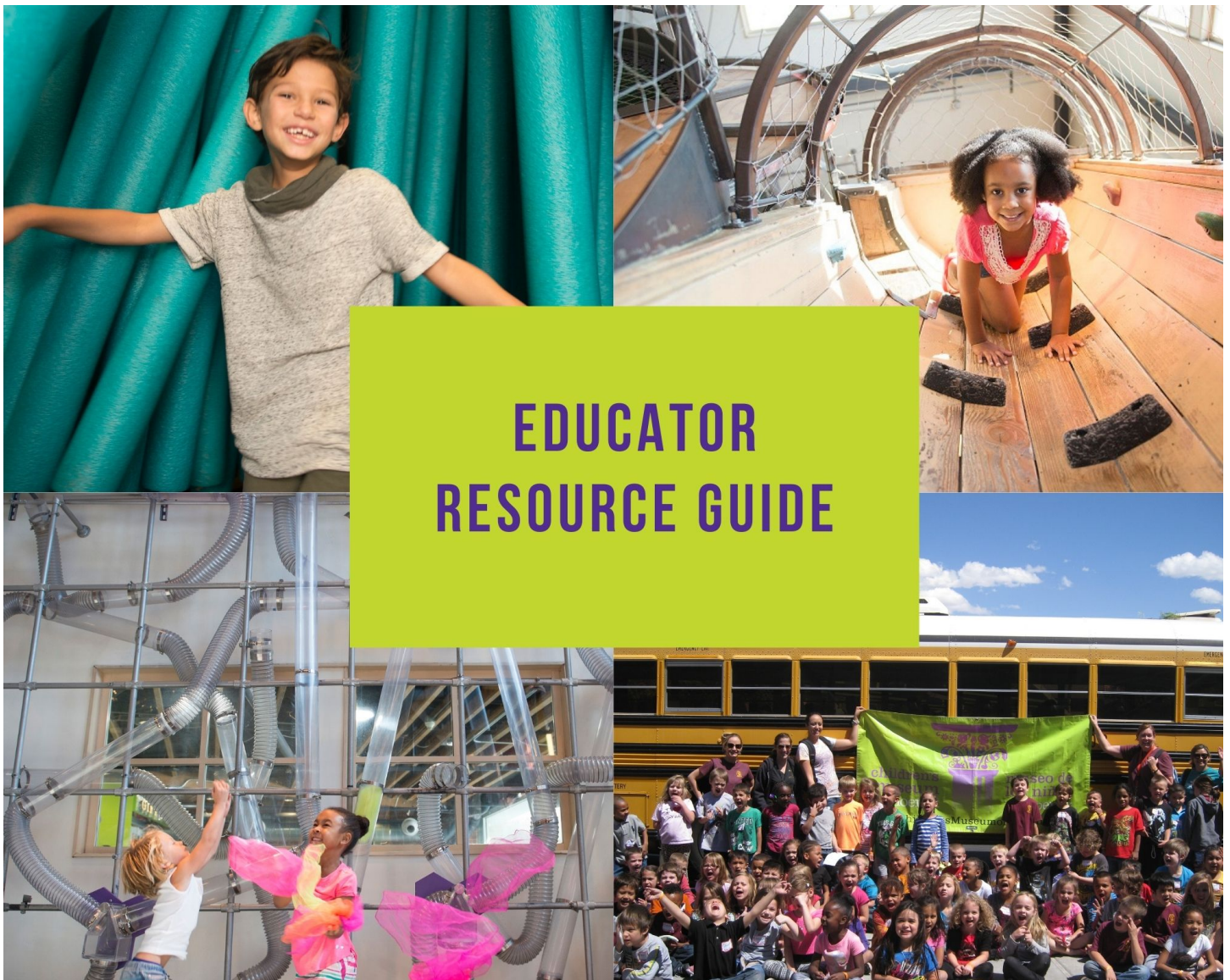




EDUCATOR RESOURCE GUIDE

children's
museum
of phoenix



museo de
los niños
de phoenix

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Our mission

Acting on the principle that learning is a joy, the mission of the Children's Museum of Phoenix is to provide hands-on exhibits and educational activities to engage the minds, muscles and imaginations of children and the grown-ups who care about them, while promoting cooperative interaction, fostering cultural understanding, and enhancing parenting techniques.

Our vision

The Children's Museum of Phoenix's vision is to foster a joy of learning to create an environment for families which captures the interest and enthusiasm of children and their adults and inspires people of all ages to learn, work and play together. Our vision is defined by the following objectives:

- Provide engaging projects, exhibits and programming for young children and their families.
- Educate parents and caregivers about child development and parenting techniques.
- Build cultural understanding, positive social interaction, and celebrate diversity.
- Act as a gateway to other cultural institutions and community programs.

We are a *Common Sense Green* museum.

The Children's Museum of Phoenix's "*Common Sense Green*" environmental initiative provides an over-arching roadmap for creating a museum that lives and breathes healthful choices. The Children's Museum supports the healthy minds, muscles, and imaginations of visitors by taking many actions that foster environmental stewardship. Some examples:

- **Using non-toxic materials throughout the building and exhibits**, including office supplies, select printing materials, and janitorial supplies, creating a healthy and safe environment in the Museum.
- **Using materials that are earth-friendly and sustainable throughout their life cycle** as in renewable, sustainable, and recycled building materials like wheatboard, and recycled cardboard.
- **Choosing materials and practices that are socially responsible.** The Museum will choose local vendors whenever possible to cut down on transportation, get to know green industries in the community, and make sure that the materials and services being used are made fair and equitable.
- **Offering incentives that support earth-friendly behavior**, like carpooling and public transportation benefits, bike racks, and easy recycling throughout the museum.
- **Spark ideas**, innovation, collaboration, and conversation about sustainability and environmental stewardship.

An Overview of the Museum:

ART STUDIO – located on the 3rd floor

In this creative workshop, visitors find an ever-changing array of hands-on art activities that help them make connections to the real world as well as to other exhibits in the Museum. Art Studio creativity includes gobs of glue, explosions of color, cutting with scissors to develop small muscles and fine tune eye-hand coordination, and releasing the imagination in bursts of creativity.

BLOCKMANIA! – located on the 1st floor

Block play is universal; something that nearly all children experience in their lifetime. This space was designed to provide ample opportunities for children and their caregivers to interact with a variety of blocks.

BOOK LOFT – located on the 3rd floor

Reading together is one of the most important activities a caregiver can do with a child as it nurtures a love of the written word and builds a foundation for literacy and later success in school. This space is more low-key than most – comfy and cozy to encourage children to snuggle in and read a good book. The loft space also affords a view to upper levels of the Climber and a closer look at the CD wall. Storytime with Museum staff or guest readers is presented every day in the Book Loft.

BUILDING BIG – located on the 2nd floor

This exhibit provides a host of raw materials and found items that might represent columns, beams, walls and roofs, all typical elements of the construction industry. Building Big entices the boundless imaginations of children to creatively engineer their own personal forts or contribute to a larger cooperative building project.

THE SCHUFF-PERINI CLIMBER – located on the 1st floor

The Climber towers above the Atrium floor offering a bird's eye view of the bustling activity below. Created from standard building materials, found objects, items out of context and a little inspiration from some wacky imaginations, the climbing adventure is guaranteed to stretch the muscles, provide a perceived feeling of risk and challenge all to climb to new heights.

THE GRAND BALLROOM – located on the 3rd floor

Balls go up, balls go down, balls go rolling all around – dropping, triggering, spiraling, bumping – flashes of movement and a myriad of sounds fill this action-packed room.

