



provocations for design

by George E. Forman, Ph.D
illustrations by Rockwell Group

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introduction

This guide will take you into places and spaces that come from the minds of adults as well as children. We want to extend the potential for children to launch their explorations into new design directions with Imagination Playground Blocks. The first book in this series explained the significance of what we have observed children doing on the playground with the Blocks. In these pages, we offer material for a more structured, school setting—ideas for engaging children in an open-ended provocation for design.

These provocations are scenarios, questions, or problems that invite children to explore specific concepts or topics as a group. We expect that they will be most suited for kindergarten through grade six, but they could certainly serve to guide curriculum-based projects for older children.

In this book, we refer to shapes from the Classic set of Imagination Playground Blocks, as well as shapes from the Angles and Curves add-on sets. We have provided a list of the shapes from each set. Some of these provocations assume that you have one of the new Add-on sets as a supplement to a Classic set of Imagination Playground Blocks.

setting the stage for provocations

Before working with provocations for the Imagination Playground Blocks, children need to have had ample free time to play, explore, and build with the parts on their own terms. Give them plenty of opportunities with the Blocks to make and test their own hypotheses, as well as draw their own conclusions. Allow them time to develop a verbal language to describe the shapes and what they create with them. As with any new medium, children need to experiment with and become familiar with the parts through direct trial and error.

These twenty provocations come from a design-based approach to problem solving. Many of these ideas come from watching our test team of architects and designers play freely with the Classic set and the new Add-on sets. Their advanced structures helped us understand the range of possibility with the Blocks. We wrote each provocation with a few general problems in mind, and have included some sketches of possible solutions devised by our designers.

We do not intend for you to show these sketches to children as you present or work on provocations. Keep in mind that we are not trying to guide them towards building these advanced solutions. We are trying to improve our ability to engage children's full range of creativity by knowing what to notice, how to describe what we notice, and how to invite children to construct new stories with the Blocks. The sketches can help sharpen your eye to recognize when children make elementary forms of these structures, so that you can better support the children's work.

presenting the provocation

A provocation can be any suggestion that causes children to reframe the purpose of their play, such as a suggestion that the birds at the playground might want play equipment or an amusement park. The teacher plays an essential role in creating the buy-in to a provocation. It takes careful observation and listening to select a provocation that reflects your student's interests. The provocation can relate to something to which the children have an emotional connection, such as a recent trip to the zoo or a favorite storybook. It could also serve as a follow-up to a topic recently explored as a class.

With each provocation, the teacher offers the children a purpose and motivation to build with the Blocks, without specifying what exactly to make. The more the children take ownership of the ideas, the more they will engage and be inspired. Children will need time to plan before they build, as well as chances to step back and rethink the frame that guides their play. Since it can be difficult to redirect play once the children have begun, the teacher should ideally meet with the children in advance to ask them to plan before they start to build. This is an important preliminary stage that we cannot fully cover in just an intro. *The Hundred Languages of Children* by Edwards, Gandini, and Forman (Praeger 2012) offers in-depth explanation on working with provocations as practiced in the highly regarded pre-primary schools of Reggio Emilia, Italy. It includes material not only on staging provocations, but also on a host of other critical topics like observing, reflecting, and documenting.

Group work with provocations offers rich opportunities for building skills in communication, listening, perspective-taking, and collaboration. It can also help children see beyond stereotypes and social hierarchies. Allow enough time for negotiation and working on sharing and collaboration. Encourage debates among the children.

Be aware that no provocation will entice the whole group. Allow the group to grow or shrink as the children's interests wax and wane. If permissible, take pictures during the process so that children can virtually look back to see their thinking as the project progresses. If the children leave and return, the photos can also help them solve problems left unfinished.

