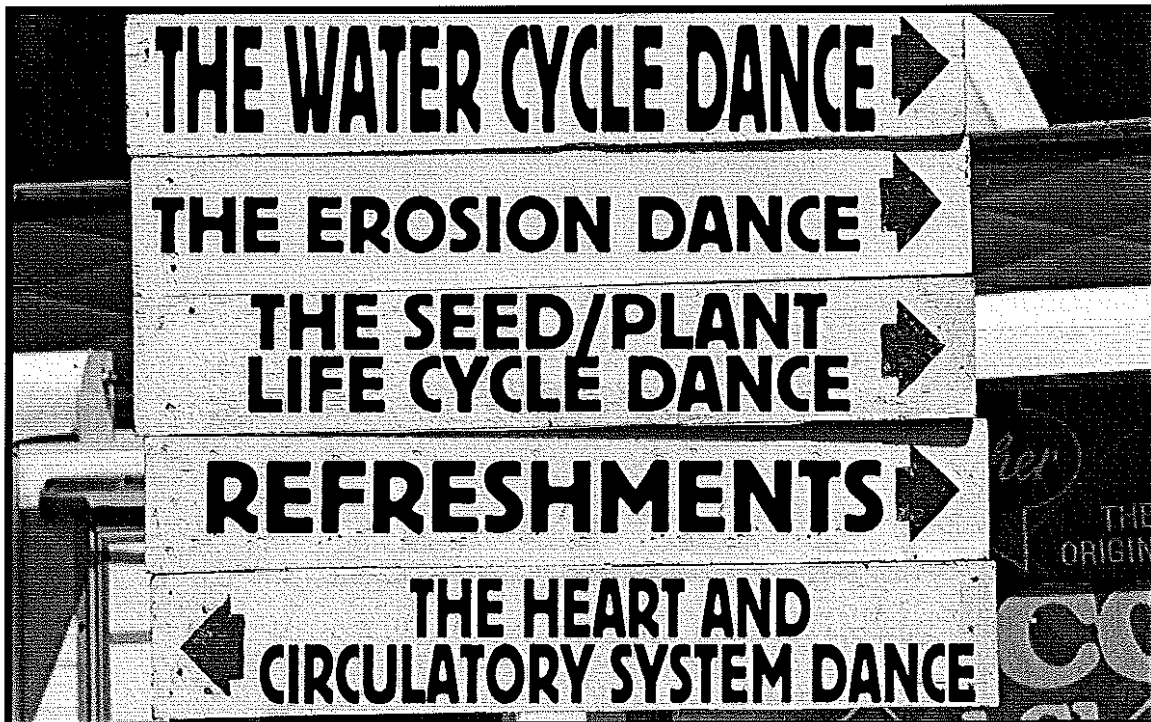


Integrating Dance and Agriculture

A Tool Kit to introduce teachers to the movement concepts and how to integrate them into curriculum.

Prepared by Jennifer Macfarlane

British Columbia Agriculture
in the Classroom Foundation
Summer Institute 2002 Unit Plan for
Grades Kindergarten to 7



Summer Institute 2002 was sponsored by:



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This document is the result of the author's participation in the BC Agriculture in the Classroom Foundations' Summer Institute for Educators. This third year level course in curriculum design is offered through the University of British Columbia's Office of Continuing Professional Education.

Participants (20 educators from Kindergarten to Grade 12) spend one week at the Montfort House Rural Resource Centre situated on UBC's Farm on Vancouver Island. Here they develop a number of practical teaching strategies for their classrooms using examples drawn from the agricultural, environmental, economic and nutritional concepts featured in the Bc Integrated Resource Packages for their particular grade or subject area.

The agricultural community sponsors participants for the costs of learning resources, tuition, meals and accommodation.

Participants taking the course for credit create teaching modules such as this to share with other educators from around the province.

Applications can be made on the BC AITC web site at www.aitc.ca/bc or directly at the AITC office. Contact Lindsay Babineau at 604-556-3088 for an application form.

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INTRODUCTION

I prefer the phrase "tool kit" over "unit" for this resource as it covers several topics and grades. It is intended to introduce the Movement Concepts and demonstrate how to integrate the dance and science curricula.

The focus of this tool kit is the integration of movement into Agriculture. The sample lessons can be adapted to fit any grade level from primary through secondary, though there are specific links to the elementary grade levels in the Science IRPs. It is my hope that once you are familiar with the movement concepts and integrating movement into your units, you will be able to take a variety of topics and create your own movement activities.

This tool kit begins with an introduction to the Movement (Dance) Concepts, including a warm-up activity for each concept that you can take directly to your classroom. Each of the four lessons is designed to focus on two concepts. You may chose to focus on only one concept but it is important to verbally remind the children as they are moving to think about and use all fifteen other concepts.

The lessons are intended to get the children moving while learning about different aspects of agriculture. They are written with the intention that the agriculture topic has already been introduced to the children. The dances are meant to help the children understand and explore these aspects of agriculture on a different level...through movement. I have also included several variations/extension activities as well as an assessment activity that will help indicate the children's grasp of these topics. While the original intent is not to perform, any of these dances can be taken to this level.

"We retain 10% of what we read,
20% of what we hear,
30% of what we see,
50% of what we see and hear at the same time,
70% of what we hear, see and say, and
90% of what we hear, see, say and DO."
- Eric Jensen

WHY MOVEMENT?

Children are always on the go, always moving. Movement begins within the womb and continues through birth, crawling and walking. Through movement, children are exploring and discovering the world around them. They reach out to touch objects, they pull themselves up onto their feet and take their first steps, and they climb and swing on monkey bars at the playground. By the time a child is 12 months old, the brain has learned 50% of EVERYTHING IT WILL EVER KNOW!

Unfortunately, in most classrooms we expect these little moving beings to suppress their urge to move. We continually remind them to sit still and listen quietly. We take away little pieces of string or broken erasers that a student is fidgeting with. What many teachers don't realise is that these children learn through movement. When we turn them into statues they stop learning.

Howard Gardner's research on Multiple Intelligences has helped us to re-discover the importance of a multi-sensory learning environment. An environment that incorporates all learners whether they are visual, auditory, or kinaesthetic to name a few.