MARKET – located on the 3rd floor

A trip to the grocery store becomes a delight as children make real choices about what products to put in the cart. Opportunities for role-play abound as children restock the shelves, ring up the items as a cashier, or fill the shopping cart as customer. Much like real life, the market experience exercises the child's physical, cognitive, and social skills.

MOVE IT! – located on the front lawn

The front lawn is a wondrous play space filled with many opportunities for moving and learning in the great outdoors!

NOODLE FOREST – located on the 3rd floor

Oodles of noodles suspended from above offer sensory immersion in a unique and engaging environment. A thick forest of textural delight awaits visitors as they navigate this unfamiliar yet stimulating terrain. The Noodle Forest is guaranteed to activate the senses and inspire giggles.

PEDAL POWER – located on the 2nd floor

Pedal Power is a long, narrow space perfect for riding tricycles – and that is just what young visitors can do here. Many young children, especially in the inner city, never have the opportunity to ride a tricycle. Within the safe confines of the Museum, young visitors can learn to master the art of pedaling, test their sense of balance, and practice cooperative play as they *stop* and *go* on imagined roadways.

PLACE FOR THREES AND YOUNGER – located on the 3rd floor

This gallery is for our youngest visitors and has many components designed to meet the particular developmental needs of infants and toddlers. Older students will enjoy looking at the wall of shoes just outside this exhibit space.

PIT STOP – located on the 3rd floor

Pit Stop is like an industrial art studio where a donated race car is the centerpiece. A real motorcycle provides another means of “transportation” or just a cool spot to sit and watch racecars zoom by overhead.

TEXTURE CAFÉ – located on the 3rd floor

Children use an amazing array of fabrics and materials to create the meal of their dreams. Tables and booths, counters and stools, and a full-service kitchen with ovens, stoves, storage and utensils provide the framework for culinary escapades.

WHOOSH! – located in the Atrium & on the 2nd floor

Whoosh! introduces children to the power of air with a freestanding jumble of connected tubes where children feed scarves in a rainbow of colors into the transparent, air-powered structure. Scarves shoot up through the pipes at high speeds, to heights of 20’ or more, are released in a burst of energy from high above, and gently float down slowly to land on or be caught by children.

For further details, visit us on the web at www.childrensmuseumofphoenix.org

Art Studio

Educational Value

Rationale

Direct participation in art sparks children's imaginations and provides another outlet for them to communicate their feelings.

"The arts provide multiple ways to experience, understand, and express the world and our relationship to it. They are one of the fundamental repositories of human wisdom. They educate the imagination and develop originality. They represent significant ways for students to discern, express, communicate, figure out, and understand the human universe." Dr. Charles Fowler

Experiences with art foster creativity and imagination, bolster problem-solving and critical-thinking skills, and cultivate originality, discipline, cooperation, and self-esteem.

"The facts are that art education makes a tremendous impact on the development growth of every child and has proven to level the "learning field" across socio-economic boundaries." - James S. Catterall

As children make art, they enhance social development, mutual appreciation and respect for others. Additionally, there is strong research that supports the link between rich art experiences and academic achievement.

Goals and Objectives

Invite Creative Expression and Visual Communication

- Provide space to settle comfortably and work individually or together.
- Provide tabletop projects that allow creativity and requires no instruction or preparation.
- Provide specific opportunities to create visual stories.

Demonstrate an Appreciation of Art and Creative Experimentation and Build Knowledge of What 'Art' Is

- Offer projects that are vertical and freestanding, and are implemented in three dimensions.
- Provide tools and materials that are open-ended and can be used in different ways.
- Provide recycled project materials that are acquired in partnerships with local industry.
- Include books about artists and art making from different places and times, including but not limited to those being explored in the Studio.
- Provide non-traditional art supplies, i.e. art materials from nature.

Literature:

Circle and Squares Everywhere by Max Grover
Hands – Growing Up to Be an Artist by Lois Ehlert
Harold and the Purple Crayon by Crockett Johnson
Imagine by Bart Vivian
I Spy – An Alphabet in Art by Lucy Micklethwait
Mouse Paint by Ellen Stoll Walsh
My Crayons Talk by Patricia Hubbard
My Many Colored Days by Dr. Seuss
When Clay Sings by Byrd Baylor



Classroom Activity

Art Studio: Baby Rattlesnakes	DURATION: 15-30 Minutes	GRADE LEVEL: Pre-K – 5 th Grades
DESCRIPTION	Children will enjoy learning about and creating their own baby rattlesnake!	
OBJECTIVES	1. The children will recognize an Indian legend, Baby Rattlesnake. 2. The children will identify facts about snakes and/or desert safety. 3. The children will construct a baby rattlesnake out of paper.	
MATERIALS	• 6" X 6" brown construction paper • Scissors • Oil pastels, crayons, or markers • Gem stickers or glitter (optional) • Information about desert safety and snakes • <u>Baby Rattlesnake</u> by Viborita de Cascabel	
DIRECTIONS 	1) The children will read or have read to them the Indian legend, <u>Baby Rattlesnake</u> . 2) The children will review information about snakes and desert safety. 3) The children will choose a piece of construction paper and cut off each of the corners so that it looks like a stop sign 4) Using a marker, the children will start from one corner and draw a spiral shape. 5) The children will then cut on the spiral shape ending in the center which becomes the head of the snake. 6) They will decorate the snake with oil pastels, crayons, or markers. Gem stickers or glitter may be added.	
ADAPTATIONS	The spiral may need to be drawn by an adult for children who are having difficulty completing this task on their own.	
EXTENSIONS	Extend the concept of patterns after children have made patterns on the snake. Explore other types of patterns and where they occur (clothing, nature, etc.). This lesson provides opportunities to further explore the topics of snakes and desert safety more in depth. Expand learning about snakes by exploring other types of snakes and their habitats. Since desert safety is so important in Arizona, continue the discussion to include the importance of sunscreen, drinking water, and other potentially dangerous desert animals.	

BlockMania!

Educational Value

Rationale

In every country, children at play sit, squat or kneel on the floor, deeply engaged in manipulating a bunch of small items before them: blocks. Building with blocks is a universal play activity that aids in cultivating three-dimensional connectivity in the brain.

Blocks are recognized as one of the most important play materials of childhood. Young children have difficulty thinking abstractly and blocks provide manipulation of concrete objects, as opposed to activity on a flat screen, such as a computer. This beautiful space offers blocks of all sizes, shapes and colors, providing the raw materials for an amazing array of creative expression. Whether engaged in a sprawling group project or intensely focused on building a solitary structure, children test their skills in eye-hand coordination, proportion, balance, symmetry, spatial awareness and patience! No doubt, it's a place of towering possibilities.

Goals and Objectives

Develop STEM (Science, Technology, Engineering, and Mathematics) skills

- Early engineering skills are developed as children face challenges in symmetry, balance, equality, weight, shape, spatial relationships, measurement, and physical properties.
- Trial and error, cause and effect, and problem solving skills are tested and retested through block play.
- Blocks are the precursor of all buildings and the foundation of architecture. For the older child, block play introduces them to the history of architecture and the role of an architect, as well as other career fields: engineering, robotics, construction, etc.

Spark creativity, imagination, and innovation

- Engage creativity, imagining and constructing with blocks to make whatever children imagine.
- Skills in creativity, imagination, and innovation are essential to the 21st century workforce, and this exhibit provides plenty of opportunity to develop these skills.
- What better place for block play than next to the wonderfully-imaginative Climber. This unique structure will inspire endless possibilities in the nearby BlockMania! exhibit.

