Properties of Objects

**What’s involved in learning**

- Playfully exploring and investigating the properties of objects
- Experimenting with action and reactions, cause and effect
- Creating patterns and relationships—sorting and matching, sizing and ordering, sequencing and grouping
- Developing a vocabulary to describe similarities and differences, patterns and relationships

---

Is it...?

- wet
- sticky
- smooth
- rough
- soft
- heavy
- cold
- hot
- squishy
- prickly
- bumpy
- slimy
- dry

---

In providing play material for infants and toddlers it is essential to ensure that there is a great variety and richness of experience offered, giving the infants the opportunity to explore with mouths and hands, a wide range of textures and shapes.

---

Elinor Goldschmied and Sonia Jackson (2004, 92)
I notice Spencer sitting on the carpet playing with our plastic bug collection. I ask him what he is doing and he tells me he is sorting the bugs. “Some are really big and some are really small. Here is where I’m putting all the dragonflies. There are two summer bugs, two flies, and lots of other ones. Look at this HUGE one, Jenna!” Spencer asked, “What is this one”? I explain that it is a tree bug and he can learn more about them in our bug book.

Why this matters:
Spencer loves bugs. He sorts and classifies them by colour, size, and species. He counts all the bugs and knows most of their names. Spencer is eager to learn more about bugs from books and the Internet.

~ Jenna LeBouthillier Sussex Early Learning Centre

“LOOK, I MADE A TRIANGLE!”

Just before snack time Erin had been working on a shape puzzle and talking to me about circles, squares, and triangles. After Erin helped tidy up and went to wash her hands she was waiting for the rest of her friends to join her. I watched her fold and unfold her napkin a few times. Suddenly she called out, “Look Bernadette, I made a triangle.”

~ Bernadette McKnight Sussex Early Learning Centre

Books to read together
Mama Do You Love Me?, by Barbara Joosee
Koala Lou, by Mem Fox
Meet Max and Roxy, by Karen Huszar
Knuffle Bunny, by Mo Willems

PLAYFUL EXPLORERS...
...make mud pies
...lay on the grass
...build snow sculptures
...catch the wind
...watch the clouds
...jump in leaves
...dig a hole
...catch rain drops
...splash in puddles
...stop and listen

Creating patterns by ordering and sequencing

COMMUNICATION • IMAGINATION • COMPASSION AND CARING • LIVING DEMOCRATICALLY • INDIVIDUALITY & INDEPENDENCE • SOCIAL RESPONSIBILITY • COMMUNICATION • AESTHETICS • SPIRITUALITY • ZEST FOR LIVING AND LEARNING • INCLUSIVENESS AND EQUITY

NEW BRUNSWICK CURRICULUM FRAMEWORK For Early Learning and Child Care ~ English
Properties of Objects

Sound Baskets

I read about sound boxes for preschool-aged children and thought the idea could be modified into a treasure basket for infants.

I knew my centre had empty baby fruit containers that were just the right size for babies to handle and the containers were clear so the children could see inside. I filled the containers with objects that provided a range of colours, shapes, sounds and textures such as beans, rice, pasta and buttons. I used packing tape to seal the containers and put them in a basket with low sides so the infants could reach inside.

When one child starts playing with a shaker it is an invitation for others to join. The children interact with each other as they shake and dance to the sounds of their noise makers.

~ Ann Clayton  Kids Choice Toddler Centre

To learn more about heuristic play and treasure baskets:

Why this matters:

Ann’s carefully selected items for the containers provide a range of sounds for children to explore and manipulate on their own. As the infants and toddlers play, educators are close by to observe and record their interactions with the materials and each other. Over time, children’s engagement with materials, often called heuristic play, deepens.

Other Possibilities:

What other items could be used for the sound boxes? Would smaller or larger containers create different sounds? What about creating a touch and/or smell basket? How about a basket containing all natural items? What other “treasures” could you include in a basket for children to explore?

---

Sound baskets encourage Heuristic Play with Objects

Heuristic play actively encourages exploration by using and developing children’s senses. Children instinctively investigate objects that interest them, making discoveries through taste, touch, smell, sound and how they look. During the activity children explore different materials and objects without adult interference. The role of the adult is to support the children, collect objects, set out the activity and to observe.

Objects used in Heuristic play are simple everyday and natural items that provide opportunities for:

- filling and emptying
- building and balancing
- recognizing differences and similarities

The objects are often set out in Treasure Baskets — large, interesting, lidded boxes that hold different items to explore.

