

Grade 1, Cluster 0: Overall Skills and Attitudes

Students will...

Overview

Cluster “0” comprises nine categories of specific learning outcomes related to skills and attitudes* involved in scientific inquiry, the design process, or both. In Kindergarten to Grade 2, students are introduced to scientific inquiry through observing and measuring. Students refine their design-process skills as they progress through the grades, gradually behaving more independently in planning, constructing, and testing objects and devices. Students also acquire key attitudes, an initial awareness of the nature of science, and other skills related to research, communication, the use of information technology, and cooperative learning.

Teachers should select appropriate contexts to introduce and reinforce the scientific inquiry and design process skills and attitudes within the thematic clusters (Clusters 1 to 4) over the course of the school year. For example, students in one Grade 1 class may focus on the development of cooperative group skills while using their senses to sort and classify objects in Cluster 2, while another class may focus on these skills while testing and evaluating the suitability of materials for a particular purpose as part of Cluster 3. To assist in planning and to facilitate curricular integration, many specific learning outcomes within this cluster are accompanied by links to specific learning outcomes in other subject areas, specifically English Language Arts (ELA) and Mathematics (Math). There are also links to Technology as a Foundation Skill Area (TFS).

* Cluster 0, Overall Skills and Attitudes specific learning outcomes for this grade are also presented as part of a Kindergarten to Grade 4 chart (separate attachment). The purpose of this chart is to provide support related to the tracking of the development of skills and attitudes across several grades.

Scientific Inquiry

Design Process

Initiating	<p>1-0-1a. Ask questions that lead to explorations of living things, objects, and events in the immediate environment. (ELA 3.1.2, 3.1.3) GLO: A1, C2, C5</p> <p>1-0-1b. Make predictions based on classroom experiences. GLO: A1, C2</p>	<p>1-0-1c. Recognize a practical problem in a given context. GLO: C3</p>
	<p>1-0-2a. Access information using a variety of sources. <i>Examples: picture and concept books, people, excursions, camps, CD-ROMs...</i> (ELA 3.2.2, Math SP-II.1.1, TFS 2.1.1) GLO: C6</p> <p>1-0-2b. Recognize when information answers the questions asked. (ELA 3.2.3, 3.2.5) GLO: C6, C8</p>	
Planning		<p>1-0-3a. Brainstorm, with the class, possible solutions to a practical problem, and reach consensus on a solution to implement. (ELA 1.1.3, 3.1.3) GLO: C3, C7</p> <p>1-0-3b. Create, with the class, a plan to solve a problem or meet a need. Include: identify simple steps to follow. (ELA 1.2.3) GLO: C3, C7</p> <p>1-0-3c. Develop, as a class, limited criteria to evaluate an object or device based on its function. GLO: C3, C7</p>
		<p>1-0-3d. Identify materials to be used, and explain their choices. GLO: C2, C3, C4</p>
Implementing a Plan	<p>1-0-4a. Follow simple directions while undertaking explorations. GLO: C2</p>	<p>1-0-4b. Construct an object or device to solve a problem or meet a need. GLO: C3</p> <p>1-0-4c. Test, with guidance, an object or device with respect to pre-determined criteria. GLO: C3, C5</p> <p>1-0-4d. Identify and make improvements to an object or device with respect to pre-determined criteria. GLO: C3</p>

	Scientific Inquiry	Design Process
Implementing a Plan (cont'd)	<p>1-0-4e. Respond to the ideas and actions of others in building their own understandings. (ELA 1.1.2) GLO: C5, C7</p> <p>1-0-4f. Work in cooperative partnerships and groups. (ELA 5.2.1) GLO: C7</p> <p>1-0-4g. Verbalize questions and ideas during classroom learning experiences. GLO: C6</p> <p>1-0-4h. Follow given safety procedures and rules. GLO: C1</p> <p>1-0-4i. Recognize safety symbols in their surroundings. GLO: C1</p>	
	<p>1-0-5a. Observe using a combination of the senses. GLO: C2</p>	
	<p>1-0-5b. Use, with guidance, appropriate materials and tools to measure and construct. <i>Examples: use paper clips to measure the width of a desk...</i> (Math SS-IV.1.1) GLO: C2, C3, C5</p> <p>1-0-5c. Estimate and measure the passage of time using non-standard units, and compare the duration of activities. (Math SS-VI.1.1) GLO: C2, C3, C5</p> <p>1-0-5d. Select an appropriate non-standard unit, and estimate and measure length. (Math SS-I.1.1) GLO: C2, C3, C5</p> <p>1-0-5e. Record observations using drawings and tally charts. (ELA 4.1.2., 4.2.5; Math SP-II.1.1) GLO: C2, C6</p>	
Observing, Measuring, Recording		
Analysing and Interpreting	<p>1-0-6a. Construct, with guidance, concrete-object graphs and pictographs using 1:1 correspondence. (Math SP-III.2.1) GLO: C2, C6</p> <p>1-0-6b. Compare data using quantitative terms, and ask questions about the data gathered. (Math SP-IV.1.1) GLO: A1, A2, C2, C5</p>	
	<p>1-0-6c. Place materials and objects in a sequence or in groups using a single, given attribute or a single, self-determined attribute. (Math SP-IV.2.1) GLO: C2, C3, C5</p>	