Opportunities to cultivate social-emotional skills

- Mentally constructing whole worlds while learning to cooperate, share, plan, and negotiate.
- Cooperation and collaboration are developed as children communicate and exchange ideas while engaging in block play.
- Children experience a sense of competence and confidence as structures are completed.

Literature:

When I Build with Blocks by Miki Alling

If I Built A House by Chris Van Dusen

Block City by Robert Louis Stevenson

How A House is Built by Gail Gibbons

Building A House by Byron Barton

Shapes in Buildings by Rebecca Rissman

How to Build an A by Sara Midda

Amazing Buildings by Kate Hayden

Dreaming Up: A Celebration of Building by Christy Hale

Changes, Changes by Pat Hutchins

Iggy Peck, Architect by Andrea Beaty

13 Buildings Children Should Know by Annette Roeder



Classroom Activity

Blockmania!: Blocks In A Box	DURATION: 15-30 Minutes	GRADE LEVEL: PreK – 5 th Grade
DESCRIPTION	During this activity where students will try to fit an assortment of blocks into a box, they will develop problem solving and communication skills while working together with peers.	
OBJECTIVES	1. The children will use problem solving and trial and error to find the best way to fit the blocks into a box. 2. The children will communicate with peers their ideas or possible solutions, while also listening to peer input. 3. The children will enhance geometry skills, including space and area, while working to figure out how they may fit together in the box.	
MATERIALS	• Assortment of wooden blocks • Box or container	
DIRECTIONS 	1) Divide the children into small groups of 3-5 students per group. 2) Each group will receive a box and an assortment of wooden blocks. 3) The goal is for each group to cover the inside bottom of their box with the blocks in a single layer, covering the most space. 4) Have each group estimate how many blocks they may use during this activity. 5) At the conclusion of the activity, have the groups share how many blocks they actually used. You may also discuss the following: - How could you fit more blocks? - Which block was the hardest to work with? The easiest? - Were your predictions correct?	
	For younger children, it would be most appropriate to use an assortment of unit blocks in square and rectangular shapes.	
EXTENSIONS	For older children, you may like to have them calculate area prior to completing the activity. Use a variety of shapes of blocks for an added challenge!	

Book Loft

Educational Value

Rationale

In the busy life of a children's museum, sometimes it's necessary for visitors to seek out a quiet spot for a change of pace; a place to sit down with one another and retreat, regroup, rejuvenate, and just observe the goings-on around them. Children in busy families relish opportunities to snuggle into a caregiver's lap or curl up into comfy seating with a book. Reading with children is one of the best ways for caregivers to nurture early literacy skills and a love of books and learning in general.

Children and adults need to spend time together: Playing, chatting, working, and just enjoying each other's company. A lifelong relationship between a child and a grown-up develops through countless shared moments. Here, grown-ups will be able to take the time to settle down and talk with their children, watch them learn, and listen to all the wonderful ideas they have.

"There are perhaps no days of our childhood we lived so fully as those we spent with a favorite book."- Marcel Proust

Goals and Objectives

Literacy: Offer Various Ways for Children to Become Familiar with Written Symbols, Book Typography, Book Parts and Reading Skills

- Provide a variety of books and other materials with wholesome topics and from different cultures, including those written in other languages.
- Museum staff will offer daily storytimes for children and their families, which also serves as a model for reading.

Relaxation: Offer a space for respite within the larger, active museum environment.

- Offer a different perspective on other parts of the Museum, especially the Climber.
- Provide a variety of seating opportunities for enjoying a piece of literature.

Communication: Provide a forum for open communication about everyday topics of interest in the child-rearing world.

- Offer means for visitors to add to cumulative dialogues about topics of interest.
- Provide comfortable multi-level social seating for adults and children in the space, so the layout is casual and encourages people to get acquainted with each other and chat.

Literature:

Arthur and the Race to Read by Marc Brown

But Excuse Me That is My Book by Lauren Child

The Day Eddie Met the Author by Louise Borden

Dog Loves Books by Louise Yates

How a Book is Made by Alik

Miss Brooks Loves Books (And I Don't) by Barbara Bottner

The Old Woman Who Loved to Read by John Winch

Read Me A Book by Barbara Reid

Reading Makes You Feel Good by Todd Parr

We Are in a Book! (An Elephant and Piggie Book) by Mo Willams

Wild About Books by Judy Sierra



Classroom Activity

Book Loft: Creative Corner Bookmarks	DURATION: 15-30 Minutes	GRADE LEVEL: 1 st – 5 th Grade
DESCRIPTION	This activity allows students the opportunity to develop skills in recognizing environmental print as well as the letters of the alphabet.	
OBJECTIVES	1. The children will follow a sequence of directions to create their own bookmark. 2. The children will use materials provided to create a design that reflects personal taste or based on personal experiences. 3. The children will increase reading time and focus by using their bookmark to mark their place in their book.	
MATERIALS	• Construction or cardstock paper, varied colors • Pattern (See page 33 of this Guide) • Paper scraps • Scissors • Glue sticks • A book to read and place the bookmark!	
DIRECTIONS 	1) Have copies of the pattern already on colored paper, and have the children cut it out. As an alternative, children may cut out the pattern and trace it onto the paper of their choice. **If you choose this method, you may wish to make some heavy duty patterns using cardstock or posterboard.** 2) After the students have a cutout of the pattern in their desired paper color, have them fold over the triangle flaps and glue them to each other. They should not glue the triangle shapes to the square shaped section of the bookmark, leaving a pocket open for the book's pages. 3) Using scrap paper, students may add details by cutting and gluing pieces to their bookmark to create a character or animal.	
ADAPTATIONS	For younger children, or to make it a slightly easier project, use the corner of an envelope to create a similar bookmark! Just cut off the corner of the envelope to make a triangle shape, have the children decorate it, and then you have a simpler version of this bookmark!	
EXTENSIONS	Have students design other ways to make bookmarks using scraps of paper in the classroom. Tell students that a bookmark is used to mark your place in your book, but should also serve as a reminder to save a time and place for reading in your daily routine!	

Building Big

Educational Value

Rationale

No matter where people end up living, they have common needs that are met by shelter. The making of shelters from whatever materials are available provides physical protection from the elements—but it also provides a sense of security, control, and independence within a community.

Building forts is a fundamental experience of childhood, universal across cultures, gender and time. Much like engineers, children create structures from scratch, transforming natural and found materials into viable systems. At the Children's Museum of Phoenix, fort building challenges developing cognitive skills as children calculate loads, experiment with tension and compression, explore the structural integrity of spans, estimate the force of gravity and create an ever-changing landscape reflecting color and artistic expression.

Children use their minds, muscles and imaginations to gain a better understanding of spatial awareness and how to move objects through space. They manipulate open-ended, repurposed materials, take risks and learn from trial and error. Whether working alone or in groups, problem-solving and negotiating skills are honed. Humming with purposeful activity, the exhibit is continually reconfigured throughout the day, guided by the wild imaginings of children at work.

Equally important, the social and emotional growth that occur during fort-building are key components of child development. Meeting children's inherent drive to construct personal worlds, children create forts - worlds in which they can become themselves. Constructing meaningful worlds during childhood play fosters a sense of competency and confidence for shaping the big world tomorrow.

"The youth gets together his materials to build a bridge to the moon, or, perchance, a palace or temple on the earth" - Henry David Thoreau

Goals and Objectives

Constructive and Imaginative Play

- Offer materials and tools that are easy to configure, connect, and change as needed to support play scenarios.
- Prompt exploration of the use of space in creating a closed-off area for privacy.

Sensory and Motor

- Provide opportunities for the development of fine motor muscles through the movements to operate mechanisms to suspend fabrics.
- Give children the opportunity to create an area that is their own private, closed-off space.

