



Learning Materials for Young Children

Find, Play, Understand!

Rwanda's Natural & Recycled Resources
Book 1, Second Edition

Greetings!

Rwanda's competency-based curriculum introduces modern teaching methods that **INTEGRATE** children's learning and understanding about the world around them

- Teachers select Rwandan *materials* and *themes*, and then *encourage* and *guide* children's hands-on exploration
- Children *choose materials*, how to *play* with them, and ways to *document* what they understand

Required Rwandan Curriculum Areas

Preschool children develop *competencies* (skills) in 6 required areas: discovery of the world, numeracy, physical & health development, creative arts & culture, language & literacy, social & emotional development

Primary children develop *competencies* in 8 required areas: Kinyarwanda; English; mathematics; social & religious studies; science & elementary technology; music, fine arts, & crafts; French; physical education

*When learning is integrated through PLAY,
students gain understandings and skills in many
areas at the same time!*



Children use colorful bottle caps to invent designs, make patterns, solve math problems, pretend to cook food, decorate their constructions...and many more original ideas! Ask parents and restaurants to save bottle caps for your school.

This series of books is designed to help Rwandan teachers of young and primary children to

- Set up classrooms at little or no cost
- Select compelling Rwandan themes to encourage discovery
- Choose readily available Rwandan learning materials that engage children's curiosity while they play
- Expand children's understandings and skills

Outdoors and in their communities, every Rwandan teacher can collect an abundance of materials to support the curriculum—natural resources and found or recycled items! This book is filled with...

1. Items that Rwanda children, families, and teachers can easily find—usually for little or no cost
2. Ideas for experiences that help children explore materials with their 5 senses, incorporate all 4 areas of child development, and integrate many required curriculum areas—all at the same time
3. Tips on what adults say to children to encourage analytical thinking
4. Skills and information children gain through active, playful engagement with the materials
5. Curriculum themes aligned with the Rwandan curriculum
6. Titles of related children's books


What else do teachers, parents, and children use to develop analytical thinking? Imaginations!



Watch children and see what original ideas they come up with! Ask them questions about what is happening. Read books together to discover related ideas. Figure out what floats on water. Prepare food. Celebrate children's curiosity! Help children figure out answers to their questions. That's how young children understand—by trying new skills and concepts for themselves! **SHARE YOUR RESOURCE IDEAS WITH US!**







Corn (maize) is a source of endless fascination! Children prepare the soil, plant seeds, water & fertilize the plants, record size and dates of growth, identify plant parts, prepare food to eat, use the silk for hair and mustaches, sweep with the tassels...and find a wide variety of other ways to genuinely understand the role of corn in their lives.



Natural Resources Support a *Playful, Integrated* Curriculum

Materials Children Explore	What Children DO With the Materials	What Adults Say to Inspire Analytical Thinking	Competencies & Understandings	Curriculum Themes	Children's Books
<p>Animal bones, teeth, & horns</p> 	<p>Examine size, shape, function</p> <p>Compare same parts of different animals (skulls, teeth, ribs)</p> <p>Construct/create with animal parts</p> <p>Identify tools that a butcher uses</p> <p>Cook meat, keep the bones</p> <p>Blow horns</p> <p>Pretend to be butchers</p> <p>Invent their own uses for animal parts (Pretta used cow ribs to make a curved roof)</p>	<p>I wonder what animal this bone/tooth/horn came from? Why do you think that?</p> <p>Let's see what is the same and different about these two bones/teeth/horns.</p> <p>What do you think this animal eats? Why?</p> <p>What do Rwandan crafters do with these animal parts?</p> <p>How do you think this horn was made into a musical instrument?</p> <p>What do you notice about these ribs (fish, cow, goat)?</p>	<p>Predict</p> <p>Compare, contrast Rwandan traditional crafts</p> <p>Anatomy of various animals</p> <p>Role of protein in healthy diets</p> <p>Write recipes to record ways to prepare different meats</p> <p>Analytical thinking</p> <p>Vocabulary</p>	<p>Butcher</p> <p>Carnivores, omnivores</p> <p>Chickens</p> <p>Cows</p> <p>Goats</p> <p>Hygiene</p> <p>Our bodies</p> <p>Pigs</p> <p>Rabbits</p> <p>Rwandan traditions</p> <p>Teeth</p>	<p><i>14 Cows for America</i></p> <p><i>Beatrice's Goat</i></p> <p><i>Bones</i></p> <p><i>Bringing the Rain to Kapiti Plain</i></p> <p><i>Chicken Little</i></p> <p><i>Handa's Hen</i></p> <p><i>Music Everywhere</i></p> <p><i>Old Makamba Had a Farm</i></p> <p><i>One Hen</i></p> <p><i>Swimmy</i></p> <p><i>The Three Little Pigs</i></p> <p><i>Three Billy Goats Gruff</i></p>
<p>Animal droppings, manure</p>	<p>Fertilize plants with droppings</p> <p>Create art using traditional dung techniques</p>	<p>What evidence do you see that animals were here?</p>	<p>Compare, contrast</p> <p>Recognize individual features</p> <p>Science research</p> <p>Try art techniques</p>	<p>Cows, goats, chickens, rabbits</p> <p>Rwandan traditions</p>	<p><i>How Many Donkeys?</i></p>

	<p>demonstrated by local artisans Identify different animals & compare droppings</p>	<p>What is the same about these droppings? What is different? What does it smell like? How do you know what this animal ate? I wonder what will happen next to these goat droppings. Why/how is cow dung used to line bee hives in Rwanda?</p>	<p>Plant growth needs Smells Analytical thinking</p>	<p>Recycling</p>	
<p>Avocadoes</p> 	<p>Mash avocado with a spoon, use it to fingerpaint and eat! Dry the seeds Plant the seeds Compare kinds of avocadoes Measure & record progress of a growing avocado Use avocado skins as moisturizer</p>	<p>Who would like to stir the avocado until it is soft? How does it change while you stir? How long do you think it will take for the seed to dry? Let's find out! What is the same about these 3 avocadoes? What is different? How does the mashed avocado feel on your hands?</p>	<p>Scientific research Small-motor development Problem solving Early math skills Multiple uses for readily available materials Hygiene</p>	<p>Plants Foods Hygiene</p>	<p><i>The Vegetables We Eat Who Owns the Fruit Tree?</i></p>