Test Limits

WHAT’S INVOLVED IN LEARNING

- Testing their powers of observation and sensory discrimination
- Testing strength, speed, agility, and control over movement

Remember to let children take risks — they learn through play.

~ Tanya MacFarlane
Nackawic Child Care Inc.

When we ask children not to move we should have excellent reasons for doing so.

It is stillness we have to justify, not movement.

~ Susan Issacs (1932)

Listening carefully to different pitches

Games that test powers of observation and tactile discrimination:

- I Spy
- Concentration
- Guess Who?
- Dominoes
- Pick-Up Sticks
- Barrels of Monkeys

Books to read together

Scaredy Squirrel, by Melanie Watt
Meanwhile, by Jules Feiffer
Courage, by Bernard Waber
Pig Pig Rides, by David McPhail
As children design structures they make decisions that require judgements regarding balance, shape, weight, size...

It will be helpful to explore more of your own relationship to risk taking. Dispositions toward risk are different for each of us. Our own tolerance and safety thresholds need to be acknowledged.

~ Deb Curtis and Margie Carter (2000, 74)
Test Limits

“I knew I could do it myself”

While playing outside in the yard Maddison stares at the tires and then begins to stack them. When the stack gets taller than she is, Maddison carefully drags over a chair and places the last tire on top. She then leans over and one foot at a time beings to crawl in. I resist the urge to tell her this is too dangerous and instead walk over and stand close by to lend a hand if needed. She gets in all by herself and beams! “See Erin... I knew I could do it myself. I didn't fall.” She pops up and down in the tire tunnel for a few minutes and then accepts some help removing the top few tires before crawling out.

~ Erin Brewer Sussex Early Learning Centre

Why this matters:

Maddison is testing her agility and control over movement in a safe environment. She is learning to take healthy risks... and I am learning it is healthy and important to allow children to take risks and test their limits.

~ Erin Brewer Sussex Early Learning Centre
Other Possibilities:

There are many opportunities for children to take risks when playing outdoors: How high to swing? How far to stray? How fast to roll? An attentive adult by a child’s side helps build confidence and assures children that they are not risking too much. As well, taking risks vicariously - by identifying with or admiring others - enables children to experience the pleasure and exhilaration of risk taking. Books, drawings, and paintings serve such a purpose.

The Adventures of the Crazy Rollercoaster
by the Southend Day Care Kids

They could hear the kids on the roller coaster screaming as it went round and round.

It is really scary! Those kids are brave said Di.
Negotiate the Complexities of Joint Undertakings

**WHAT’S INVOLVED IN LEARNING**

- Negotiating rules of time, space, and roles
- Making collective plans and decisions about the directions of play
- Developing a sense of fair play

We often respond to children’s conflict from our own sense of justice and fairness, which is often quite different from what children want in a given situation. We often underestimate children’s ability to work things out, even when they are infants. We forget to look for the underlying motivations of the behaviours in question.

> ~ Margie Carter and Deb Curtis (2000, 97)

---

After working very hard on a block vehicle, Creston brings it over to show me. He explains its many functions and decides he would like to keep it until tomorrow. I offer to put it up high on the cubbies. Creston tells me, “We need a sign too in case there are tall friends.” I ask him what it should say and after some deliberation he decides on “Don’t Touch, Don’t Sneak”. Creston asks, “Erin can you do one part and I’ll do the other?” “Sure” I reply and we finish the sign together.

> ~ Erin Brewer  Sussex Early Learning Centre

---

Group games… provide many opportunities for making rules, seeing their effects, modifying them and comparing what happens.

> ~ Constance Kamii and Rheta DeVries, (1980, 28)
COOPERATION OR COMPETITION?

Almost any game can be made into a cooperative game. For example, in the game of Concentration or Memory, anyone who remembers a card can help out the person whose turn it is.

Some board games, such as Harvest Time are designed as cooperative games where all players work together to overcome Old Man Winter.

How can games such as Musical Chairs and Simon Sate be modified to encourage ongoing participation by all players?

BOOKS TO READ TOGETHER

Growing Vegetable Soup, by Lois Ehlert
Stone Soup, by Marcia Brown
Pancakes, Pancakes!, by Eric Carle
Mean Soup, by Betsy Everitt

You Can’t Say “You Can’t Play”

Equal participation is, of course, the cornerstone of most classrooms. This notion usually involves everything except free play, which is generally considered a private matter. Yet, in truth, free acceptance in play, partnerships, and teams is what matters most to any child.