Inspiration and Cultural Awareness: Different Kinds of Shelters

- Offer frameworks in a variety of shapes.
- Provide a range of enclosure materials with varying texture, shape, or imagery.

Literature:

A Kid's Guide to Building Forts by Tom Birdseye

Bailey Goes Camping by Kevin Henkes

Block City by Robert Louis Stevenson

Building Big by David Macaulay

Camp Out! The Ultimate Kids' Guide by Lynn Brunelle

Oliver Pig and the Best Fort Ever by Van Leeuwen/Schweninger



Classroom Activity

Building Big: Cardboard Box Forts	DURATION: 25-30 Minutes	GRADE LEVEL: Pre-K- 5 th Grade
DESCRIPTION	A cardboard box is no longer just a box! To your students, it could be a castle, a tent, a house, or a fort of course!	
OBJECTIVES	1. Children will develop a unique, interesting, and creative three-dimensional sculpture out of recycled materials 2. Children will develop geometry and engineering skills as they design and plan their structure. 3. Through trial and error, children will discover what works and what doesn't as they are constructing their structure.	
MATERIALS	• Cardboard Boxes of various sizes (ask someone who just moved or a large warehouse business) • Scissors or other tool for cutting • Markers (or paint) to decorate • Other various craft materials for decorative features: feathers, foam shapes, etc.	
DIRECTIONS 	1) Children will develop a plan for the type of structure they wish to build (students may draw out a plan as well). 2) Children will gather boxes and other materials to make their structure and will complete their structure as planned. (NOTE: Adults will likely need to assist with cutting the cardboard. Students may draw lines for the parts that they want cut to assist with this step.) 3) Children may add other features using craft materials.	
ADAPTATIONS	Work on developing teambuilding skills by having students work together in teams to create a structure from the box(es). This will encourage students to work on communication, listening, trial and error, and planning.	
EXTENSIONS	Incorporate other recycling materials, such as bottles, caps, food boxes, etc. to add other features to their structure. Add the element of writing to this project by having students write a story about who lives in the structure, what kind of environment the structure is in, and what different features of the structure are used for.	

The Schuff-Perini Climber

Educational Value

Rationale

Prior to opening, over two hundred people were invited to a community Imagining Session for the Museum. Tree-climbing and tree-house experiences were mentioned over and over again as the most memorable childhood experiences.

The Climber invites you to the top of the world where a microcosm of climbing experiences suspended in the space above the atrium exhibits offers a unique bird's eye view of the bustling activity below. Children climb and balance, hang on for dear life, and find the best perch from which to observe.

Goals and Objectives

Motor and Sensory

- Provide opportunities for climbing and clambering, balancing, maneuvering around others and within multi-dimensional terrain.
- Immerse children in a sensory-rich environment with various textures, sights, and sounds.

Imaginative Play, Immersion and Risk

- Provide an experience that is perceived as risky and challenging, an opportunity for children to test themselves and succeed by climbing out, up, through, and engaging in some mid-air activity.
- Offer opportunities to choose and maneuver among multiple routes.

Community, Camaraderie, and Bonding

- Present visitors with a central element of the atrium space that connects the upper and lower levels and encourages visitor interaction across both the vertical and horizontal dimensions.
- Supply clear sightlines from the Climber down to the lower floor and across to the atrium, and scale the Climber so that there are clear sightlines through it between the mezzanine edges to the lower level. The idea is to see kids in it from above and below, and for kids to be able to see clearly out from it.



Literature

Climb the Family Tree, Jesse Bear! by Nancy Carlstrom

The Daddy Mountain by Jules Feiffer

Every Time I Climb a Tree by David McCord

Henry Climbs a Mountain by D.B. Johnson

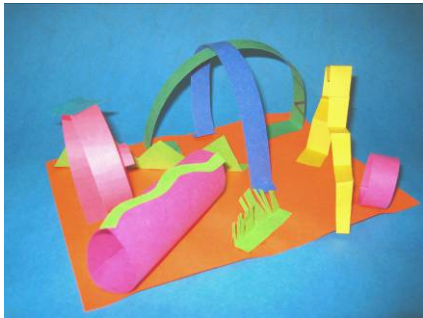
Humpty Dumpty Climbs Again by Dave Horowitz

Troo's Big Climb by Cheryl Crouch

You Wouldn't Want to Climb Mommy Everest by Ian Graham



Classroom Activity

Climber: Construction Paper Playgrounds	DURATION: 15-25 Minutes	GRADE LEVEL: Pre-K – 5 th Grade
DESCRIPTION	Based on inspiration from the Museum’s Climber, students will design and create their own construction paper playgrounds with unique features.	
OBJECTIVES	1. Children will use fine motor skills to cut, fold, and manipulate paper to create 3-dimensional playground features. 2. Children will recognize the use of recycled paper in a 3-dimensional picture. 3. Children will plan and implement their planned design to create a paper playground.	
MATERIALS	• Construction paper 6”x9” • Construction paper scraps • Glue • Scissors	
DIRECTIONS 	1. The children will choose a sheet of 6” X 9” construction paper for a base. 2. Using pieces of recycled paper, they will cut out various strips or shapes and form them into 3-dimensional shapes (cones, spirals, cylinders, etc.). 3. They will glue the 3-dimensional shapes onto the base to create a climber or playground.	
ADAPTATIONS	Incorporate other items, including recyclables, to add other features to your playground!	
EXTENSIONS	Have students, especially those in older grades, create an article or advertisement about their unique playground! Encourage them to include details about the features of the playground, where it is located, and what visitors may do at the playground!	

Grand Ballroom

Educational Value

Rationale

Balls, balls and more balls – rolling, dropping, triggering, and bumping – flashes of movement and a myriad of sounds fill this action packed room. As children release balls from high in the loft, they can track their progress as they roll around the room setting off sights and sounds to squeals of delight.

Freestanding track runs on a smaller scale engage children on a more intimate level. The youngest visitors develop their tracking skills while rolling balls, cars, and “centipedes” down simple tracks.

A wall of metal and a selection of magnetic track pieces allow for constructing your own ball run – designing, testing, adjusting and launching the balls down the path you’ve devised. And what about the resonating sounds of the kitchen inspired pan run – simple yet enticing, isn’t it?

The physics/science of chain reactions comes to life on a grand scale as ramps encircle the room. Smaller ball runs and exhibits exploring cause and effect combine to make this room a favorite with ball players, young and old.

Goals and Objectives

Critical Thinking Skills

- Offer opportunities for decision-making and strategizing as they construct their own cause and effect scenario.
- Introduce risk-taking when stakes are low, such as climbing the ladder to the top of the ball run.
- Engage curiosity, experimentation, cause and effect

Sensory Stimulation & Motor Skills

- Develop fine & gross motor movements as they construct their own and utilize existing ball runs within the exhibit
- Provide sensory-rich exploration of cause and effect ball runs such as when the ball hits the bell, it rings!