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<p>Charcoal & ashes</p> 	<p>Write/draw/paint on concrete, paper, banana leaves, tree bark</p> <p>Use charcoal or sticks to cook foods</p> <p>Compare efficiency & heat of charcoal with wood fire</p> <p>Make gray paint: sift ash particles out of cool ashes, stir with a bit of water</p> <p>Make black paint: crush charcoal, mix with water</p>	<p>How did the wood change when it burned?</p> <p>Tell me about your drawing.</p> <p>Explain what you are doing</p> <p>Which kind of fire will cook fast? Why?</p> <p>How do you know when a fire has cooled enough to touch the ashes?</p> <p>The charcoal is glowing red!</p> <p>How do the cool ashes feel on your hands?</p>	<p>Try art techniques</p> <p>Small motor skills: write, draw, stir</p> <p>Scientific research</p> <p>Physical changes in matter</p> <p>Safety</p> <p>Touch & texture</p>	<p>Art</p> <p>Conservation of natural resources</p> <p>Food preparation</p> <p>Fire/heat</p> <p>Recycling</p>	<p><i>Beatrice's Goat</i></p> <p><i>Mama Elizabeti</i></p> <p><i>Mouse Paint</i></p> <p><i>Pretty Salma</i></p> <p><i>The Fire Children</i></p>
<p>Clay</p> 	<p>Ask local artisans to demonstrate clay techniques</p> <p>Experiment with clay techniques: roll, pound, pinch, pull, shape, add/subtract</p> <p>Find out what happens when clay dries out, water is added</p> <p>Compare traditional uses of pottery: brazier, cooking</p>	<p>What happens when you roll the clay between your hands?</p> <p>How else can you change the clay?</p> <p>What will happen if you add water?</p> <p>I can see you love the slippery feel of wet clay!</p> <p>How will the clay be different in a few days?</p>	<p>Compare/contrast clay properties with soil & sand</p> <p>Scientific research with wet/dry clay</p> <p>Try art techniques</p> <p>Physical properties of clay & water</p> <p>Rwandan traditions</p> <p>Texture</p> <p>Analytical thinking</p>	<p>Rwandan natural resources</p> <p>Sculpture</p> <p>Rwandan people & traditions</p>	<p><i>Elizabeti's Doll</i></p> <p><i>Handa's Hen</i></p> <p><i>Mufaro's Beautiful Daughters</i></p> <p><i>The Fire Children</i></p>

	<p>pots, candle holders...</p> <p>Which Rwandan people are traditional potters?</p> <p>How do they fire clay?</p>	<p>You are shaping the clay from one piece.</p> <p>You are adding tiny bits to the big piece.</p> <p>Describe how the wet clay feels when you smooth it with your hands.</p>			
<p>Corn (maize)—stalks, shucks, silk, cobs, kernels</p> 	<p>Observe corn growing, measure, record</p> <p>Pick shell, cook, eat</p> <p>Invent uses for shucks, silk, cobs, and plants</p> <p>Ask about traditional uses for parts of corn plants</p> <p>Dry & grind corn for flour, make porridge or cornbread</p> <p>Scrub shoes & other items</p> <p>Use cobs to paint with mud</p> <p>Decorate items with seeds</p> <p>Compare corn seeds with other grains (rice, beans)</p>	<p>What can you do with a corn cob? (shine shoes, stop bottles)</p> <p>How are corn/rice/beans the same? Different?</p> <p>You put a kernel of corn on top of each rock.</p> <p>What happened to the kernels when you ground them with the rock?</p> <p>How does the silk feel when it is green? Dry?</p> <p>You started with a corn cob. You tied shucks around the cob for a dress. You used silk for hair. You invented a doll!</p>	<p>Plant growth & parts</p> <p>Creative use of abundant resources</p> <p>Analytical thinking</p> <p>Early math skills</p> <p>Variety of ways to prepare one food</p> <p>Traditional food preparation</p> <p>Problem solving</p> <p>Fine-motor skills</p> <p>Scientific research</p>	<p>Food</p> <p>Farming</p> <p>Health & hygiene</p> <p>Rwandan traditions</p> <p>Balanced diets</p>	<p><i>Corn Is Maize</i></p> <p><i>Galimoto</i></p> <p><i>Umuganura</i></p> <p><i>Ntazibagirwa</i></p>