The integration of movement in the classroom benefits all children, not just the kinaesthetic learners. Students learn body awareness, co-ordination, flexibility, and spatial awareness through movement. A child's cognitive skills develop through vocabulary building and creative problem solving, while his or her social/emotional self grows through co-operation with others and a growing sense of self-esteem. Movement truly fosters the development of the whole child: body, mind and spirit (Landalf and Gerke, 1996).

Brain research supports the use of movement in learning. It shows that an enriched environment creates brains with a thicker cortex, more dendrite branching, more growth spines, and larger cell bodies which leads to cells that communicate better (Eric Jensen, 1998). An enriched environment is multi-sensory. It provides learning opportunities through touching, listening, viewing, doing, and working alone or with others. In other words we always want to have our students SEE, SAY, HEAR and DO whatever we want them to learn. In the movement lessons I have included, your students will learn through these four methods. I hope you will take the SEE, SAY, HEAR, and DO method into all the subjects you teach.

LINKS TO THE IRPs

DANCE

Many of the dance outcomes repeat themselves, or change only slightly from Kindergarten through Grade 7. The following learning outcomes are supported by the dance activities in this tool kit. It is expected that students will:

Elements of Movement

- ♦ move safely in both personal and general space
- ♦ move in a variety of levels, pathways, and directions, using a variety of body shapes
- ♦ demonstrate an ability to balance in locomotor and non-locomotor movements
- ♦ demonstrate the principles of movement in dance
- ♦ identify appropriate terminology to describe the elements of movement

Creation and Composition

- ♦ create movements that represent patterns, characters, and other aspects of their world
- ♦ interpret and move in response to a variety of sounds, images, feelings and music
- ♦ apply the creative process to revise dance compositions

Presentation and Performance

- ♦ demonstrate a willingness to rehearse and perform dance
- ♦ demonstrate respect for the contributions of others
- ♦ demonstrate an awareness of appropriate performance skills and audience etiquette

Dance and Society

- ♦ describe the roles portrayed by dancers
- ♦ identify a variety of purposes for dance
- ♦ describe dances from a variety of historical and cultural contexts

SCIENCE

The following Science Learning Outcomes are listed by the supported activity

The Water Cycle Dance

It is expected that students will:

- ♦ differentiate between solids, liquids and gases (Grades K/1)
- ♦ describe the characteristics of water (Grades K/1)
- ♦ describe the three states of matter (Grades 2/3)
- ♦ relate changes in the states of matter to thermal energy transfer (Grades 2/3)
- ♦ relate the life processes of an organism to its use of nutrients, water and oxygen (Grade 4)
- ♦ outline the importance of water for life (Grade 4)

- ♦ use the physical properties of water to describe or illustrate the water cycle (Grade 4)
- ♦ identify common elements and molecules (Grade 5)
- ♦ demonstrate physical changes (Grade 6)
- ♦ assess the impact of chemical pollution on a local environment (Grade 7)

The Erosion Dance

It is expected that students will:

- ♦ demonstrate the effects of water and wind on rocks and soil (Grades K/1)
- ♦ describe the effects of water and wind on rocks and soil (Grades K/1)
- ♦ give examples of how the Earth's surface changes constantly (Grades 2/3)
- ♦ describe the consequence of extreme weather conditions (Grade 5)
- ♦ identify changes to matter as either chemical or physical (Grade 6)

The Plant Life Cycle Dance

It is expected that students in Grades K-3 will:

- ♦ determine the requirements of healthy plants
- ♦ demonstrate knowledge of how plants take in water, nutrients and light
- ♦ identify the stages in the life cycle of a plant
- ♦ compare and contrast different types of plant life cycles
- ♦ demonstrate how plants and other organic material can be recycled back into the environment
- ♦ describe structures that enable different plants to survive in different environments

The Circulatory System Dance

It is expected that students in Grade 5 will:

- ♦ describe the basic structure and function of the organs involved in circulation
- ♦ compare and contrast the circulatory systems of humans and various animals
- ♦ describe the relationship between the circulatory and respiratory systems

This tool kit includes activities and experiences that are based on the **PRINCIPLES OF LEARNING** as described in the Introduction to each of the IRPs:

- ♦ learning requires the active participation of the student
- ♦ people learn in a variety of ways and at different rates
- ♦ learning is both an individual and a group process

The lessons and other suggested "Agro-Dance" topics in this tool kit also link with a number of the **CROSS-CURRICULAR INTERESTS** outlined in each IRP in Appendix C:

- ♦ Environment and Sustainability
- ♦ Multiculturalism
- ♦ Career Development

MOVEMENT (DANCE) CONCEPTS (Gilbert, 1992)

Rudolph von Laban originally defined the basic Movement Concepts in the 1930's. He wanted to establish a notation system for movement similar to the one used in music (Landalf and Gerke, 1996). It is important to note that these concepts are not isolated to dance, but underlie all movements, whether they be dance steps, athletic accomplishments, pedestrian movements, or even the movement of animals and machines. Feel free to enlarge this list and post it in your teaching space.

Place – Self Space, General Space

Level – High, Middle, Low

Size – Big, Medium, Little

Direction – Forward, Backward, Right, Left, Up, Down

Pathway – Straight, Curved, Zigzag

Focus – Single focus, Multi-focus

Speed – Slow, Medium, Fast

Rhythm – Pulse, Breath, Pattern

Energy – Smooth, Sharp

Weight - Strong, Light

Flow – Free, Bound

Body Parts – Head, Shoulders, Arms, Torso, Hands, Elbows, Back, Stomach,
Legs, Hips, Feet, Toes...

Shapes – Straight, Curved, Angular, Twisted, Wide, Narrow

Relationships – Over, Around, Under, Through, Together, Apart, Beside...

Balance – On Balance, Off Balance

EXPLANATION OF CONCEPTS AND WARM-UP ACTIVITIES

Use these activities to introduce the movement concept to your students. You may also wish to use them as quick brain/body energisers after a period of seatwork.