Literature

A Ball for Daisy by Chris Raschka

Ball! by Ros Asquith

Balls by Michael J. Rosen

Beach Ball by Peter Sis

Bear and Ball by C. Wright

Hit the Ball Duck by Jez Alborough

Klipper’s Lost Ball by Mick Inkpen

Little Pig’s Bouncy Ball by Alan Baron

Round Like a Ball by Lisa Campbell Ernst

Sam’s Ball by Barbro Lindgren

Shapes That Roll by Karen Nagel

The Story of Red Rubber Ball by Constance Kling Levy



Classroom Activity

Grand Ballroom: Make Your Own Marble Maze	DURATION: 15-25 Minutes	GRADE LEVEL: Pre-K – 5 th Grade
DESCRIPTION	Children will create their own labyrinth using recycled materials.	
OBJECTIVES	1. Children will develop eye-hand coordination as they manipulate the box to make the ball move. 2. Children will explore trial and error to successfully manipulate the ball the way they intend. 3. Children will develop visual tracking skills while watching the ball move.	
MATERIALS	• Shoebox lid • Construction paper scraps • Straws, cotton swabs, bottle lids, etc. • Glue • Scissors • Markers or crayons • Marble (or a gumball works well too!)	
DIRECTIONS 	1) Children will glue on straws, cotton swabs, lids, and paper scraps to create a maze for their marble in the shoebox lid. 2) Children will then use markers or crayons to decorate their maze. They may add Start and Finish areas to their maze. 3) Children will then place the marble on the maze and tilt the box lid back and forth to manipulate it through the obstacles.	
ADAPTATIONS	Obviously younger children will make a simpler maze, while older students may make a more complicated maze. If you have magnetic balls and magnet wands in your classroom, this is another fun way to use the maze. This is a great way for children who have difficulty coordinating their movements to make the marble move the way they want it to.	
EXTENSIONS	Make a marble maze on a larger scale by using cardboard tubes to connect to each other. Challenge students to see how high they can make their marble maze. Another great marble maze tool is a pool noodle cut in half lengthwise. The groove that is in the center makes a perfect track for the marble!	

Market

Educational Value

Rationale

Direct participation in role-play experiences empowers children by sparking their imaginations and providing outlets for them to experiment and communicate with other people.

Not only can the Market give children opportunities for role-play and social interaction, but the sorting, grouping, weighing, counting, and numeracy that happens here provides a strong foundation for early math learning. The Market is a print-rich early literacy environment, and a rich variety of ‘products’ reflect the cultural diversity of Phoenix. In addition, concepts like good nutrition and consumer judgment can be introduced in simple, understandable formats.

“Around the age of six or seven, children develop a great need to learn by doing, to make their mark on a community outside the home. If the setting is right, these needs lead children directly to basic skills and habits of learning.” A Pattern Language

Goals and Objectives

Support Visitors' Imaginations, Capacity for Constructive Play, and Self-Initiative

- Provide objects and materials that suggest the sort of behaviors that might occur in a market.
- Establish an open-ended sequence that lets visitors drive all aspects of the market from shopping to check-out to restocking.
- Use tactile and multisensory details to convey the sense of a market—smell station with the real smell of spices, chrome bars to contain carts, tactile exploration of peas to scoop and measure.

Involve and Empower Children and Families to Participate in the Community Environment

- Supply comfortable spaces for caregivers to observe and chat from close proximity.
- Bolster children’s social confidence by allowing for a wide variety of roles.
- Offer activities that require more than one participant or that integrate ‘helping’.

Promote Cultural Awareness and Explore Cultural Diversity

- Offer market products with food types and labels from a variety of cultures in a variety of languages.

Encourage Basic Skill Development in Literacy and Math

- Include images, text, and numeric information on labels for development of literacy and numerical skills.
- Provide products with different shapes, sizes, weights, and tactile qualities.
- Supply finite quantities of products and offer ways to match or count products.

Literature:

At the Supermarket by Anne Rockwell

The Curious Garden by Peter Brown

Fruits and Vegetables by Gladys Rosa-Mendoza

Llama Llama Mad at Mama by Anna Dewdney

Maisy Goes Shopping by Lucy Cousins

My Garden by Kevin Henkes

Our Corner Grocery Store by Joanne Schwartz

Put It On the List by Kristen Darbyshire

Shopping with Dad by Matt Harvey

Signs at the Store by Mary Hill

Tommy at the Grocery Store by Bill Grossman

What’s in Grandma’s Grocery Bag? by Hui-Mei Pan



Classroom Activity

Market: Classroom Store	DURATION: 30-45 Minutes	GRADE LEVEL: Pre-K – 3 rd Grade
DESCRIPTION	Make a pretend grocery store in your classroom for many fantastic learning opportunities across all academic areas!	
OBJECTIVES	1. Children will explore economic concepts such as job roles, spending, and comparison shopping. 2. Children will use basic math concepts, such as counting, sorting, addition, subtraction, and money. 3. Children will develop literacy skills, including reading, speaking, listening, and writing.	
MATERIALS	• Various empty, clean food containers (ask parents!) • Grocery ads and coupons • Baskets, bags, or carts for shopping • Toy cash register • Paper and pencils for lists and receipts • Pretend money	
DIRECTIONS	1) Collect empty, clean food containers from parents to display on a classroom shelf. 2) Place the cash register on a small table and provide bags or carts for shoppers. 3) Encourage students to assign various roles for the store: shopper, cashier, stocker, and any other roles you may think of. 4) Allow students the opportunity to explore and play in this area on their own. 5) Encourage students to make shopping lists and to write receipts in their play.	
ADAPTATIONS		
EXTENSIONS	Let the learning continue by opening other shops in your classroom, such as a flower shop (use fake flowers and/or flowers that you make as an art project), book store, ice cream shop, etc. These classroom shops are easy to align to classroom activities or themes that you are doing. The possibilities are endless!	

Move It!

Educational Value

Rationale

There is a crucial need for children to engage in more physical activity, and *Move It!* helps to address that need. A dramatic reduction in levels of physical activity and an escalating disconnect between children and nature are contributing to the growing epidemic of obesity in our nation's children. It is vital to our children's health and well-being that they engage in appropriate physical activity, develop a healthy appetite for outdoor play and cultivate a hands-on respect for nature.

The design elements of *Move It!* not only complement the interactivity of the Museum interior by advancing the use of minds and muscles, they also align with important health and wellness initiatives promoted by the Association of Children's Museums (ACM) including *Good to Grow* and First Lady Michelle Obama's *Let's Move!* Offering family friendly strategies to combat the growing epidemic of childhood obesity, *Good to Grow* supports eating healthy foods, increasing physical activity, reducing screen time and connecting with nature through outdoor play. Through endorsement of the national initiative *Let's Move!*, ACM encourages children's museums to support healthy lifestyles for children and families through exhibits and programs that invite children to play and encourage them to be physically active.

Goals and Objectives

Provide a space where children may engage in physical activity

- Visitors engage in movement such as climbing, crawling, clambering, rolling, running, balancing, negotiating around others, through space, and within multi-dimensional terrain.
- Children can test themselves with experiences that are challenging and involve developmentally appropriate risk.
- Families have the opportunity to move and learn together in a unique environment.

Inspire exploration of a natural environment

- Children can test themselves with experiences that are challenging and involve developmentally appropriate risk.
- Provide a space where children may explore the outdoors in a safe place.