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<p>Gardens</p> 	<p>Ask a farmer to demonstrate soil preparation Children use a hoe Plant seeds left from food preparation (papaya, avocado, tomato) Predict, observe, & record how long it takes for seeds to sprout, how fast they grow, what parts people eat Identify & compare different types of seeds Children help construct a traditional tiered kitchen garden</p>	<p>How many days do you think it will take for this bean seed to sprout leaves? Let's keep track! Which seed do you think will grow to be tallest? Why do plants need sun, rain, soil, & fertilizer to grow? Why is now a good time to plant (corn, beans, rice)? When is the best time to plant a garden? Let's see how many different shapes/textures/colors of leaves we can find in this garden. How tall is our tomato?</p>	<p>Observation of nature Scientific research, record observations Identify types of seeds Analytical thinking Health & hygiene Early math skills Early literacy, vocabulary Large & small motor skills</p> 	<p>Economics of gardening & farming Health & hygiene Weather cycles How plants grow Water cycle</p>	<p><i>A Seed Is Sleepy</i> <i>Bunches & Bunches: How Bananas Grow in Rwanda</i> <i>Growing Vegetable Soup</i> <i>Old Makamba Had a Farm</i> <i>Planting a Rainbow</i> <i>The Good Garden: How One Family Went From Hunger to Having Enough</i> <i>Planting a Rainbow</i> <i>The Vegetables We Eat</i> <i>The Very Hungry Caterpillar</i> <i>Tops & Bottoms</i></p>
<p>Leaves—large, such as banana</p>	<p>Children create shade Paint dry leaves with corn cobs or fingers Dry, make balls Invent uses (such as to lay wet items to dry, wave to create wind, make blankets for pretend babies)</p>	<p>When you made your banana fiber ball, what did you do first? Next? Where will we find banana fiber? Show me how you braided the fiber.</p>	<p>Find out why plants have leaves Discover shadows Early math skills Compare differences between shade & sunshine (heat, glare) Scientific research</p>	<p>Plants Leaves Traditional Rwandan games Painting How shadows change Weather</p>	<p><i>Bunches & Bunches: How Bananas Grow in Rwanda</i> <i>Houses and Homes Over in the Jungle</i> <i>The Very Hungry Caterpillar</i> <i>Tops & Bottoms</i></p>



Weave strips to make bracelets, earrings, necklaces, hats, mats
Fold to make purses
Braid to make ropes
Sit on them outdoors for stories
Lay laundry or dishes to dry on leaves


What is the same about the banana leaves and fiber? What is different?
I wonder what will happen to the banana plant after the bananas are harvested.
What else can you find that is the same size/color/shape as this leaf?






Small motor skills:
shape into ball
Large motor skills:
throw, catch, jump
Use imagination
Pretend play
Use symbols or representation
Early literacy skills
Problem solving
Match sizes/shapes/
Colors

Rwandan natural resources
How bananas grow



Materials Children Explore	What Children DO	What Adults Say	Competencies/ Understandings	Curriculum Themes	Children's Books
<p>Leaves—small</p> 	<p>Order from small to large Compare different sizes, shapes, colors Make texture rubbings or trace shapes with crayon or chalk Identify plants by leaves (shape, smell, color) Cook leaves, taste Grind, cook in water to make paint Make green paint: pound leaves, drain off water, sprinkle with salt to preserve, dip wet palms in green, print on paper Crush kararisuka leaves, hold them between fingers, paint on paper</p>	<p>What is the same about these leaves? What is different? What else can you find that is the color of this leaf? What happens to the cassava leaves when you grind them to cook isombe?</p>	<p>Find out why plants have leaves Serration Vocabulary Early math understandings Colors Shapes Science: How things change when they are cooked Problem solving Small motor skills: rub, pick up leaves Try art techniques Invent creative uses for plant materials</p>	<p>Plants Leaves Art Geometry Fire/heat Changes in matter</p>	<p><i>Autumn Leaves</i> <i>Mouse Paint</i> <i>The Dot</i> <i>The Very Hungry Caterpillar</i> <i>Tops & Bottoms</i></p>
<p>Mud</p>	<p>Fingerpaint with mud Paint with mud using sticks, corn cobs, leaves Make capati, cakes, amadazi, bread, & other pretend things</p>	<p>How does the mud feel when you squish it between your fingers? What can you do to wash the mud off your hands/feet/ clothing?</p>	<p>Textures Changes in physical matter Tools Fine-motor skills Imaginary play Analytical thinking</p>	<p>Rwandan traditions Homes & buildings Creative expression</p>	<p><i>Houses and Homes</i> <i>Monkey See, Monkey Draw</i> <i>Mouse Paint</i> <i>The Dot</i> <i>Three Little Pigs</i></p>



	<p>Create mud bricks in the traditional way, dry them in sun, observe changes</p> <p>Children choose to invent their own mud creations: houses, ovens, rivers/dams, floods, rice fields</p> <p>Suggest children include rocks, sticks, & other found items in their structures</p>	<p>How is mud used in Rwanda? Why do people still use it to make their homes?</p> <p>Show me how you moved the mud to create your design.</p> <p>What happened to the bricks we put in the sun?</p>	<p>Rwandan resources</p> <p>Scientific method</p> 		<p><i>Wonderful Houses Around the World</i></p>
<p>Plant materials—to make paints</p> 	<p>Boil beets and their leaves. Eat them. Use pink/red water to paint.</p> <p>Boil purple cabbage. Eat cabbage. Paint with purple water.</p> <p>Cut tops off pineapples. Eat pineapple. Blot tops dry. Print with paint or mud.</p> <p>Pick yellow lilies. Rub on paper like paint.</p> <p>Rub fresh mango seeds or skins on paper to make yellow designs.</p> <p>Use several colors! Mix colors. What happens?</p>	<p>What other plant parts can we use to make paint?</p> <p>What can you use for a tool to paint?</p> <p>What happens when you press the muddy pineapple top onto the leaf?</p> <p>Let's see what happens when you put yellow on top of red.</p>	<p>Creativity</p> <p>Scientific research</p> <p>Analytical thinking</p> <p>Fine-motor skills</p> <p>Observation</p>	<p>Plants</p> <p>Colors</p> <p>Foods We Eat</p> <p>Recycling</p>	<p><i>Little Blue & Little Yellow</i></p> <p><i>Mouse Paint</i></p> <p><i>The Dot</i></p> <p><i>The Fire Children</i></p> <p><i>The Fruits We Eat</i></p> <p><i>The Vegetables We Eat</i></p> <p><i>Tops & Bottoms</i></p>