Place tells us whether we are moving on one spot (self-space) or travelling through space (general space). Whether we travel or stay in one place, we are surrounded by our kinesphere, or bubble, which serves as a boundary between our own space and the space of others. The size of our kinesphere can change. *A corn stalk in a field of corn has a small kinesphere and it can only sway in self-space. A cow in a field has a larger kinesphere and can move through general space. Ask the children to move like a farm animal through general space when the music is playing. When the music stops they have to move in self-space like something different they would find on the farm.*

Level indicates how close or far away from the ground we are. We can change levels by rising and sinking. *Ask the children to think of a farm animal that moves on a low level, medium level, or high level.*

Size is the amount of space our body is taking up. It is important to note that "small" does not mean "short" and "big" does not mean "tall." When we reach far into space we are moving with a big size and when our body parts are tight together we are moving with a small size. *Call out different crops and have the children make the shapes of those plants. A pumpkin reaches out over a large area and therefore would be a big size. The leaves on a head of lettuce grow tightly together, therefore it would be a small size.*

Direction is determined by the part, or side, of the body that is leading us through space. The front of the body leads us forward, the back leads us backward, the sides lead us sideways, the head leads us up, and the feet lead us down. *Play some music and have the children move through space as you call out the different directions.*

Pathway is the pattern our feet would make if we left footprints. *Ask the children for three types of ground/soil that would be found on a farm (dirt, concrete and water for example). On the chalkboard match a pathway with one of their ideas (dirt = zigzag, concrete = straight, water = curvy). Now play some music while calling out their choices. The children have to move in the pathway that matches.*

Focus tells the audience where our attention is directed when we are moving. If we focus on one object, a prop on stage for example, we are using single focus. However if our gaze is moving in different directions then we are using multi-

focus. *Hand out imaginary sacks to the children telling them that inside are several vegetables and seeds. Play music, call out a vegetable and call out a place in the room where the children have to throw their vegetable (teacher's desk, window, pencil sharpener, light, rug...). Once they have thrown their vegetable the children dance toward their vegetable, focusing only on it, and pick it up. When the children throw a handful of seeds their focus will become multi-focus as they try to collect all the scattered seeds.*

Speed allows you to vary the time it takes you to complete a movement in space. *Have the children imagine a farm in the early morning when most animals are still sleeping and the machines are warming up in the sheds...ask them to move like something they have pictured. As the day progresses, there is more activity on the farm. Imagine a farm at the hub of its day. Ask the children to change their speed to match the activity level.*

Rhythm is the pattern our movements make in time. It can be an even pulse like a heartbeat or march, or it can be free flowing and varied such as the wind or breath. It can also have a pattern if we divide time into beats of different lengths. *Have the children move like a salmon on a fish farm to explore breath rhythm, walk like a farmer to explore pulse, and gallop like a horse to explore pattern. Can they think of other examples?*

Energy can be smooth or sharp. When our movement continues without stopping we are moving with smooth energy, or a sustained movement. Twirling and swaying are examples of this. Sharp energy, or percussive movement, is full of sudden stops. *Have the children think of different machines or tools they might see on a farm. Which of those machines move with sharp energy? (a tractor loading hay into a loft, a hammer, an irrigation system...). Which of those machines move with smooth energy? (a combine, a paint brush, a running hose...)*

Weight is defined by how we use our muscles when we move. When we move our muscles with strong weight we may be pushing, pulling or giving into gravity and feeling heavy. When we move our muscles with light weight we give a sense of floating or rolling. *To explore strong weight ask the children to pretend they are hauling a bale of hay, pushing a stubborn cow into the milking parlour, or walking back to the farmhouse after a long day on the farm. To explore light weight ask the children to pretend they are the dust on the barn floor being swirled by the wind, snow falling gently on a field, or a chick scurrying over to its mother.*

Flow can be free or bound. When we allow movements to flow through our body without trying to control it we are moving with free flow. When we control the movements like a robot or walking on a balance beam, we are moving with

bound flow. *In small groups have the children make a farm machine with their bodies connected and only one body part each moving repeatedly. This is bound flow. Now have the children be the wind as it rolls over the wheat fields of the prairies, between the mountains and into the valleys. This is free flow.*

Body Parts can be moved together or in isolation. Many children do not move their backs, hips or head and depend on arms and legs only. Body parts can lead us through space or connect us to others to create shapes. (This activity is called Finger-Body-Finger and is taken from Creative Dance for All Ages). *Have the children make a shape in self-space focusing on one of their fingers. Say to them, "When the music begins, move only that finger...now add your hand...your elbow...your arm..." Continue until all body parts are moving reminding them that only when both legs are allowed to move, can they move through general space. "Now take away one leg...the other leg...your hips..." until only one finger is moving. The children might be chickens, in which case some body parts are different. Or the children might be plants and they move only one leaf, then the stalk...*

Shapes can be made by twisting, angling and curving our bodies. We can make wide shapes, narrow shapes, and straight shapes by manipulating our body parts or joining with others. A shape can be symmetrical if both sides of the shape are the same (a silo, an animal), or asymmetrical if the sides are different (tomato vine, tractor engine). *Have the children move through general space. Call out an object/animal found on the farm such as "sheep" and have the children create that shape and tell you what kind of shape it is (symmetrical). Repeat with the children's suggestions.*

Relationships are prepositions. We can have a relationship with our own body parts, such as my head is between my arms, or we can have relationships with other people, such as Holly is standing over Hardeep. *Tell the children they are pretending to look for a lost lamb on the farm. They have to follow you as you move around the farm and repeat what you say. Be sure to vary the locomotor movements. "We walk inside the barn, creep up the stairs to the loft, peer between the bales of hay, slide down the ramp...leap over the fence, scurry around the barn, crawl under the tractor..."*

Balance. When you feel you are planted firmly on the Earth's surface you are on balance. When you feel unstable, such as when you lean, you are off balance. The challenge in dance is to still be in control when you are off balance. *Have the children experiment with different balancing shapes by calling out body parts that have to be planted on the ground. Alternate making balanced shapes with moving through general space on and off balance.*

LESSON ONE – The Water Cycle Dance

Movement Concepts: Space and Speed

Introducing the Concept: SEE, SAY, HEAR and DO

Write the words on the board, say them aloud and ask the children to repeat the following concepts: self-space, general space, slow, medium, and fast. Ask the children to show you how they would skip in self-space, while saying "self-space." Now ask them to skip in general space. Ask them to creep while repeating "slow." Ask them to walk while repeating "medium speed." Finally, ask them to gallop through general space while repeating "fast."