~ Vivian Gussin Paley (1992, 20)

Jeremy-Jesse spends lots of time playing Tic-Tac-Toe and teaching other children how to play the game. One morning as Jeremy-Jesse drew a picture he told me: “This is a Tic-Tac-Toe game but you use your pencil to put the X’s and O’s in, not those plastic thingies.” His drawing inspired other children to create their own versions of Tic-Tac-Toe.

~ Katie Parlee, Sussex Early Learning Centre

Observing Puzzle Making:

How are children sorting and selecting pieces?
Are children rotating pieces to try different orientations?
Do children use the picture on the box as a guide?
How do you decide when is a child ready for a new puzzle challenge?

Celebrating a game well played!
Negotiate the Complexities of Joint Undertakings

Sam and Francis Want to Play Pirates

Sam and Francis were having a bad day. I observed them several times in different parts of the room with their hands on their chins looking glum. These two friends don’t usually have any trouble finding some interesting adventure to act out so I asked them what was going on and they explained that nobody wanted to play with them.

Upon further questioning it came out that nobody wanted to play the same game they had planned for that day. I continued to watch to see how they would solve this dilemma. As Lola’s ballerina school danced past and Jacob and Laura went on a picnic nearby, Sam and Francis sat and pondered because nobody wanted to play pirates.

Soon I saw them talking to Russell and Matthew about building and suddenly there was a great flurry of activity as they all started hauling the large blocks up to their favourite spot up on the steps.

The unfortunate part was that they only had a few moments to build before the cleanup music started. I could tell that this was frustrating for them so I talked about how helpful it is to get started playing right away and about how other children often join in when a great game is underway.

The next day I noticed that the pirate ship was built first thing and I praised them for their decision to get right to it.

~ Jill Bateman  UNB Children’s Centre

Why this matters:

Negotiations in this busy social atmosphere are often difficult. Sam and Francis are very imaginative children who usually have a crowd of children clamouring to join in with their great ideas. They experienced a set back in their play on this particular day and had to figure out a different way to meet their goals.

Jill supported Sam and Francis by offering strategies to support them in solving their own problems. Jill made the most of this learning opportunity and followed through with positive encouragement when Sam and Francis used their new strategies the next day. When educators recognize critical moments, provide strategies, and reinforce successes, children’s abilities to negotiate with others are strengthened.
SAM AND FRANCIS WANT TO PLAY PIRATES — BUT NO BITES FROM THE OTHER CHILDREN!

EVERYONE IS ALREADY DANCING OR HAVING A PICNIC!

THE SHIP SAILED EARLY THE NEXT DAY! AHOY MATES!

MAYBE IF WE JUST START...
Creative Approaches to Working Out Practical Problems

What’s involved in learning

• Developing sustained, shared thinking
• Raising questions and making hypotheses about how and why things happen
• Choosing from a range of materials, tools, and languages to investigate, experiment, and make their thinking visible
• Creating imagined worlds in which they can explore possibilities and test alternative solutions

Respect children’s initiative and focus by:

Noticing: When you made the ramp steeper, your cars went much faster. You’re managing to control those drips with the very tip of your brush.

Encouraging: Looks like you’re getting there… You’re really persevering with that. If you need a hand, I’m right here. Good idea! Let’s try that next.

Asking: What seems to be the problem? What have you tried so far? What’s happening now? How could we help?

Wondering: What might happen if…? How could we find out? Would another tool work? What about trying…?

Creating opportunities for reflection and evaluation: What did you try? How did that work? What did you learn? Would you like to show and tell how you solved that problem? take a photograph? draw a picture? make a book?

Encourage children in their unconventional and innovative uses of materials and equipment.

How do you:

• Model enthusiasm, curiosity, and interest in solving problems?
• Cultivate sustained and shared thinking?
• Uphold an ‘image of the child’ as competent, inventive and full of ideas?
• Encourage children to ‘think out loud’ as they work through practical problems?
• Hold the door open for every child to join the community of problem solvers?

Making a Ramp — Sustained, shared thinking about balance, pitch, scale and velocity.

Small World Play — Children explore new possibilities in miniature worlds they create.