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<p>Plant parts—seeds, stems, flowers, & pods; fresh & dried</p> 	<p>Observe fresh seeds from papaya or other fruit, place some indoors and others in sun to dry, observe changes, record with dates</p> <p>Arrange a bouquet in a recycled container</p> <p>Sort by shape, size, color</p> <p>Make & play orusoro (mancala)</p> <p>Place in a recycled plastic bottle or metal container with a lid, shake to make sounds</p> <p>Dry seeds from avocados, papaya, passion fruit</p> <p>Collect seed pods from acacia trees, compare to other types of seeds</p> <p>Pick flowers, arrange a bouquet, watch & record changes daily</p> <p>Pick flowers, put petals on paper, cover with wax</p>	<p>What do you see is the same about these seeds/flowers? What is different about them?</p> <p>What will happen if we put the seeds/flowers in the sun?</p> <p>Which flowers can we eat?</p> <p>Who can match this pod/leaf with the seed?</p> <p>What happens to the water when the seeds are put in the sun?</p> <p>Close your eyes. Who can figure out what this smell is?</p> <p>Who can find stems with thorns? Without thorns?</p>	<p>Compare/contrast</p> <p>Identify plant parts & functions</p> <p>Aesthetics</p> <p>Problem solving</p> <p>Fine-motor skills</p> <p>Sounds</p> <p>Taste & texture</p> 	<p>Plants & plant parts</p> <p>Growth cycle of plants</p> <p>Sun</p> <p>Traditional Rwandan games</p> <p>Flowers</p> <p>Gardens</p>	<p><i>A Seed Is Sleepy</i></p> <p><i>Bringing the Rain to Kapiti Plain</i></p> <p><i>Bunches & Bunches: How Bananas Grow in Rwanda</i></p> <p><i>Children Just Like Me</i></p> <p><i>Ebele's Favourite: A Book of African Games</i></p> <p><i>From Seed to Plant</i></p> <p><i>Planting a Rainbow</i></p> <p><i>Seed to Peanut</i></p> <p><i>The Carrot Seed</i></p> <p><i>What We Wear</i></p> 



paper, rub with rock
to make petal prints
Dry flowers in sun,
crush, add water to
make paint
Compare and contrast
smells of different
flowers & leaves
Create a round
container with
banana fiber. Fill it
with soil and plant
seeds
Make a wreath of
flowers to wear in
hair



Materials Children Explore	What Children DO	What Adults Say	Competencies/ Understandings	Curriculum Themes	Children's Books
<p>Recycled & found items— pans, wood pieces, wire, plastic or cardboard containers, bottle caps, boxes, flour bags, water bottles (see rice sacks)</p> 	<p>Nail items to a board or branch Hit items with sticks to make sounds Create galimotos, pull along on ground to make sounds Use bottle caps for pretend money, food, decorations, or whatever children can imagine! Prepare & serve pretend food Visit a garage, children select recycled treasures to take back to make galiimotos Decorate block & sand constructions Arrange caps in order by color, shape, size, or texture Use recycled plastic containers to make pots for planting Design mobiles & stabiles Read labels (words, pictures, & numbers)</p>	<p>Tell me what you did to make your galimoto? What else do you need to complete your sculpture? You placed bottle caps on top of the mud bricks to decorate your house. This container smells like oil. Let's read the label. What do you see? What can we learn from the pictures, words, & numbers on this flour sack (water bottle or other container)? Let's make amayo for dancing. What shall we do first?</p>	<p>Sort Large-motor skills: Pound nails with hammer into wood or bottle caps, bend wire Make sounds, rhythms Solve problems Early math skills: Measure lengths Creativity & inventions Choose materials to use creatively Imagination Early literacy and numeracy: words and numerals on recycled items Planning & organization Patterns</p>	<p>Physics: vibration Music: sound, pitch, rhythm, tempo Tools Recycling Literacy Early math skills: weigh, measure, numbers on recycled items Environment Inventions Vehicles</p>	<p><i>Emika's Gift</i> <i>Galimoto</i> <i>Music Everywhere</i> <i>My Rows & Piles of Coins</i> <i>Pretty Salma</i> <i>Wood-Hoopie Willie</i></p> 



on containers & bags. Ask children to describe how this information is used.
 Use water bottles as a guide to roll tires
 Make traditional ankle bells (amayo) by making holes in bottle caps, stringing them on yarn or banana fiber.

Rice sacks



Cut rice sacks open, measure size, remove fibers from one direction to make ishunda.
 String beads on rice sack or banana fiber to make urugoli.
 Jump in sacks, race

How can we make Intore dancing skirts (ishunda), headbands (urugoli), and long hair (imigala) with rice sacks?
 Who would like to race in rice sacks? How do you jump inside them?





Measure
 Small-motor skills: Cut, tie, string beads
 Plan
 Identify traditional Rwandan attire
 Strength
 Scientific research
 Large-motor skills:
 Jumping & coordination
 Speed
 Sense of direction
 Control of body in space

Rwandan traditions
 Music, sound
 Five senses
 Celebrations
 Early math skills: measure
 Fine motor skills: cut, remove fibers
 Language & literacy

*Celebrations!
 Music Everywhere*



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<p>Ropes</p> 	<p>Jump rope, singles, doubles, & more Pretend play, such as ropes on goats Pull objects, each other Braid banana fiber Hold a rope at different heights, children and teachers jump over it</p>	<p>You tied a knot with the rope. How long does the rope need to be to jump with your friend? Who can jump the highest over the rope? Why did you run to jump over the rope?</p>	<p>Large motor skills: jump, timing Experience similarities & differences among pull, push, & carry Small motor skills: preparing ropes Scientific research Early math skills: Height, length, speed, direction of turning the rope to jump Cooperation when jumping with twirlers</p>	<p>Traditional Rwandan games Physics Rwandan natural materials Friends work together Bananas Economics of farming</p>	<p><i>Ebele's Favourite: A Book of African Games</i> <i>How Many Donkeys? Kibondo na Nyagakecuru</i></p> 

Sand

Fill large recycled tires with sand.
Find sand-play tools such as wooden frames for mud bricks.
Collect recycled items—food containers, cut plastic cooking oil or ikivuguto containers, soap buckets, dishes, cups, plastic bottles, spoons, sieves



Play in sand: dig, sift, pile, smooth, shape
Add water to sand, observe changes
Use tools such as sifters, molds, diggers, trowels
Create dams, rivers, mountains
Pretend bakery
Use containers to make molds, experiment with amount of water needed



That sand is really hard.
How can you make it looser?
Why do you think the sand didn't hold its shape when you lifted the mold?
I noticed that you have been playing in the sand for at least 20 minutes. Tell me what you were doing.