Suggested questions to ask to link the dance concept with the topic

(Answers will vary and questions may be used pre- or post-dance)

"Imagine you are a water molecule..."

In which part of the water cycle would you travel through general space?

Evaporation, condensation, moving through a river, precipitation

In which part of the water cycle would you move in self-space? *A still puddle, glacier*

When would you be moving fast? *In a gaseous state (condensation), in a river, during a rain storm*

When would you be moving slow? *In a solid state (ice, glacier)*

Is there anywhere you would be completely still? *No, there is always movement. Even in a solid state, water molecules are vibrating.*

How would the speed of the precipitation change if the temperature dropped? *If it was colder, the water molecules could become sleet and move quicker because they are heavier. If the water molecules fell as snow they would move slower.*

How would the direction of the precipitation change if there was a strong wind coming from the west? (Note: you would want to determine directions in your classroom) *The precipitation would move downwards but slanted toward the east*

What other movement concepts did you use in this dance? *Level (clouds are high, surface water is low), Relationships (glaciers are on the mountains, rivers run through valleys, rain falls below the clouds, water molecules travel behind one another), Pathways (snow drifts curvy to the ground, river water zigzags between land), Direction (evaporation goes up, precipitation goes down, rivers run forward, sleet falls sideways), Flow (water in the river is bound within its edges, gaseous water is free as the sky has no boundaries)*

The Dance

Students work with the whole group.

Choose a beginning for the water cycle, i.e. a glacier. All the children (water molecules) will be very close together with only enough room to vibrate (slow speed) back and forth. The air around the glacier warms causing the solid water molecules to move faster (medium speed) as they melt into their liquid state. The liquid state may be a river, lake or puddle. Despite their location, the water

molecules should be moving at a medium speed with more space between them compared to in a solid state. As the water molecules take more energy from the sun or ground, some of them break the surface of the liquid, becoming a gaseous state. The gaseous water molecules move freely through general space at a fast speed. This is evaporation. Have the children repeat "evaporation" as they move. Once in the sky, the gaseous water molecules begin moving together to form a cloud. They are still moving quickly but their space is shrinking. Have the children repeat "condensation" as they move together. When the cloud gets too heavy it releases these water molecules toward the Earth. Have the children say "precipitation" as they return to Earth. If they fall on a glacier they will slow down as they become solid. If they fall into a river they will move at a medium speed.

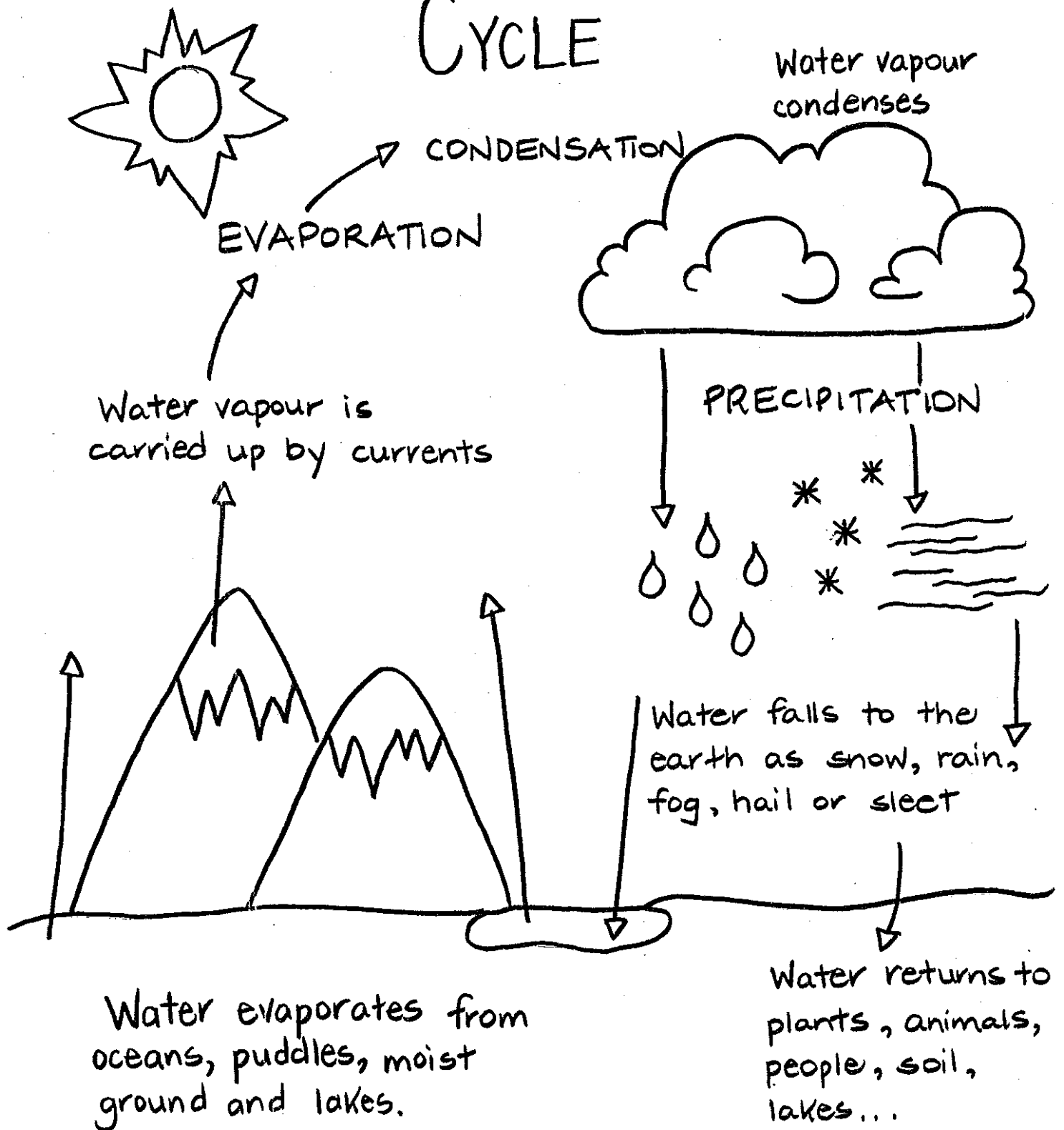
Variations and Extensions:

- ♦ Include the path of the water molecule through a plant (photosynthesis)
- ♦ Include filtration through the aquifer
- ♦ Include drainpipes in the dance. Many students don't make the connection that the water that goes down the drainpipes ends up in our streams
- ♦ Introduce the molecular shape of water (H₂O) and have the children travel through the water cycle in this triangular shape. Discuss polarity and how that pulls each water molecule.
- ♦ The children have to demonstrate the different cloud types and the type of precipitation that falls from them
- ♦ Give a couple students pinnies to indicate they are pollutants. Have them follow the water cycle to demonstrate how quickly these pollutants can affect our water supply. Discuss consequences as they relate to agriculture and possible solutions.
- ♦ Divide the class into 3 or 4 groups and assign each group a different global area. Have each group perform the water cycle dance as it would occur in that area. Discuss the consequences of the different water cycles on farming in those areas.
- ♦ Students create their own music for the water cycle dance using spoons and glasses filled with different volumes of water. Higher sounds could indicate fast speeds and lower sounds could indicate vibrations.
- ♦ Do a nitrogen cycle dance or an oxygen cycle dance

Assessment:

- ♦ Use water-colours to paint a landscape wash then illustrate and label the water cycle using pastels, felts, or crayons.
- ♦ Create a diorama of the water cycle in a chosen part of the world. Display them side by side and have the children compare and contrast the cycles.
- ♦ Write three dance words (light, bound, sharp) used in this dance

THE WATER CYCLE



LESSON TWO – The Erosion Dance

Movement Concept: Level and Size

Introducing the Concept: SEE, SAY, HEAR and DO

Write the words on the board, say them aloud and ask the children to repeat the following concepts: high, medium, low, big, medium and little. Ask the children to make the shape of a pebble. Repeat the word "little." Now ask the children to make the shape of a boulder, again repeating "big." Ask the children to move like a piece of sand at the bottom of a stream. What level are you moving on? Now move like a glacier and repeat "high level."

Suggested questions to ask to link the dance concept with the topic

(Answers will vary and questions may be used pre- or post-dance)

What is weathering? *The breakdown of rock and land by wind, water or chemicals.*

What is erosion? *The movement of this broken-down earth from one place to another.*

During which stage of erosion would the sediment move on a high level? *When it is carried by the wind.*

During which stage of erosion would the sediment move on a low level? *When it is being carried by water (stream, rain run-off) or when it is rolling down a hill.*

What happens to the size of the sediment as it is eroded? *It gets smaller*

In what ways is erosion a negative consequence for agriculture? *Rich topsoil is removed from farmland. In countries (Japan, France) where they farm on ledges entire "steps" may disappear (landslide)*

In what ways might erosion benefit agriculture? *After a flood, the silt from the river ends up on the farmland creating a better growing environment. When glaciers melted they deposited good soil from the mountains in the valleys creating many fertile lands.*

What other movement concepts did you use in this dance? *Focus (multi-focus when I was the wind and rain, single focus when I was the mountain), Flow (free flow when I was the wind and rain, bound flow when I was the mountain), Shape (twisted, angular, curved, straight, depending on how the wind or rain formed the mountain), Body Parts were moved, and Relationships (the wind partner moved around, under, over and beside the mountain partner)*

The Dance

Students work in partners.

Partner #1 makes a big shape like a mountain. Partner #2 flows freely around #1 like wind or water, stops and erodes one body part of #1 making him smaller or lower. For example #2 lowers #1's arm to a different position. #2 mirror images the new shape of #1 and freezes. #1 then flows freely around #2 and erodes a part, copies the shape and the game continues until the shape is as low

and small as it can go. Both partners rise and simultaneously mirror each other through the erosion process they just created (memory and sequence)

Variations and Extensions:

♦ Have the children create their own dance to show how a natural disaster affects the land used for agriculture. Suggested disasters include: floods, fire, tornadoes, earthquakes, landslides, volcanoes, tidal waves... Whisper the natural disaster to each group to keep their identity a secret during practise time. After they perform their dance, the rest of the class must guess which disaster they had. The use of props (scarves, gymnastic ribbons, balloons, instruments...) is great for this one!

Assessment:

- ♦ Have the children create their own cinquain poem following this structure

Noun	Erosion
Adjective, adjective	Destructive, beneficial
Verb, Verb, Verb	Taking, moving, leaving
Four word phrase	Our earth is carried
Noun or Synonym	Weathering
- ♦ Ask the children to create flour and water relief maps to show the acts of weathering and erosion. Use arrows to indicate where the eroded land travelled.
- ♦ What levels did the dancers use?
- ♦ What evidence is there that the dancers used the concept of size?

LESSON THREE – The Plant/Seed Life Cycle

Movement concept: Shape and Energy

Introducing the Concept: SEE, SAY, HEAR and DO

Write the words on the board, say them aloud and ask the children to repeat the following concepts: twisted, angular, straight, curved, smooth energy, and sharp energy. Ask the students to make a twisted shape, repeating "twisted." Do the same with the other shapes. Ask the children to move smoothly (swaying, rolling) repeating the word "smooth." Now have them move sharply (jabbing, punching) repeating the word "sharp."

Suggested questions to ask to link the dance concept with the topic

(Answers will vary and questions may be used pre- or post-dance)

What do we need to grow some corn? *Corn seeds, soil, water, sunlight, nutrients*

Show me with your body the shape of a corn seed.

What shape is a seed? *Curved*

What shape is a corn stalk? *Straight*

With what kind of energy does a plant grow? *Smooth energy*

With what kind of energy would you cut down a corn stalk? *Sharp energy*

If we grow crops in a covered greenhouse do we need to provide anything for these seeds? *Water since the greenhouse is covered. Maybe nutrients if we are planting in pots where the soil will be depleted.*

Why do farmers use greenhouses? *Protected/controlled environment; they are able to grow varieties that would not survive "outdoors" in the area*

What other movement concepts did you use in this dance? *Level (low in the ground, high when fully grown), Place (self-space the whole time as a plant cannot make locomotor movements), Plant Body Parts (seed, roots, stalk, leaves, vegetable), Relationships (under the Earth, through the surface, beside other plants...)*

The Dance

Students can work in small groups or as a whole class.