Making a Ladder — Large equipment prompts collaborative problem solving.
**Books to read together**

*Jack and the Missing Piece*, by Pat Schories  
*Mrs Armitage on Wheels*, by Quentin Blake  
*The Shopping Basket*, by John Burningham  
*Sadie and the Snowman*, by Allen Morgan

---

**Question, compare, estimate, predict, hypothesise, plan, test, represent, evaluate…**

---

**Problems encountered in play often have many possible solutions, and provide the opportunity to “wander over the mathematical landscape”.**  
~ Judith Van Hoorn et al. (2007, 188)

---

**The large spaces found outdoors allow children to use the whole body to explore, plan and carry out their plans without restrictions on noise or activity.**  
~ Jane Perry (2003, 26)
Creative Approaches to Working Out Practical Problems

How Can We Make the Ball Go Up?

During the morning activities Nigel, Iain and Ryland decided to see how they could make the ball go up using the wooden blocks and ramp sections.

They had to find just the right way to set it up like a teeter-totter and the right placement of the ball. As well, they had to figure out how hard to step on the board to make the ball go up and not just roll away. They all worked together, sharing ideas and helping each other set up the boards and the balls.

It was a lot of fun for the boys who learned how to get the results they were looking for and learned to share and help friends at the same time.

~ Trish Van Goch and Cynthia O’Donnell
Crafty Corner Childcare Centre

Why this matters:

By making time, materials and space available, Trish and Cynthia created opportunities for the boys to initiate the activity themselves, defining their own problem and devising ways to solve it. As is often the case with practical problem solving, the boys knew what results they were aiming for and devised a strategy to get there, testing and refining their predictions about weight, balance, levers and force along the way. A collaborative effort, solving this problem required sustained and shared thinking that involved exchanging ideas, sharing materials and helping each other.
Puzzling It Out: Cass and Kathy Co-Construct a Solution…

“\textit{I want to pick up the puzzle that I just made},” Cass told me. She showed me the cover of the puzzle box, which featured Big Bird and a girl holding up the puzzle. But when Cass tried to pick up her puzzle, it fell apart. So I asked her: ‘\textit{What do you think you could do to keep the puzzle together so you can pick it up?’} Together we decided to try tape. Initially, it wasn’t working so well, and we figured out that the tape would need to be on each piece.

As Cass put the puzzle together she asked me to place the tape on the pieces. “We can get it done faster if we work together,” she exclaimed. She was right! When we were done, I helped her pick up the puzzle and we measured it against her – just like the picture on the Big Bird puzzle box that had inspired her. Wow! It was almost as tall as her.

\textit{\textnormal{-- Kathy Pictou  Eel River Bar First Nation Day Care}}

Other Possibilities:

Providing different materials, equipment and tools offers different opportunities for children to build on their conceptual knowledge and develop languages as they solve practical problems. For example:

- Water play – flow, capacity, buoyancy, surface tension, pressure…
- Clay/modelling materials – malleability, mass, forces, texture…
- Small world play - classification, ordering, spatial relations – shape, size, scale, and positionality…
- Board games and card games – counting, comparing, sorting, 1:1 correspondence, addition, subtraction, number and word recognition, probability…
- Painting and drawing…
- Domestic play…
- Blocks, lego…
For Reflection

How do you support children in language development through their play? Think about restating and extending children’s responses using precise language to name things; consciously expand children’s vocabularies.

Walk about your room with children’s eye level in mind. How do you support children’s access to spaces, objects, and materials? What is available to children to manipulate and investigate?

How does your environment encourage healthy risk taking? Where do children run, climb, and jump? Think about the distinction between challenging and hazardous environments.

In what ways do children challenge each other to test their limits? How do children support each other through these challenges? During this process, consider your role and your influence in balancing safety with courage. Help children to make decisions about participation.

Examine your own beliefs about competition and cooperation. Where do these fit in the play environment? Consider cultural notions underlying these concepts.
Consider your interactions with children who are negotiating conflict during play. How do body language, facial expressions, and physical responses help children? How do you encourage them to reflect on their behaviour? How do you model rules of fair play to solve their problems?

How do you help children to seek multiple solutions to the problems they encounter? Think about how questions and why questions that promote children’s theory building in order to extend and deepen their understanding.

How do you promote and extend children’s thinking at play? Think about how to follow their lead, ground your language in what they are doing/saying, and provide materials, books, and experiences that enable them to extend their thinking and play.

How does your centre provide for constructive play activities? Think about blocks, for both in and out of doors, and other building materials such as wood and nails, cardboard boxes and glue.