Compare textures, wet & dry
Science research: Effects of combining sand & water, evaporation
Pretend play
Large motor skills: balance, pour
Fine motor skills: shape & roll wet sand, sift and sprinkle dry sand
Compare shapes, textures, effect of sun









Rwandan natural materials
How mud bricks are made
Tools
Water
Bodies of water



Hidden in the Desert
Ocean
Sea Shells
Talkabout Sand

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<p>Sisal</p> 	<p>Ask a local artisan to demonstrate traditional weaving techniques Strip sisal leaves of pulp, dry fibers Create long hair for Intore dancing Comb & measure length of fibers Create hair for dolls, pretend animals Dye fibers with plant dyes</p>	<p>Let's make a list of all the steps it takes to make a Rwandan basket. How could you make a doll with these fibers? Who can show me how dancers use these fibers? What do you think will happen if we dip the sisal into this beet juice?</p>	<p>Scientific research Analytical thinking Fine-motor skills Early literacy Early math skills Creativity Problem solving</p> 	<p>Plants Rwandan crafts Economics of crafting Traditional Rwandan dancing Community resources Careers</p>	<p><i>Circle Unbroken</i> <i>Kibondo na Nyagakecuru</i> <i>Pretty Salma</i></p>
<p>Skins and stems from plants—potato, passion fruit, uruteja—to paint with, make glue</p>	<p>Cut and eat passion fruit, dry the skins, hold them in fingers to paint Boil peeled potato skins in a little bit of water, mash into glue</p>	<p>Why does passion fruit skin shrivel up? What is another way you could use that shell to paint? What happened to potato skins when they were cooked? What happens when you put glue between dry leaves?</p>	<p>Scientific research Early math (measure water, heat to boil) Small-motor development Creativity, inventions</p>	<p>Recycling Rwandan plants Rwandan crafts</p>	<p><i>All the Colors of the Earth</i> <i>Anansi The Spider</i> <i>Chicken Little</i> <i>Color Zoo</i> <i>Mouse Paint</i></p>

		<p>How do you think glue works? Break the stem of a uruteja plant, use the sap as glue.</p>			
<p>Soil</p> 	<p>Dig in various types of soil, explore differences & similarities Find soil with different properties: rocky, sandy, red, black Plant seeds, document change, measure growth, keep track of time to sprout, grow to maturity, figure out what plants need to grow (soil, sun, water, fertilizer, air) Make a pile of soil to make a Rwandan hill, pour water on top, describe what happens to the soil & water</p>	<p>What do you see/feel is the same about these two soils? Different? Which kinds of plants grow best in the soil we have in our community? How do you know? What happens if a plant doesn't get sun/soil/water/fertilizer/air? What do you think will happen when we pour water on this pile of soil? Why?</p>	<p>Compare/contrast soil properties with clay and sand Watch and document how plants grow Scientific method Analytical thinking Early math (time, measure)</p>	<p>Erosion Rwandan natural resources Soil types Plants Weather Rwandan physical features</p>	<p><i>A Seed Is Sleepy</i> <i>Dirt</i> <i>Growing Vegetable Soup</i> <i>Old Makamba Had a Farm</i> <i>Planting a Rainbow</i> <i>The Good Garden: How One Family Went From Hunger to Having Enough</i> <i>The Vegetables We Eat</i> <i>The Very Hungry Caterpillar</i> <i>Tops & Bottoms</i></p>

Materials Children Explore	What Children DO	What Adults Say	Competencies/ Understandings	Curriculum Themes	Children's Books
<p>Sorghum</p> 	<p>Compare large-leaf plants & seeds with sorghum Order leaves by size, shape, color, edges, vein patterns Trace around leaves Rub crayon on paper placed on top of a leaf (crayon rubbing) Make sorghum porridge Write a recipe for porridge Pretend to grow like sorghum seeds Fingerplay: Instead of "Pease Porridge Hot" say "Rwandan sorghum hot" Grow, grind sorghum flour, cook Make molasses Read flour packages</p>	<p>What ingredients do we need to make porridge? How much of each one? What do we do first? Next? How long does it take to cook? How do you know it is ready to eat? What other plants do you know that are similar to sorghum? How is sorghum flour made? Let's find out! What do sorghum plants need to grow? Why do you think sorghum helps keep you healthy?</p>	<p>Food preparation Hygiene Observe how a solid becomes a liquid Scientific method Analytical thinking Early math (time, measure, comparisons, order) Early literacy (write recipe, read labels) Small-motor coordination</p>	<p>Food crops Rwandan plants Economics Texture Nutrition</p>	<p><i>Corn Is Maize</i> <i>From Seed to Plant</i> <i>Umuganura</i> <i>Ntazibagirwa</i></p> 