	Scientific Inquiry	Design Process
Concluding and Applying	<p>1-0-7a. Propose an answer to the initial question based on their observations. GLO: A1, A2, C2</p>	<p>1-0-7b. Propose a solution to the initial problem. GLO: C3</p> <p>1-0-7c. Identify new problems that arise. GLO: C3</p>
	<p>1-0-7d. Connect new experiences and information with prior knowledge. (ELA 1.2.1) GLO: A2</p> <p>1-0-7e. Describe, in a variety of ways, what was done and what was observed. <i>Examples: concrete materials, drawings, oral language...</i> (ELA 4.1.2, 4.1.3) GLO: C6</p>	
Reflecting on Science and Technology	<p>1-0-8a. Recognize that learning can come from careful observations and investigations. (ELA 3.3.4) GLO: A1, A2, C2</p>	<p>1-0-8b. Recognize that tools are developed in response to human needs. GLO: A3</p>
Demonstrating Scientific and Technological Attitudes	<p>1-0-9a. Willingly consider other people's views. GLO: C5, C7</p> <p>1-0-9b. Willingly observe, question, and explore. GLO: C5</p> <p>1-0-9c. Express enjoyment of science-related classroom activities. GLO: C5</p> <p>1-0-9d. Take the time to measure with care. GLO: C5</p>	

Grade 1, Cluster 1: Characteristics and Needs of Living Things

Overview

Students in Grade 1 are interested in a wide variety of living things found in their local environments as well as in those from afar. In this cluster, a study of living things provides opportunities for students to discover the many different forms life takes. Students observe similarities and differences among living things and develop an understanding of their general characteristics. As a result, students become aware that all living things, including themselves, have needs. They discover that living things can often have similar needs, but that particular needs may be unique to individual living things. While the emphasis is on shared characteristics and needs among living things, diversity is also recognized, including the variations that make each human unique.

Students will...

- 1-1-01 Use appropriate vocabulary related to their investigations of characteristics and needs of living things.
Include: characteristic, human, animal, plant, living things, needs, as well as descriptive words relating to life processes.
GLO: C6, D1
- 1-1-02 Identify major parts of the human body and describe their functions.
Examples: arms and legs for movement...
GLO: D1, E2
- 1-1-03 Identify and describe common characteristics of humans and other animals they have observed.
Examples: number of limbs, eyes, ears, skin...
GLO: D1, E1
- 1-1-04 Identify and appreciate variations that make each human unique.
Examples: eye colour, hair colour, body type...
GLO: C5, E1
- 1-1-05 Recognize that plants, as living things, come in different forms.
Examples: grass, trees, shrubs...
GLO: D1, E1

- 1-1-06 Observe and identify similarities in life processes between themselves and other living things.
Examples: they eat, sleep, grow, and breathe, and so do other living things...
GLO: D1, E1
- 1-1-07 Recognize that plants, animals, and humans, as living things, have particular needs.
Examples: plants need sunlight and water...
GLO: D1
- 1-1-08 Describe what is needed to care for a pet, a farm animal, or an indoor plant.
Examples: provide fresh water for their hamster daily, feed and bed calves regularly...
GLO: B4, B5
- 1-1-09 Compare ways in which humans and other animals meet their needs.
Examples: senses, locomotion, tools...
GLO: C2, D1, E1
- 1-1-10 Describe how humans and other living things depend on their environment to meet their needs.
Examples: the environment provides humans and other living things with food...
GLO: D2, E2
- 1-1-11 Design a representation of an environment that meets the needs of a Manitoba animal.
Examples: a model, a diagram
GLO: C3, D1
- 1-1-12 Identify hobbies and jobs that require knowledge of the needs of living things.
Examples: gardeners, nurses, zookeepers...
GLO: B4, B5
- 1-1-13 Develop, implement, and evaluate personal and group action plans that contribute to a healthy environment for themselves and for other living things.
Examples: wash hands before eating, reduce amount of waste produced by the class...
GLO: B3, B5, C4, C7
- 1-1-14 Show respect for living things in their immediate environment.
Examples: handling the class gerbil with care...
GLO: B5
- 1-1-15 Recognize that some information they receive about living things is not scientific in nature.
Examples: movie animals talking, Jack's beanstalk growing to the sky...
GLO: A1, C5, C8