Literature:

Desert Digits by Barbara Gowan

Guess Who's In the Desert? by Charline Profiri

My Dad is the Best Playground by Luciana Navarro Powell

My Dream Playground by Kate Becker

Outside Your Window by Nicola Davies

Playground Day by Jennifer Merz

Shadows & Reflections by Tana Hoban

The Sun is My Favorite Star by Frank Asch



Classroom Activity

Move It!: Following Directions Fit ‘n’ Fun!	DURATION: 15-30 Minutes	GRADE LEVEL: Pre-K – 5 th Grades
DESCRIPTION	Get active and focus on listening skills in this fun outdoor game!	
OBJECTIVES	1. Students will develop listening skills as they hear and execute given directions. 2. Students will improve communication skills as they give verbal directions to their peers. 3. Students will develop motor skills as they physically execute the given task.	
MATERIALS	• Outdoor playground or play space	
DIRECTIONS 	1) Model for the class how to give a sequence of directions for students to follow (i.e. “run around the tree, go up the ladder, and down the slide”). 2) Select a student to take the lead in giving the directions. 3) Encourage students to add more details to the directions to make it more challenging (i.e. “go to the biggest tree, touch the bark, and come back”).	
ADAPTATIONS	For students who have more difficulty listening to verbal directions, provide picture cues or cards to assist them in understanding the verbal directions. Play the classic following directions game of “Simon Says”, which requires even more acute listening! Students give directions after the phrase “Simon Says” and then on another direction attempt, without the phrase “Simon Says.” Those who still follow the direction, without the Simon Says preceding it are to sit out for the remainder of the game.	
EXTENSIONS	Work on understanding of classroom content by drawing and/or writing letters, shapes, numbers, words, etc. on the concrete with chalk and then giving directions based on the images (i.e. “stand on the number 14, then jump over the number 20”).	

Noodle Forest

Educational Value

Rationale

Children love to burrow to explore, to hide, or just to see what it's like. You find them giggling in the racks at the clothing store, deep in the swimming pool, half-buried in sand at the beach, submerged in those ball pools, hiding in the coat closet. It's the *Lion, the Witch, and the Wardrobe* story...

Interaction with unpredictable situations and unfamiliar environments develops spatial, cognitive and strategic skills that children apply to the world around them. Sensory integration is a normal, neurological, and developmental process which begins in the womb and continues throughout one's life. Sensory processing occurs when the brain receives sensory input from the environment and interprets the information for use in achieving goal directed actions.

"Deeper, richer, multisensory learning experiences will clearly lead to greater retention of content and, more importantly, the skills to learn in new environments." - David J. Staley, Ph.D, Director, The Harvey Goldberg Program for Excellence in Teaching

Regular opportunities for unstructured imaginative play help children develop the skill of self talk, the ability to carry on conversations in their minds which are linked to problem solving and perseverance. Imaginative play can help a child work through difficult emotions, practice social roles, and develop empathy, impulse control and a spirit of cooperation.

Goals and Objectives

Provide a Space for Sensory Stimulation, Experimentation and Gross Physical Movement

- Create an unusual setting for exploring with the senses.
- Magnify movements and encourage interaction between visitors through the movements of the material
- Provide access for adults and children with special needs
- Encourage an awareness of one's body in space and one's relationship to the people and objects around them.

Provide an Open-Ended Play Environment that Fosters Activity

- Expand visitors ideas of what a landscape, environment, and play space might be
- Offer an environment that fosters understanding and practice of directional language
- Provide an environment that encourages fantasy play

Literature

Be A Friend to Trees by Patricia Lauber

The Great Kapok Tree by Lynn Cherry

In the Tall, Tall Grass by Denise Fleming

The Lorax by Dr. Seuss

Rumble in the Jungle by Giles Andreae

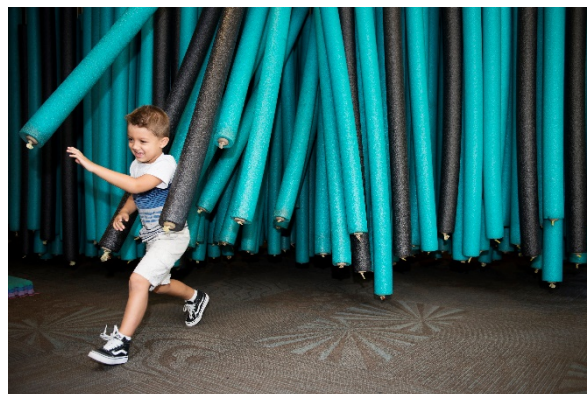
"Slowly, Slowly, Slowly" Said the Sloth by Eric Carle

The Umbrella by Jan Brett

Walking Through the Jungle by Debbie Harter

We're Going on a Bear Hunt by Michael Rosen

Where the Wild Things Are by Maurice Sendak



Classroom Activity

Noodle Forest: Non-standard Units of Measure	DURATION: 15-30 Minutes	GRADE LEVEL: Pre-K – 2 nd Grade
DESCRIPTION	How many noodles long is the classroom? How many paperclips long is a pencil? These questions and many more can be answered using a variety of non-standard measurement tools!	
OBJECTIVES	1. Children will develop estimation skills when estimating the sizes of objects using various non-standard measuring tools. 2. Children will use non-standard measurement tools for measuring. 3. Children will compare various measurements using the same, as well as different, non-standard measuring tools.	
MATERIALS	• Ruler, yardstick, and/or measuring tape • Pool noodle, paper clips, buttons, Unifix cubes, other non-standard measuring tools • Items to measure	
DIRECTIONS 	1) Ask students what tools they may use to measure something. Show the ruler, yardstick, and/or measuring tape. Measure a few classroom items using the standard measuring tools. 2) To model the nonstandard measurement activity, have students place a writing utensil (pencil or crayon) on their desk. Then ask students to place paper clips along the object (see photo to the left) to measure how many paperclips long it is. Compare using different sized paperclips, or try using buttons. 3) Show the students the pool noodle, Unifix cubes, blocks, and other non-standard tools to use for measuring. Have students measure various classroom items using the nonstandard measuring tool. How many blocks long is their desk? How many pool noodles long is the board? 4) Ask students to compare and contrast their measurements. You may wish to create a chart of some sort for students to document their measurements.	
ADAPTATIONS	For very young children, consider making a measuring stick. To do this, simply glue paper clips or buttons to a popsicle stick. Children may then use this tool to measure how many paper clips or buttons long an item is.	
EXTENSIONS	Read <u>How Big is a Foot?</u> by Rolf Myller and discuss the reason why the measurements were different. Have the students trace their own foot onto a piece of construction paper and cut it out. They may then use this foot to measure various items around the classroom and to compare the measurements with other students.	

Pedal Power

Educational Value

Rationale

Pedal Power is a long, narrow space perfect for riding tricycles – and that is just what young visitors can do here. Many young children, especially in the inner city, never have the opportunity to ride a tricycle. Within the safe confines of the Museum, young visitors can learn to master the art of pedaling, test their sense of balance, and practice cooperative play as they *stop* and *go* on imagined roadways.

A tricycle “car wash” presents a unique experience as young drivers find their way through soft brushes, hanging strips and blowing fans. A mirrored tunnel excites children’s imaginations as they safely zoom through on an adventure to somewhere.

Learning to ride a bicycle is a developmental milestone usually preceded in young childhood by adventures on tricycles and scooters. With urban sprawl and the ever-increasing number of vehicles on our nation’s roadways, there is little safe area where young children can learn to ride, especially in the inner city. Pedal Power offers children a safe place where they can experiment with balance, gross motor skills, and spatial awareness while at the same time nurturing that growing sense of independence.

A Brief History of the Tricycle

The first tricycle was built in 1680 for a German paraplegic named Stephan Farffler (Oct. 24, 1689), who lived near Nuremburg. He was a watchmaker and the tricycle had gears and hand cranks. In Asia and Africa, tricycles are used primarily for commercial transportation.

Goals and Objectives

Provide a Space Where Children Can Develop Motor Skills

- Offer children the opportunity to develop large muscle motor skills while riding the trikes.
- When riding on the trikes in this confined area, children are forced to develop motor planning skills to plan which way to go.
- Develop wiring in the brain from the alternating movements that are involved with riding a trike, which plays a key role as children begin to read and write.

To Encourage Patience and Turn-Taking

- Provide opportunities for children to develop skills in patience and turn-taking.
- Give children opportunities to better understand and cooperate with their peers.