<p>Sticks—small size</p> 	<p>Poke sticks in mud to make shapes, fences, roofs, or anything imaginary Pile sticks like a pretend fire Make a real fire for cooking Count sticks, match one-to-one with other objects Create or add to galimotos Pretend sticks can be food or spoons or anything!</p>	<p>Tell me about your construction. Explain to me why you piled the sticks on top of each other. What is your story? If each child gets one stick, how many sticks do we need? What can you use to hold your galimoto together?</p>	<p>Imagination Matching—one-to-one correspondence Comparison Pretend play Engineering Planning Analytical thinking Physics of fire Scientific research Early math—length, circumference Comparisons: wet and dry sticks</p>	<p>Recycling Fire Rwandan resources Galimotos Transportation Construction Conservation</p>	<p><i>Galimoto</i> <i>Pretty Salma</i> <i>The Fire Children</i> <i>The Village of Round & Square Houses</i></p> 
<p>Sticks—medium size</p> 	<p>Play drums Tap in rhythm Rub together to make sounds Hold a stick while children tell stories Stir pretend food in a pot over pretend fire Create original constructions Make galiotos Guide tires Compare sizes, shapes, bark colors, dry/wet, easy/hard to break, bendability Poke & dig in dirt /mud</p>	<p>You are digging deep in the dirt with your stick! What else could you do with those sticks? Show me how you use the stick with the drum How do you balance the tire with your stick? Show me how you do it. Which of these 4 sticks will be hardest to break? Why do you think that? You are drawing straight lines and ovals with your stick.</p>	<p>Physics of sound Engineering Rhythm Storytelling Comparisons Predictions Early literacy Physics of fire Analytical thinking Cooperation Early math—length, circumference, height Early literacy</p>	<p>Rwandan music, instruments Traditional storytelling Fire Galimotos</p>	<p><i>Galimoto</i> <i>Music Everywhere!</i> <i>Pretty Salma</i> <i>The Fire Children</i> <i>The Leopard's Drum</i> <i>The Village of Round & Square Houses</i></p> 

Materials Children Explore	What Children DO	What Adults Say	Competencies/ Understandings	Curriculum Themes	Children's Books
<p>Sticks—large size, long</p> 	<p>Make big constructions outdoors Use as walking sticks Use as props for pretend characters such as Kageni Dance with pretend spears Jump between sticks in a pattern</p> 	<p>You used many different sticks. How did you create your construction? Which stick is biggest? Which is smallest? How can you tell? Tell me why your character uses a walking stick. Show us how Kageni uses her walking stick.</p>	<p>Balance Size comparisons Pretend play Large-motor coordination Early literacy Story elements Analytical thinking Leadership Problem solving Early math—length, circumference</p>	<p>Textures Physics Rwandan traditional dancing Rwandan music Traditional Rwandan stories Construction</p>	<p><i>Houses and Homes</i> <i>Kageni</i> <i>Kibondo na Nyagakecuru</i> <i>Music Everywhere!</i> <i>The Village of Round & Square Houses</i> <i>Three Little Pigs</i> <i>Umuganura</i> <i>Ntazibagirwa</i> <i>Wonderful Houses</i> <i>Around the World</i></p>

Stones, large rocks, & pebbles



Order: small to large, light to heavy, dark to light, rough to smooth

Dig for rocks

Make texture rubbings with crayon or chalk

Drop into water, see what happens, experiment with rock sizes, drop height

Watch rocks being dug up, loaded/unloaded, lifted, carried on heads

Use round rocks as marbles, play games like orusoro (mancala)

Add recycled items to create marble runs

Play Hop Scotch

Make shakers: put pebbles in a recycled container, cover, shake; compare sounds with other items such as seeds

Pile & balance rocks to make structures

Paint rocks with water or paint, observe how color changes when wet or dry

I wonder which of these rocks weighs the most? The least?

How big of a rock can you lift? How much do you think it weighs?

What will happen to the rocks if you put them in water?

You are rubbing two rocks together. What is happening? Why?

Let's see how many rocks you can balance. Which rock will you start with?

Why does that round rock roll off of your pile?

Science: seriation

Where rocks are found, how they got there

Write stories about their rock experiences

See how buildings are made, pretend to construct with blocks or wood pieces

Small motor skills: balance

Experiment with art techniques

Analytical thinking

Play marbles, orusoro

Invent marble runs

Design Hop Scotch court, throw rock into target space

Invent maracas

Listen for, describe differences in sounds

Balance rocks

Design structures, observe how the flow of water changes (behind dam, over waterfall, under bridge)

Rocks & pebbles

Construction

Art

Water: splashes, ripples, & waves

Weight

Traditional Rwandan games

Sounds

Inventions

Evaporation

Civil engineering/ infrastructure

Science: words to describe physical phenomena, structures

Rwandan physical features

Weight

Recycling

A Rock Is Lively

Drum Dream Girl

Elisabeti's Doll

If You Find a Rock

Music Everywhere



Rocks




Show Me Rocks & Minerals


The Leopard's Drum


Volcano





	<p>Add sand to make dams, bridges, structures</p> <p>Find out where rocks come from (sedimentary, igneous, metamorphic)</p> <p>Climb up, slide down large rocks</p> <p>Play gusamata (juggle stones)</p>				
<p>Tires, small, recycled</p> 	<p>Roll tires</p> <p>Balance (ride) a tire with a stick (umucungo) or other object such as a recycled water bottle or cooking oil container</p> <p>Spin tires</p> <p>Jump from tire to tire</p>	<p>When does the tire go faster—up a hill or down a hill? Why?</p> <p>Show me how you keep a tire going.</p> <p>Why does a tire spin? What happens when it spins slower and slower?</p> <p>What is another way to arrange tires for jumping?</p> <p>You used a tire for a basketball hoop. Show us how you did that.</p> <p>What else can you do with a tire?</p>	<p>Large motor skills: Coordination, balance, run, walk</p> <p>Depth perception when jumping</p> <p>Comparisons of size, speed, shape</p> <p>Physics of motion</p> <p>Gravity</p> <p>Scientific research</p> <p>Early math: concentric circles, diameter, radius, numerals on tires such as PSI</p> <p>Early literacy: rubber, words on tires</p>	<p>Traditional Rwandan games</p> <p>Recycling</p> <p>Circles</p> <p>Transport</p>	<p><i>Bobo n'igare Galimoto</i></p> 