Grade 1, Cluster 2: The Senses

Overview

Our awareness of the environment and the many materials that are found within it is based on our sensory experiences. Through our senses, we can detect items that may be good to eat, pose danger, or be useful. Our senses are immediate and automatic. But the ability to use our senses safely and effectively involves focus, discernment, awareness, and judgement. In this cluster, students learn more about what the senses are, how they operate, and how they must be protected. Students also refine their observation skills. These skills are critical to science (see *Grade 1, Cluster 3: Characteristics of Objects and Materials*) and can be applied to other subject areas.

Students will...

- 1-2-01 Use appropriate vocabulary related to their investigations of the senses.
Include: senses, sight, smell, hearing, taste, touch, eye, nose, ear, tongue, skin, eyelash, eyebrow, eyelid, nostril, cartilage, nose hair, as well as descriptive words related to shape, colour, lustre, wetness, temperature, taste, odour, size, texture, pitch.
GLO: C6, D1, D3
- 1-2-02 Identify the five senses and describe the main body parts with which they are associated.
Include: sight and eyes; smell and nose; hearing and ears; taste and tongue; touch and skin.
GLO: D1
- 1-2-03 Use their senses to sort and classify objects.
Examples: sort according to texture, sound, taste, or smell...
GLO: C2, D1, E1
- 1-2-04 Identify and describe parts of the eye that help to protect it.
Include: eyelash, eyebrow, eyelid.
GLO: D1
- 1-2-05 Recognize that their fingertips are especially sensitive to touch.
GLO: D1

- 1-2-06 Identify the external part of the ear, and explore to determine its function.
GLO: D1
- 1-2-07 Use smell to identify familiar substances, following safe procedures.
Examples: vinegar, cinnamon, lemon, shampoo...
GLO: C1, C2, D3
- 1-2-08 Identify parts of the nose and describe their functions.
Include: nostril, cartilage, hairs.
GLO: D1
- 1-2-09 Identify parts of the body that are involved directly and indirectly in tasting.
Include: the tongue is involved directly, the nose is involved indirectly.
GLO: D1
- 1-2-10 Identify objects and procedures that protect the body and preserve each of the senses in explorations and in daily life.
Examples: sunglasses and safety goggles for eyes, gloves and tongs for hands, plugs for ears, washing hands regularly to avoid getting a cold or pinkeye...
GLO: B3, C1
- 1-2-11 Explore to determine ways that the appearance, texture, sound, smell, and taste of objects can be altered.
Examples: sanding, cooking, painting, tuning instruments, shaping clay...
GLO: D3, E3
- 1-2-12 Describe ways in which the senses can both protect and mislead.
Examples: seeing enables us to avoid obstacles, smell of smoke tells us something is burning, smell is not reliable when we have a cold, skin may not immediately tell us when we are getting sunburned or frostbitten...
GLO: B3, C1, D1
- 1-2-13 Recognize and appreciate that humans have different capabilities for sensing the environment and can use aids to assist them.
Examples: glasses and guide dogs are used to assist people with visual impairment...
GLO: B1, C5, E1
- 1-2-14 Recognize and appreciate that humans may have different interpretations of similar sensory observations.
Examples: one student likes the taste broccoli, another does not...
GLO: C5, E1
- 1-2-15 Give examples of how the senses are important in various activities, hobbies, and jobs.
Examples: smell is important to a chef, sight is important to a baseball player...
GLO: B4

Grade 1, Cluster 3: Characteristics of Objects and Materials

Overview

In Grade 1, students are introduced to the concept of materials by exploring various objects in their immediate surroundings. Through these observations, students distinguish between objects and materials, learning that objects are made from materials with specific characteristics. They are also able to describe these characteristics clearly and precisely. By making objects from various materials, they begin to understand the connection between a material's characteristics and the specific purpose(s) for which the material is used.

Students will...