Have the children start as a tiny corn seed, sitting very still in a little hole. Other children can pretend to be the sun's rays and the rainfall or irrigation that falls on the soil. Slowly, and smoothly, each child stretches out a leg to become the root and an arm to become the shoot. As they grow, they will break through the earth's surface getting taller (higher level). Remind the children that growing is a smooth movement. Leaves might grow out making the plant look angular. If the children were tomato seeds or the plant may grow as a vine and thus take on a twisted shape. The children continue growing until they are ready for harvest. The harvesting method for corn uses sharp energy as the corn stalks are chopped down and the corn cobs removed. Be sure the children move sharply as they are harvested.

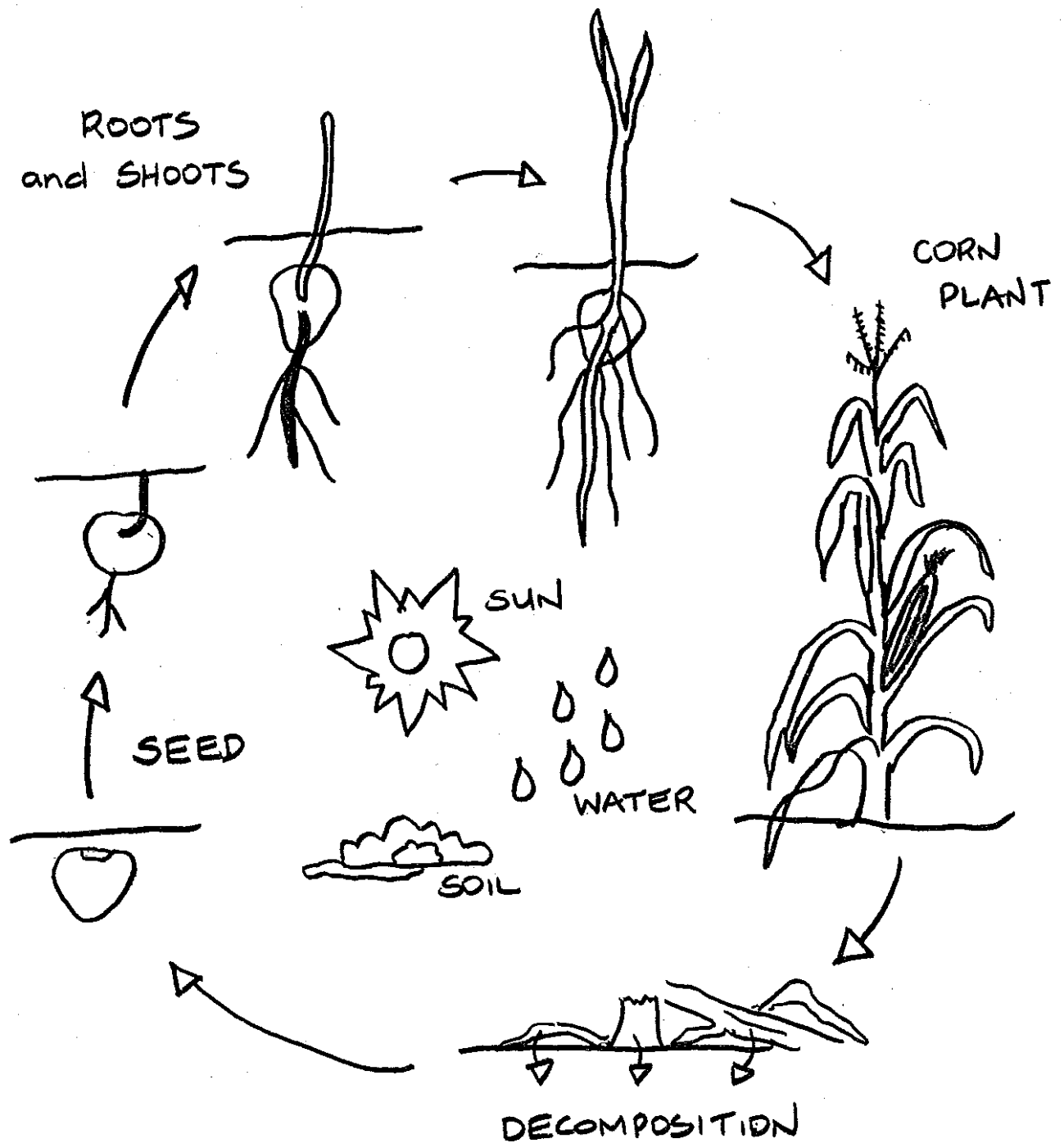
Variations:

- ♦ Have the children be different seeds so they may explore the growth of a variety of crops, and as a result a variety of shapes.
- ♦ Grow some vegetables in your classroom and have the children make the shape of the sprout with their bodies. Each day ask them to make this shape. Does it change? Measure the plant's growth and record it on a chart or graph.
- ♦ Have the children adapt the dance to when growing conditions are not favourable (drought, poor soil, pests)
- ♦ Take the dance to another level by continuing from harvest through to a product that is found in store shelves. Many children who live in the city do not make the connection between farms and the food found in cans or bags in the grocery stores.
- ♦ Start a composting project with your school
- ♦ As a group project, students research the staple foods from different cultures. In their presentation they could show the life cycle from seed to staple, plot on a world map where the staples are grown and eaten, share a recipe using the staple, or even teach a folk dance from the culture depending on the food.
- ♦ Ask the children to bring in a favourite recipe and have them "dissect" it for farm products. Make some of these recipes in class.
- ♦ Host a Local Foods Luncheon. Children bring in food made with products grown locally and invite their parents.
- ♦ Have the children learn Raffi's song *Everything Grows* or *Inch By Inch* and use it for a movement activity
- ♦ Make a collage of foods grown locally
- ♦ Make vegetable prints
- ♦ Create a dance for the life cycle of a farm animal (chickens). Raise chickens in your classroom and observe the specific movements a chick makes.

Assessment:

- ♦ Have the children draw themselves in their favourite shape from the dance, labelling the parts of the plant and the requirements from the surrounding environment.
- ♦ Have the children describe the energy (and perhaps change of energy) of the dancers? (sharp, smooth, strong, light)
- ♦ Ask the children to write a title for this dance.