Literature:

A Bicycle for Rosaura by Daniel Barbot

Bear on a Bike by Stella Blackstone

The Bear’s Bicycle by Emilie Warren McLeod

The Bike Lesson by Stan Berenstein

Duck on a Bike by David Shannon

Froggy Rides a Bike by Jonathan London

His Finest Hour by David Neuhaus

Sally Jean, the Bicycle Queen by Cari Best



Classroom Activity

Pedal Power: Environmental Print	DURATION: 15-30 Minutes	GRADE LEVEL: Pre-K – 3 rd Grade
DESCRIPTION	This activity allows students the opportunity to develop skills in recognizing environmental print as well as the letters of the alphabet.	
OBJECTIVES	1. Children will recognize various types of environmental print, including products, places, and street signs. 2. Children will recognize letters of the alphabet. 3. Children will match logos to the appropriate letter of the alphabet.	
MATERIALS	• Various magazines, newspapers, and grocery ads • Scissors • Glue • Markers/crayons • Paper to make a book (enough for each letter of the alphabet) or pre-made books for each student	
DIRECTIONS 	1) If books are not pre-made, have students use paper to make a book by folding pages in half and stapling them together to make 26 pages. 2) Have students write each letter of the alphabet in their book, one letter per page. 3) After writing the letters, have students look through the newspapers, magazines, and ads to find logos, signs or labels of things that start with each letter of the alphabet (for example: Goldfish crackers for “G” or Target for “T”) and cut them out. 4) Have the students glue each of the items they cut out to the appropriate page of their book.	
ADAPTATIONS	As an alternative, you may desire to make a class book or display together. Each child will be able to contribute by finding environmental print and placing it with the correct letter.	
EXTENSIONS	Continue exploring environmental print through a variety of other fun activities: • Bingo: Create Bingo boards using environmental print and then draw cards to have students mark the logo you call out. • Puzzles: Food boxes make great puzzles and work on literacy and spatial skills. Simply cut a panel from a food box (cereal, cookies, crackers, etc.) and cut it into shaped pieces to make a puzzle! • Scavenger Hunt: Make a checklist of environmental print that students may see on a walk around the school (exit, restroom signs, etc.). Take students on a walk to mark the ones that they see!	

Pit Stop

Educational Value

Rationale

The Pit Stop is a space for pretending. Direct participation in ‘pretend’ role-play empowers children by sparking their imaginations and providing outlets for them to experiment and communicate with other people.

“Time for play is valuable because play is the child’s most valuable medium...it is the mode that allows them to practice their skills: Taking initiative and solving problems within the constraints of a task, focusing attention for long periods of time, negotiating social relationships, inventing and imposing patterns and order, and manipulating materials and ideas in creative ways. These are skills that cannot be taught directly, but they are learned by children at play.” - Reynolds and Jones

Highlighting the basic principles of objects in motion as studied by Newton and Galileo, Pit Stop is a blur of action as visitors race cars of differing sizes and weights down ramps to the finish line. Experimenting with the laws of physics, the exhibit encourages children to explore concepts related to objects in motion such as momentum, speed, distance, acceleration, gravity and friction. Whether racing identical cars or two different kinds of cars, visitors predict which car will go faster, which attributes affect speed, which cars make the most noise, etc. Visitors experiment with cars crashing through a wall and launch cars off a ramp to sail through the air, predicting which car will go farthest and which incline works best. Engaging the scientific method and honing critical thinking skills, Pit Stop is a STEM playground – fun, fast and very physical!

Goals and Objectives

Support Visitors' Imaginations, Capacity for Constructive Play, and Self-Initiative

- Provide objects and materials that suggest the sort of behaviors that might occur in a futuristic and enlightened auto garage or fix-it shop
- Establish an open-ended sequence that lets visitors drive all aspects of the pit stop, from car maintenance to running the car wash to inventing gadgets to pimping tricycles for off-road/off-planet journeys
- Use tactile and multisensory details to convey the sense of a shop—the smell of metal filings, satisfying metallic clanking sounds, uniforms to support play roles, and real vehicles, toolboxes, and worktables

Inspire: Expand Visitors' Perception of What the Future Could Be

- Offer constructive, experimental tabletop projects based on *new* applications of simple scientific principles.
- Provide tools and tactile materials that can be used and combined in different ways for open-ended constructive projects like wire, fasteners, scrap materials, screws, soft wood, etc.
- Provide recycled project materials in partnerships with local industry.
- Provide materials and forms that can be applied to vehicles to expand their range or capacity

Literature:

Brrmm! Let’s Go! by Julie Kingdon

Cars and Trucks and Things That Go by Richard Scarry

Cars Galore by Peter Stein

Cool Cars by Tony Mitton and Ant Parker

If I Built a Car by Chris Van Dusen

Little Blue Truck Leads the Way by Alice Schertle

My Big Truck Book by Roger Priddy



Classroom Activity

Pit Stop: Exploring Ramps and Wheels	DURATION: 15-30 Minutes	GRADE LEVEL: Pre-K – 4 th Grade
DESCRIPTION	Explore the traits of bridges and ramps through experimentation in this hands-on activity!	
OBJECTIVES	1. The children will use prior knowledge to design a bridge or ramp. 2. The children will use materials provided to build their bridge or ramp. 3. The children will make a hypothesis for how a toy vehicle will move on their bridge/ramp and if it will hold up. 4. The children will test their hypothesis and form a conclusion for their experiment.	
MATERIALS	• Blocks, cardboard, or other building materials • Vehicles, toy cars • Optional: paper and pencil for drawing design and/or writing hypothesis	
DIRECTIONS 	1) As a class, in small groups, or individually, have students make a plan for how they are going to build their ramp or bridge. 2) After they have formed a plan, they should use the materials provided to build their bridge or ramp. 3) The students should make a prediction for how the toy vehicle will move on the bridge or ramp and how their structure will hold up. 4) The students may use the various vehicles and toy cars to test their ramps and bridges, forming a conclusion and refining their structure if needed.	
ADAPTATIONS	For younger students, the teacher may want to build the ramp and have the students test various items (toy car, crayon, puzzle piece, glue stick, etc) to see how they move on the ramp. A similar experiment may be done where the teacher builds a bridge and students place various items on it to test the weight.	
EXTENSIONS	Provide other types of vehicles, even with varying types or shapes of wheels, to test how they move down the ramps or across the bridge.	

Texture Café

Educational Value

Rationale

Like a grocery store, a café is a familiar environment for many children. This environment allows children to imitate the behaviors and roles they observe in the real world, at a scale they can affect.

Direct participation in role-play experiences empowers children by sparking their imaginations and providing outlets for them to experiment and communicate with other people.

Not only can the cafe give children opportunities for role-play and social interaction, but the sorting, mixing, and ‘cooking’ of different textures and fabrics provide sensory stimulation. As children take on different roles in the cafe, they develop fine motor skills by working with the materials and cognitive skills by remembering orders and combining different colors and textures to simulate certain foods.

Goals and Objectives

Support Visitors' Imaginations, Capacity for Constructive Play, and Self-Initiative

- Provide objects and materials that suggest the sort of behaviors that might occur in a restaurant or sidewalk cafe.
- Establish an open-ended sequence that lets visitors drive all aspects of the café from taking orders to preparing food to paying for a meal.
- Use tactile and multisensory details to convey the sense of a café—tables and booths with windows nearby.

Involve and Empower Children and Families to Participate in the Community Environment

- Offer comfortable spaces for caregivers to observe and chat.
- Bolster children’s social confidence by allowing for a wide variety of roles that contribute to the functioning of the café.