Materials Children Explore	What Children DO	What Adults Say	Competencies/ Understandings	Curriculum Themes	Children's Books
<p>Tires, large, recycled</p> 	<p>Create a place to keep sand Roll around on tire sections Ride large tires With a small group, rock a big tire back and forth Arrange in order from small/light to large/ Heavy Compare treads, circumferences, diameter</p>	<p>You are rocking back and forth on that tire! First left, then right. You invented a new way to use tires! What do you see on the side of the tire? On the part that goes on the road? What do you think tires are made from? How could they be made?</p>	<p>Physics of motion Analytical thinking Early math Early literacy Scientific research</p>	<p>Natural resources (rubber) Recycling Transport Inventions</p>	<p><i>Bobo n'igare Galimoto</i></p> 
<p>Tree bark</p> 	<p>Compare various textures, colors, thicknesses, odor Identify trees by their bark Find out why trees have bark Arrange bark in aesthetically pleasing manner</p>	<p>Which kind of tree has this bark? How do you know? Why do you think trees have bark? How can we arrange these pieces of bark to make a design?</p>	<p>Tree parts, functions Observation Compare/contrast Experiment with artistic arrangement principles: proportion, balance, variety Fine motor skills: balance</p>	<p>Trees How plants grow Sculpture 5 senses</p>	<p><i>Are You My Mother?</i> <i>Beatrice's Goat</i> <i>Caps for Sale</i> <i>Who Owns the Fruit Tree?</i> <i>Wangari's Trees of Peace</i></p>

Materials Children Explore	What Children DO	What Adults Say	Competencies/ Understandings	Curriculum Themes	Children's Books
<p>Tree branches</p> 	<p>Use short, thin branch as story stick to designate child whose turn it is to talk</p> <p>Choose tall, sturdy branches to make poles for climbing beans, tomatoes, other plants</p> <p>Create an outdoor xylophone with different lengths of thick branches, use another branch as a mallet to make sounds</p> <p>Pile thin, short sticks, pick up one at a time</p> <p>Use as kindling to start a fire (adult required)</p> <p>Use short branches as rhythm sticks</p> <p>Make high and low jump hurdles</p>	<p>When Pacifique holds the story stick, what do the rest of us do?</p> <p>Which sticks will be best to hold up our bean plants?</p> <p>What sounds do you hear with the different sticks?</p> <p>What steps do we follow to build a fire with sticks?</p> <p>Who would like to make a rhythm with their sticks? Who can follow the leader?</p> <p>Who can jump over this stick?</p>	<p>Self-direction</p> <p>Listen to other children</p> <p>Take turns</p> <p>Public speaking, share ideas</p> <p>Social skills</p> <p>Problem solving</p> <p>Compare sounds made by different branches</p> <p>Invent new uses for sticks</p> <p>Fine motor skills: balance, pick up thin sticks</p> <p>Experiment with ways to pile sticks to encourage fire to burn</p> <p>Leadership skills</p>	<p>Story telling</p> <p>Safety</p> <p>Early literacy</p> <p>Gardens</p> <p>Plants</p> <p>Sound/music, rhythm, beat, tempo</p> <p>Traditional games</p> <p>Fire/heat</p> <p>5 senses</p>	<p><i>Are You My Mother?</i></p> <p><i>Caps for Sale</i></p> <p><i>Honey...Honey...Lion!</i></p> <p><i>Jungle Drums</i></p> <p><i>Wangari's Trees of Peace</i></p> <p><i>Where the Wild Things Are</i></p>
<p>Tree limb rounds</p>	<p>Observe branches being cut with saw</p> <p>Pretend to use a saw</p> <p>Stack & build with rounds</p>	<p>What tools do you see the carpenter use?</p> <p>Who can explain how this saw works?</p>	<p>How saws work</p> <p>Safety</p> <p>Geometry—how pieces fit together</p> <p>Sort</p>	<p>Trees</p> <p>Careers</p> <p>Safety</p> <p>Geometry</p>	<p><i>Are You My Mother?</i></p> <p><i>Caps for Sale</i></p> <p><i>Wangari's Trees of Peace</i></p>

	<p>Rounds can be pretend money, set up a pretend market</p> <p>Sort rounds by sizes, shapes, & weight</p>	<p>What can you do with these round pieces?</p> <p>How else could you sort them?</p>	<p>Early math</p> <p>Compare/contrast</p> <p>Estimate</p> <p>Count</p> <p>Imagine</p> <p>Motor: balance, saw</p>	<p>How numbers work (count)</p> <p>Economics: money, jobs, stores</p> <p>Imagination</p>	
<p>Tree stumps & sections</p> 	<p>Observe trees being cut</p> <p>Jump from one section to another</p> <p>Jump off stumps, hop back on, climb high stumps</p> <p>Arrange sections as stepping stones</p> <p>Use stumps as tables</p> <p>Sit on sections for storytelling</p> <p>Hammer with nails</p> <p>Count & measure growth rings, circumference</p> <p>Compare bark & wood (color, texture)</p> <p>Pick up different sizes</p> <p>Use sticks with stumps to make drums, tap out rhythms</p> <p>Watch a drum maker at work: hollow out stumps, prepare hides, attach head</p>	<p>Tell me how the men cut the tree down. What happened first? Next?</p> <p>What happens when you jump?</p> <p>What do you see is the same about these stumps? What is different?</p> <p>How can you arrange them in another way?</p> <p>For what can you use these stumps?</p> <p>How do you get the nails pounded into the wood?</p> <p>Let's measure how wide this stump is...what its circumference is.</p> <p>Who can help me count the rings in the stump?</p> <p>Why do you think there are rings inside a tree?</p> <p>Which are the heaviest stumps? Which are lightest?</p>	<p>Large motor skills: jump, hammer, lift</p> <p>Space perception</p> <p>Rough/smooth surfaces</p> <p>Hard/soft surfaces</p> <p>Compare/contrast</p> <p>Number</p> <p>Length</p> <p>How saws & hammers work</p> <p>Shapes</p> <p>Analytical thinking</p> <p>Weight</p> <p>Estimate</p> <p>Physical strength</p> <p>Sing "Johnny Hammers With One Hammer..."</p>	<p>Trees</p> <p>Construction</p> <p>How plants grow</p> <p>Weather</p> <p>Careers</p> <p>Safety</p> <p>Geometry</p> <p>Measurement</p> <p>Tools</p> <p>Music/sound</p> <p>Traditional</p> <p>Rwandan crafts</p> <p>Rwandan physical features</p> <p>Insects</p>	<p><i>Are You My Mother?</i></p> <p><i>Caps for Sale</i></p> <p><i>Wangari's Trees of Peace</i></p>