CORN LIFE CYCLE



LESSON FOUR – The Heart and Circulatory System Dance

Movement Concept: Flow and Rhythm

Introducing the Concept: SEE, SAY, HEAR and DO

Write the words on the board, say them aloud and ask the children to repeat the words bound flow, free flow, pulse, breath, and pattern. Have the children demonstrate moving in these ways while repeating the concept aloud.

Suggested questions to ask to link the dance concept with the topic (Answers will vary and questions may be used pre- or post-dance)

Does blood flow freely throughout the body? *No it is bound within the vessels and heart but within these structures the blood cells flow freely most of the time.*

With what rhythm does the blood move as it goes away from the heart? *Pulse due to the heartbeat*

With what rhythm do the heart walls move? *Pulse or pattern*

If we had some children acting as the oxygen coming into the body, with what rhythm would they move? *Breath*

What structures help the blood return to your heart from your lower body? *Valves in the veins help prevent the backflow of blood*

How would the speed of the blood change if the person was running? *The heart would pump faster and so the blood would move faster through the system.*

How would the movement of blood change if the person had arteriosclerosis? *The walls of the arteries would be less elastic and therefore the blood would move with more bound energy*

Which foods would help maintain a healthy heart and circulatory system? *Fruits, vegetables, sushi, milk, steamed rice, moderate amounts of meat...*

Which foods would contribute to high cholesterol, heart attacks, and arteriosclerosis? *French fries, cookies, gravy, deep fried wontons...*

What other concepts did you use in this dance? *Speed (blood moves quickly as it moves away from the heart due to higher pressure, and slower on its way back to the heart because of lower pressure), Pathways (curved or straight depending on the body part), and Direction (blood moves forward through the circulatory system unless there are faulty valves, in which it would move backward)*

The Dance

Students work as a class

Structure: Two blue hula-hoops, 2 red hula-hoops and several blue and red pinnies or scarves are required for this dance. Arrange 4 students each to become the two smaller chambers (right and left atria). Arrange 5 students each to become the two larger chambers (right and left ventricles). The hula-hoops are the valves. The blue hula-hoops are located on the right side of the heart as that side carries de-oxygenated blood (low oxygen). Put one at the entrance to the right atrium and one between the right atrium and right ventricle. The red hula-hoops are located on the left side of the heart as this side carries oxygenated blood (high oxygen). Place one student at each hula-hoop to control the flow of blood. They can do this by moving their arms together and apart in front of the hula-hoop. Place two piles of red pinnies near the heart to represent the oxygen in the lungs. Place one pile of blue pinnies at the brain and another pile at the feet. The blue pinnies represent carbon dioxide that is given off by

the body's cells. The remaining students are blood cells that will move through the circulatory system.

Function: The blood moves through the circulatory system, picking up oxygen (putting on a red pinny) and dropping off carbon dioxide (taking off a blue pinny) in the lungs. From the lungs the blood travels to the left side of the heart (atrium then ventricle). Only when the valve opens, does the blood get pushed into the next structure. Because the blood is prevented from moving by the valves it is moving with bound flow. From the left ventricle the blood can go to the brain or feet (free flow). Here the blood drops off the oxygen and picks up the carbon dioxide then returns to the right side of the heart. From the right side, the blood travels to the lungs and the cycle begins again. The children who are the walls of the heart join hands and "contract" and relax." As they contract the blood is pushed out of that chamber, and as they relax the blood can enter the chamber.

Variations and Extensions:

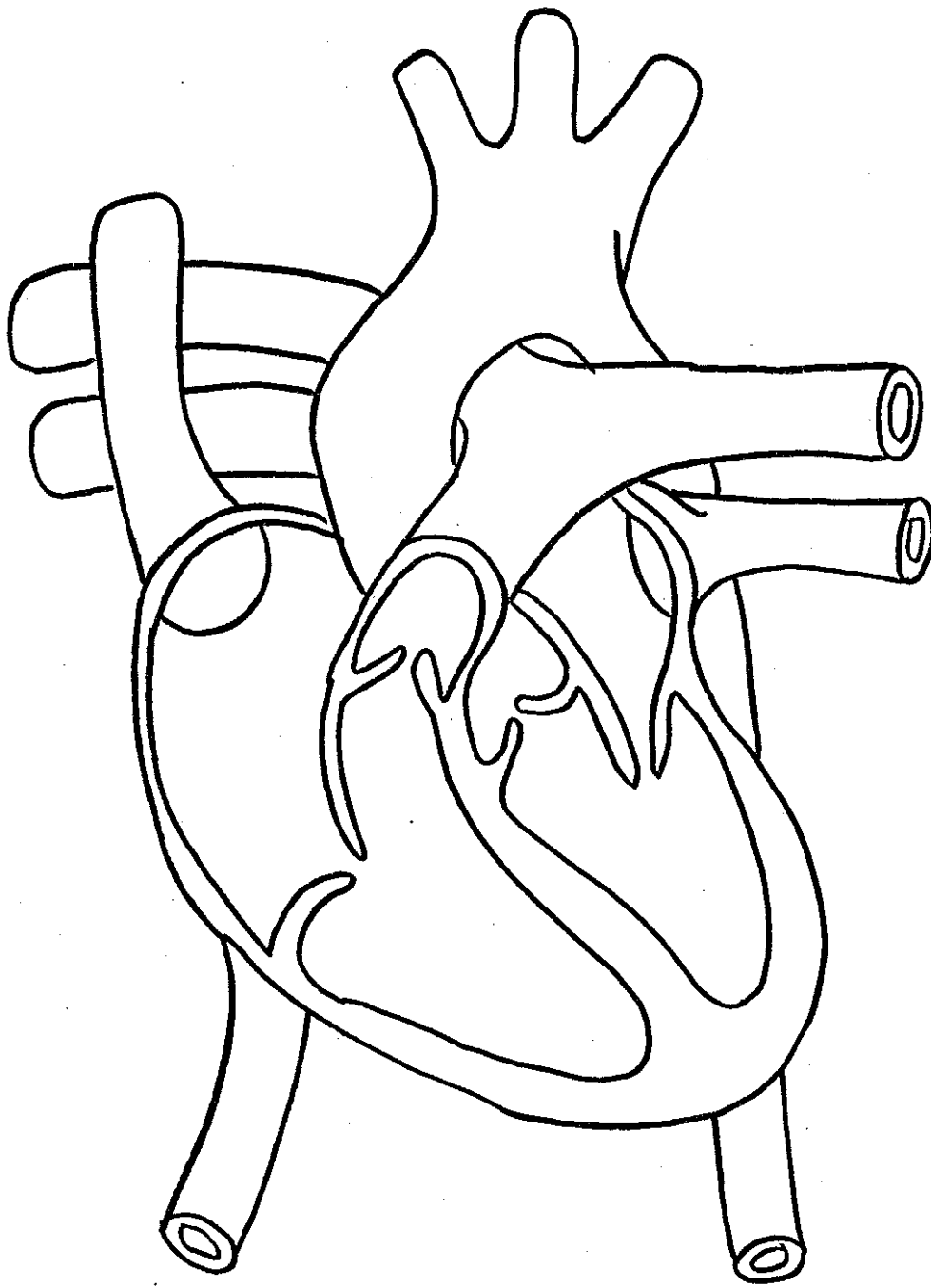
- ♦ Create a dance for the digestive system in humans and another for the rudimentary digestive system. Compare and contrast the structure and function of the different systems. (Boys LOVE to be food because they end up as poop!)
- ♦ Discuss possible solutions for world hunger. Students can share their solutions through posters, commercials, pamphlets...
- ♦ Create a dance for the sensory organs. Students can follow the pathway of a sound wave through the ear as it is changed into a sound vibration and a nerve impulse. Or they can follow the pathway of light through the eye to the brain. As in the circulatory system, some students should be the structure of the organ.
- ♦ Discuss healthy lifestyle choices and their effects on the circulatory system. Have the students perform the dance with healthy blood vessels then again with unhealthy blood vessels.
- ♦ To show the effects of a poorly operating heart, do the dance with faulty valves or a hole in the septum.