Encourage Basic Fine Motor Skill Development and Working Creatively with Tactile Materials

- Provide materials that evoke different kinds of foods and can be put together to create complete fabric ‘meals’: strips, strands, balls, flakes, patties, and leaves that can be rolled, mixed, stacked, fried or baked.
- Supply tools, equipment, and kitchen utensils that can be used and manipulated in many ways.

Literature

A Little Bit of Soul Food by Amy Wilson Sanger

A Pizza the Size of the Sun by Jack Prelutsky

The Book of Sushi by Amy Wilson Sanger

Eating by Gwenyth Swain

Eating the Alphabet by Lois Ehlert

Good Enough to Eat: A Kid’s Guide to Food and Nutrition
by Lizzy Rockwell

Grandma’s Saturday Soup by Sally Fraser and Derek Brazell

How Do Dinosaurs Eat Their Food? by Jane Yolen

If You Give a Moose a Muffin by Laura Numeroff

If You Give a Pig a Pancake by Laura Numeroff

Is It Rough? Is It Smooth? Is It Shiny? by Tana Hoban

L M N O Peas by Keith Baker

Pancakes for Breakfast by Tomie DePaola

The Peanut-Free Café by Gloria Koster

Round is Mooncake by Roseanne Thong



Classroom Activity

Texture Café: Feely Box	DURATION: 15-30 Minutes	GRADE LEVEL: Pre-K – 1st Grade
DESCRIPTION	Explore your sense of touch as you make your own feely box to feel items that you cannot see!	
OBJECTIVES	1. Children will use their sense of touch to experience various objects. 2. Children will use rich, descriptive language to describe the item in the box.	
MATERIALS	• Empty tissue box or shoebox with lid • Various materials to touch (toys, household or classroom items, etc.) • Paint and/or markers	
DIRECTIONS 	1) If you are using a shoebox, cut a hole in one end for hands to reach into to feel the various items. 2) Using the paint and/or markers, decorate the box as desired. 3) Place an item in the box for students to feel. Encourage them to describe how it feels and if they can name the object.	
ADAPTATIONS	For very young children, or children with special needs, it may be more appropriate to create a book of textures or place various textures on each side of a small box for them to explore their sense of touch.	
EXTENSIONS	Turn this activity into a matching game by having photos of items that you place in the box. Lay out a select few photos and see if your students can match what they are feeling to a photo of the object! Various types of feely boxes, including activities, are on the market today. Feel free to explore these products as well for even more ideas!	

Whoosh!

Educational Value

Rationale

Interaction with unpredictable situations and environments develops spatial, cognitive, and strategic skills that children apply to the world around them.

"There is no such thing as a failed experiment, only experiments with unexpected outcomes" -
R. Buckminster Fuller

Gross motor skills, spatial skills, and balance are developed best through whole-body motion and dynamic interaction with tactile materials.

Goals and Objectives

Develop Gross Motor Skills and Spatial Awareness

- Offer an open space to interact with the falling materials.
- Utilize the full height, width and length of the exhibit space for interaction with the materials.

Boost Sensory and Tactile Capacity

- Allow children to experience the museum with altered visual perceptions through fabrics.
- Provide a satisfying way for children to make the material compact and put it into the blower.
- Present visual and auditory indications when materials are released.

Stimulate Curiosity and Scientific Experimentation

- Use transparent mechanics to facilitate a simple cause-and-effect process.
- Encourage curiosity by exposing the workings of the mechanism and emphasizing the contrast between the materials behavior in the pipe, and released from the pipe.

Promote Critical Thinking and Improvisational Skills

- Provide ways to decipher the random cause-and-effect patterns by visually connecting the input/output ends of the tunnels.
- Vary the amount of time it takes for different materials to fall (by height, weight, tunnel length, or release.)

Literature

Air is All Around You by Franklyn M. Branley

Air: Outside, Inside, and All Around by Darlene Stille

Feel the Wind by Arthur Dorros

Fishing in the Air by Sharon Creech

Hot Air: The (Mostly) True Story of the First Hot-Air Balloon Ride by Marjorie Priceman

I Face the Wind by Vicki Cobb

Like a Windy Day by Frank Asch

Millicent and the Wind by Robert N. Munsch

The Usborne Big Book of Experiments by Alastair Smith

Where Do Balloons Go? by Jamie Lee Curtis

The Wind Blew by Pat Hutchins



Classroom Activity

Whoosh!: Parachute Experiments	DURATION: 15-30 Minutes	GRADE LEVEL: 1 st – 4 th Grade
DESCRIPTION	This activity allows students the opportunity to develop skills in recognizing environmental print as well as the letters of the alphabet.	
OBJECTIVES	1. Children will explore the effect of gravity and weight on the speed of parachutes. 2. Children will graph and analyze results from parachute drop.	
MATERIALS	• Colored tissue paper, cut into a square • String • Tape • Paper clips	
DIRECTIONS 	1. Have each child cut their tissue paper into 12" x 12" squares and cut string into four, 6" pieces, and tape one to each of the four corners of the tissue paper 2. Tie the four strings together making sure that the tape side is on the outside of the parachute 3. Now they will need to hook their paperclip at the knot of the four strings (have some students hook multiple paper clips on their parachute so you can watch as they fall at different speeds) 4. Stand on chairs or tables and drop parachutes, paying attention to the speed that each parachute reaches the ground. For this reason, you may want to have a specific color tissue paper correlating to a designated amount of paper clips, i.e. green tissue parachutes have one paperclip and blue tissue parachutes have two – watch as all of the blue parachutes fall first! 5. Have student record the results in a graph. Do they make it to the ground at the same time? Which ones landed first? Why? What happens if they have more paperclips?	
ADAPTATIONS	Allow students to construct their own parachutes or choose objects other than paper clips to hang. Experiment with different sizes of parachutes and different weights hung from the string. What is the relationship between the overall mass of the parachute and how quickly it falls?	
EXTENSIONS	Continue learning about air by exploring other flying objects by making paper airplanes, windsocks or kites! Look online for directions for these sorts of activities.	

Resources

General

DonorsChoose – www.donorschoose.org - teachers can request donations toward specific programming or experiences for their class

Treasures 4 Teachers – www.treasures4teachers.org –school supplies for Arizona educators provided to members free of cost

Read On Arizona – www.readonarizona.org – provides information on literacy, including links to many literacy rich websites

Science Foundation of Arizona – www.sfaz.org – provides information, activities, and research in the areas of STEM

Public Transportation to Museum

Valley Metro

- Bus Routes:
 - Route 3 on Van Buren – stops at Van Buren & 7th Street
 - Route 7 on 7th Street – stops at Van Buren & 7th Street
 - Route 1 on Washington Street – stops at Washington & 7th Street and Jefferson & 7th Street
- Light Rail Routes:
 - Eastbound: stops at Jefferson & 3rd Street
 - Westbound: stops at Washington & 3rd Street
- Fares: Field trips are FREE
 - Tempe youth are FREE with valid Tempe Youth Pass
 - All day local pass \$4.00
 - All day local pass purchased on bus \$6.00
 - All day reduced pass \$2.00 (youth, senior, persons with disabilities)
 - All day reduced pass purchased on bus \$3.00

Elementary school groups may be eligible for FREE field trip passes: www.valleymetro.org/transit_education/field_trips

For more information call Valley Metro Customer Service at 602.253.5000 or visit www.valleymetro.org

DASH

A convenient and FREE way to get around downtown Phoenix!

Pick-up/Drop-off locations near Museum:

Van Buren & 5th Street

For more information call 602.253.5001