	<p>Find out names of places in Rwanda where trees grow (rain forest, forest, gardens, hills) Look for insects & plants inside</p>	<p>Who can play faster? Slower? Where have you seen trees grow in Rwanda? Which kinds of trees grow near water?</p>			
<p>Vines</p> 	<p>Collect various kinds of vines (squash, bean) Compare/contrast vines, leaves, flowers, colors, textures, odors, foods Think about why some plants are vines Create necklaces Invent uses for vines (decoration, rope)</p>	<p>Show me how you braided your vine to make your bracelet. I wonder which vegetable this vine will grow. Who has ever eaten a flower? Let's cook some! Why do you think this pumpkin has such a long vine?</p>	<p>Variety in nature Sense of beauty Compare & contrast Scientific method Analytical thinking Creativity</p>	<p>Plants Art techniques Inventions Rainforests Foods</p>	<p><i>Hidden in the Jungle</i> <i>How the Leopard Got His Claws</i> <i>Jungle Drum</i> <i>The Jungle Grapevine</i> <i>The Very Hungry Caterpillar</i> <i>Where the Wild Things Are</i></p>
<p>Water</p> <p>Large tubs with water & recycled containers (funnels, plastic bottles, cups, sieves, spoons), flexible pipe</p>	<p>Experiment with properties of water Pour small to large Measure, using different sizes Experiment with containers that have holes Discover how funnels work</p>	<p>What do you think will happen if we leave this water in the sun? When the bottle is full, then what happens? I wonder how the sand will change if you add water. Which of these containers do you</p>	<p>Liquids can be poured Liquids run downhill Water cools warm objects & people Fine motor skills: pour with control Analytical thinking Large motor skills: carry tubs, water Evaporation</p>	<p>Properties of water Water cycle Friends work together Erosion Early math Early literacy Water displacement</p>	<p><i>Anansi the Spider</i> <i>Bringing the Rain to Kapiti Plain</i> <i>Noah's Ark</i> <i>One Well: The Story of Water on Earth</i> <i>Swimmy</i> <i>Three Billy Goats Gruff</i></p>

		<p>think will hold the most water? You pushed the small container into the big one, and the water came rushing out! How are rocks and water different? The same?</p>	<p>Solve problems Observe changes in wet & dry Fractions (full, empty, half full)</p>	<p>Motor skills, small and large Weather</p>	
<p>Water routes with recycled items (boards, plastic containers, hoses, rocks, sand, soil)</p> 	<p>Arrange items to direct water on a path Observe where water goes (downhill) Observe how water spreads out on a flat surface Dig a trench in the soil with a stick for water</p>	<p>What happens when you spin around with the tube? Where did the water go? Why? Where did this water come from? What happens when we put this rock in water?</p>	<p>Make choices Solve problems Scientific method Analytical thinking Motor skills: pour, bend</p> 	<p>Water Weather Erosion Bodies of water: rivers, lakes, oceans Wells</p>	<p><i>Anansi the Spider</i> <i>Bringing the Rain to Kapiti Plain</i> <i>If You Find a Rock</i> <i>Noah's Ark</i> <i>One Well: The Story of Water on Earth</i> <i>Swimmy</i> <i>Three Billy Goats Gruff</i></p>

Materials Children Explore	What Children DO	What Adults Say	Competencies/ Understandings	Curriculum Themes	Children's Books
<p>Wood blocks, sandpaper</p> 	<p>Cover 3 sides of 2 blocks with sandpaper, rub together to make sounds Sand rough pieces of wood to make them smooth, use as blocks</p>	<p>What could we do with sawdust? What else makes dust when you rub two together? Feel these pieces of wood. What do you notice? How else could we use this sandpaper?</p>	<p>Compare texture: rough, smooth Sounds Experiment with practical and fun uses for sandpaper Motor skills: sanding with the grain, against the grain, in circles</p>	<p>Tools Music 5 senses Trees</p>	<p><i>How a House Is Built</i> <i>Tools</i></p>
<p>Wood shavings</p> 	<p>Visit carpenter shop, see wood shavings being made from tree parts Identify tools to make shavings Talk with carpenters about their jobs Explore different textures, smells, colors, shapes of shavings</p>	<p>Why do you think the shavings make curls? What could you do with these shavings? Why do carpenters shave the wood? What tools do you see the carpenters use?</p>	<p>Physics: inclined planes Compare/contrast: sharp/dull Fine motor skills: pick up small pieces, hold at different angles Appreciate beauty of nature</p>	<p>Careers Tools Safety 5 senses</p>	<p><i>How a House Is Built</i> <i>Tools</i></p>

Children eagerly document their explorations and findings with original drawings and stories. They love to share what they have discovered with their classmates.

When children learn through play with integrated curriculum themes, they naturally become *competent readers, writers, and analytical thinkers!*