- ♦ By gluing dry pasta, Styrofoam, string, beads or other small objects onto construction paper, the children create a model of an artery carrying blood with its white blood cells, red blood cells, plasma... Label the parts
- ♦ Place heart models in the centre of a group of students and have them sketch the model from their perspective. Students can switch seats with other students and sketch the model from a new perspective.

Assessment:

- ♦ On a diagram of the heart, have the children draw arrows to show the correct path of blood. Colour the blood within the chambers either blue or red to indicate oxygenated or deoxygenated blood.
- ♦ Ask the children to write two to three adjectives they feel describes this piece

THE HEART



Other Suggested "Agro-Dance" topics

Explore the movement of the sun, Earth and moon through dance. Discuss how these movements influence tides. Currents and tidal changes affect many aspects of fish farming, including the location and how waste is carried to surrounding waters.

Teach folk dances from different cultures when the students learn about farming practices from around the world. Many crops that we now grow locally have been introduced by different cultures as a result of immigration. Use the resources within the school district or invite parents or guests to teach their native dances to your students. Show slides or photos of dancers in native dress.

Metamorphic, sedimentary, and igneous rock formation can be taught through movement. Students can research how these different rock types influence farming. Some cultures around the world have adapted different farming practices to overcome and abundance of one rock type. Volcanic eruptions result in the land becoming covered by igneous rock. What do the people in these areas do when their farmland experiences these changes?

Have children dance a story such as Watch Out! Growing Up On a Farm or The adventures of Cooper the Rooster. Recreating a story through movement is an excellent way to assess student comprehension. Have the students dance the beginning, middle and end.

Have students create Canada's Food Guide through movement. They can make the shapes of a variety of foods. Look for an understanding of suggested servings per day, healthy food choices and correct sorting of the type of food. Ask the children to move around the room. When you call out a food they have to decide if it is a healthy or unhealthy food choice. If it is a healthy food choice the students make its shape, if it is an unhealthy choice they keep moving.

Create graphs (bar graphs, pie graphs) with their bodies to explore a variety of different agriculture statistics. Seeing, or being, the statistic helps the non-mathematical learners understand better than a group of numbers written on a page. Some examples are:

- ♦ percentage of consumer spending on food in different countries
- ♦ the changing number of people who live/work on farms over time
- ♦ changes in amount of food production over time

Teach the concept of money through movement. Assign students a value (\$1, \$0.25). Ask the class to show you how much money it costs to produce a hectare of wheat.

Use movement to explore the different careers in agriculture. Treat this activity like charades, having the other children guess the career.

It is imagination...that opens our eyes
to worlds beyond experience...enabling us to create, care for others and
envision social change
- Maxine Greene

RESOURCES

Student Books

Hathorn, Libby & Peter Gouldthorpe. *The Wonder Thing*. Houghton Mifflin, 1996

Isadora, Rachel. *Max*. Simon & Schuster, 1976 ISBN 0020438001

Locker, Thomas. *Water Dance*. Harcourt Brace & Company, 1997

The adventures of Cooper the Rooster is available through AgAware BC 604.924.4804. It is a story and colouring book.

Watch out! Growing Up On A Farm is available through Newfoundland and Labrador Agriculture. It is written for 3-7 year olds

All About Food: Agri-food Facts is available through your provincial Agriculture in the Classroom program or www.aipc.ca

Teacher Resources

Gardner, Howard. *Frames of Mind: the Theory of Multiples Intelligences*. Macmillian, 1977

Gilbert, Anne Green. *Creative Dance for All Ages: A Conceptual Approach*. Reston, VA: American Alliance for Health, Physical Education, Recreation and Dance, 1992 ISBN 0883145324

Gilbert, Anne Green. *Teaching the Three Rs Through Movement Experiences*. Burgess Publishing Company, 1977

Jensen, Eric. *Teaching With the Brain in Mind*. Virginia: ASCD, 1998

Landalf, Helen and Pamela Gerke. *Movement Stories*. Smith and Kraus, 1996 ISBN 1575250489

Grow BC: a teacher's handbook on BC's agriculture, fish and food industry is produced by The British Columbia Agriculture in the Classroom Foundation 604.556.3088

Music Resources (available through Ravenna Ventures 206.528.7556)

Chappelle, Eric. *Music for Creative Dance: Contrast and Continuum, Volumes, I, II, III and IV*

Nichols, Kerri Lynn. *Music for Dancers*