e.g., naturalistic observation of things or events, data collection, controlled experiments), depending on the questions they are trying to answer
- 12.3 Plans and conducts simple investigations (e.g., formulates a testable question, makes systematic observations, develops logical conclusions)
- 12.4 Uses appropriate tools and simple equipment (e.g., thermometers, magnifiers, microscopes, calculators, graduated cylinders) to gather scientific data and extend the senses
- 12.5 Knows that different people may interpret the same set of observations differently

Standard 13: Students will understand the scientific enterprise

- 13.1 Knows that people of all ages, backgrounds, and groups have made contributions to science and technology throughout history
- 13.2 Knows that although people using scientific inquiry have learned much about the objects, events, and phenomena in nature, science is an ongoing process and will never be finished
- 13.3 Knows that scientists and engineers often work in teams to accomplish a task

Science Units in ISKL Melawati

Grade	Earth and Space Sciences	Life Sciences	Physical Sciences	
Prep R & J				SENSES
		Characteristics	Water	

Grade 3 – 5 Science Standards and Benchmarks

Prep S		and needs of Living Things		
Grade 1	Weather	Organisms	Solids and liquids	
Grade 2	SOILS	Life cycle of the butterfly	Changes	
Grade 3	Land and water	Plant growth		
Grade 4	Earth Structure		Motion and design	
Grade 5	Earth in Space		Electrical Circuits	