- 1-3-01 Use appropriate vocabulary related to their investigations of objects and materials.
Include: characteristic, wood, metal, plastic, cloth, waterproof, absorbent, rigid, pliable, join, recycle.
GLO: C6, D3
- 1-3-02 Explore and describe characteristics of materials using their sensory observations.
Examples: steel is hard, shiny, and cold, and makes a ringing noise when tapped...
GLO: C2, D3
- 1-3-03 Distinguish between an object and the materials used to construct it.
Examples: chairs can be made of wood, metal, plastic, cloth, leather, wicker, or a combination of these materials...
GLO: D3, E2
- 1-3-04 Identify materials that make up familiar objects.
Examples: a desk can be made up of wood, metal, and plastic...
GLO: D3, E2
- 1-3-05 Explore to identify characteristics of common materials.
Examples: waterproof/absorbent, rigid/pliable...
GLO: D3

- 1-3-06 Give examples that show how the same material can serve a similar function in different objects.
Examples: in gloves and boots, rubber is used to keep out water...
GLO: D3, E1
- 1-3-07 Test and evaluate the suitability of materials for a particular function.
Examples: test mitts made of different materials to evaluate their ability to keep hands warm and dry...
GLO: C3, D3
- 1-3-08 Evaluate and describe the usefulness of common objects for a specific task.
Examples: compare usefulness of a toothbrush, hairbrush, toilet brush, or paintbrush for cleaning a sink...
GLO: B1, C3, C4, D3
- 1-3-09 Describe ways that materials can be joined.
Examples: gluing, stapling, taping, interlocking, buttoning...
GLO: C3, D3
- 1-3-10 Use the design process to construct a useful object by selecting, combining, joining, and shaping materials.
Examples: pencil holder, crayon box, desk organizer...
GLO: C3, D3
- 1-3-11 Demonstrate ways to reduce, reuse, and recycle materials during classroom learning experiences.
GLO: B5, D3

Grade 1, Cluster 4: Daily and Seasonal Changes

Overview

By observing their environment, students become aware of changes that can occur within it, such as changes in temperature, wind, and light, and in plant and animal life. Through observations and investigations, students learn that changes often occur in cycles, including the relatively short cycle of day and night and the longer cycle of the seasons. Recognizing these cyclical patterns prepares students to deal with daily and seasonal changes. Particular attention is given to studying ways in which humans are able to live comfortably throughout the seasons.

Students will...

- 1-4-01 Use appropriate vocabulary related to changes over time.
Include: Sun, light, heat, day, day time, night time, morning, afternoon, days of the week, yesterday, today, tomorrow, seasons, shadow, characteristic, behaviour, living things, cycle.
GLO: C6, D4, D6
- 1-4-02 Recognize that the Sun is a source of light and heat.
GLO: D4, E4
- 1-4-03 Recognize that a day is divided into day time and night time based on the presence or absence of sunlight.
GLO: D6
- 1-4-04 Sequence and record events and activities that occur over the course of a day, a week, or a year.
GLO: C2
- 1-4-05 Recognize that shadows are caused by blocking light.
GLO: D4, D6
- 1-4-06 Observe and describe how the Sun appears to change position over the course of a day.
Examples: track the location of the Sun using shadows...
GLO: C2, D6

- 1-4-07 Record, describe, and compare changes in temperature at different times of the day.
GLO: C2, D4, E3
- 1-4-08 Investigate and describe changes that occur in characteristics and behaviours of living things throughout a day.
Examples: some flowers open in the morning, some animals are active at night...
GLO: D1, E3
- 1-4-09 Compare characteristics of the four seasons.
Examples: length of day, type of precipitation, temperature...
GLO: E1, E3
- 1-4-10 Describe how humans prepare for seasonal changes.
Examples: put up snow fences, take out winter clothes...
GLO: B1, C1
- 1-4-11 Identify people who help us prepare for and deal with seasonal changes.
Examples: meteorologists, snow plough operators, reporters...
GLO: B4
- 1-4-12 Identify features of buildings that help keep humans sheltered and comfortable throughout daily and seasonal cycles.
Examples: furnace, lights, air conditioners, fans, windows, blinds, walls, roof...
GLO: B1
- 1-4-13 Sort clothing to suit each season, and justify their decisions.
GLO: B1, B3, C3, C4
- 1-4-14 Describe safety precautions related to daily weather, the changing of the seasons, and weather extremes.
Examples: wearing a raincoat if rain is expected, staying indoors during a blizzard, staying off thin ice in the spring and fall...
GLO: B3, C1
- 1-4-15 Describe how humans are able to participate in non-seasonal activities.
Examples: use indoor sport centres to swim in the winter and skate in the summer...
GLO: B1, B3
- 1-4-16 Identify physical and behavioural changes that occur seasonally among Manitoba plants and animals, and discuss possible reasons for these changes.
Examples: thicker fur, migration, dormancy...
GLO: D1, E3
- 1-4-17 Use the design process to construct a device or structure that helps a Manitoba animal adjust to seasonal changes.
Examples: winter birdfeeder, dog house, dog "booties" for winter...
GLO: B5, C3