It is important for the children to reflect on their work at the completion of a project. This helps mark that a project has come to an end, and also helps bring the children to a point where they are sufficiently satisfied with their structures. When children know they will be asked to complete their work, they define their structures and sharpen their decisions about what elements are essential. Have the children look back at their plans from the building process, and summarize what makes the project a success when completed. Let the class select two or three children to present oral summaries to the group.

Offering the opportunity to revisit a provocation at a later date will lead to a deeper understanding of concepts, and give the children a sense of mastery and competency. It is valuable to allow children the time and space to revise their work. It allows children to learn from and build upon their experiences towards a higher level of problem solving and divergent thinking.

types of provocations

Some of these provocations can launch long term projects (for example, “A Stage for a Play” or “A Town for Everyone”). The children can discuss, plan, build, and return to their structures to improve or rethink what they have already done over time. Some provocations, like “Transformables” or “New Bugs, But Still Bugs,” can be completed in one session with the Imagination Playground Blocks. These are specific challenges to think about what can be done with the Blocks. We encourage you to shorten projects into challenges, and to lengthen challenges into projects.

We hope the ideas in this booklet inspire you as teachers and educators to use the Imagination Playground Blocks with your students in new ways. We have grouped the provocations into loose categories to leave them open to diverse possibilities. Many of these provocations delve into more than one curriculum area, offering exploration into concepts in math and science, social studies, visual studies, and language. All of them aim to stimulate divergent thinking as well as problem-solving skills.

Please treat all we write as provocations for your work, as much as for your students’ work. We urge you to modify or morph these ideas to suit the needs of your classroom, whether it is to support other learning experiences or to meet specific curriculum goals. We would love to hear from you or see images of your work online at <http://community.imaginationplayground.com/forum> so that we can all learn from each other, and discuss modifications to these provocations that increase their value for creative play. We also hope that you have fun with this material because, with both children and adults, play is learning.

safety

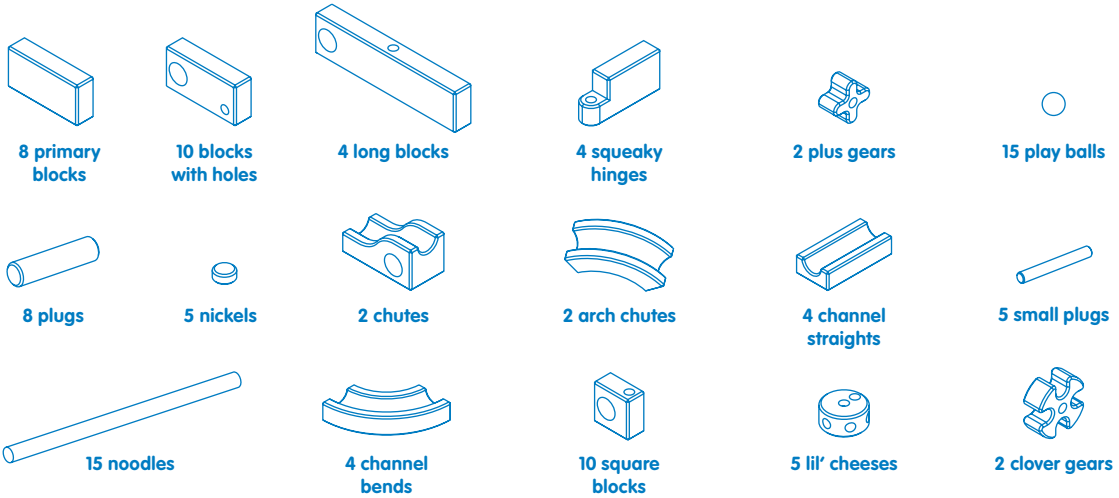
Imagination Playground should always be used in a secure and safe environment for children to play. Always follow all applicable safety rules and procedures with Imagination Playground.

Play sessions may become active and boisterous. Teachers, caregivers or parents should be present during play sessions. Be watchful and ready to step in and give direction. Encourage children to take turns and share. If there are too many Blocks and Loose Parts in the given area, put some away.

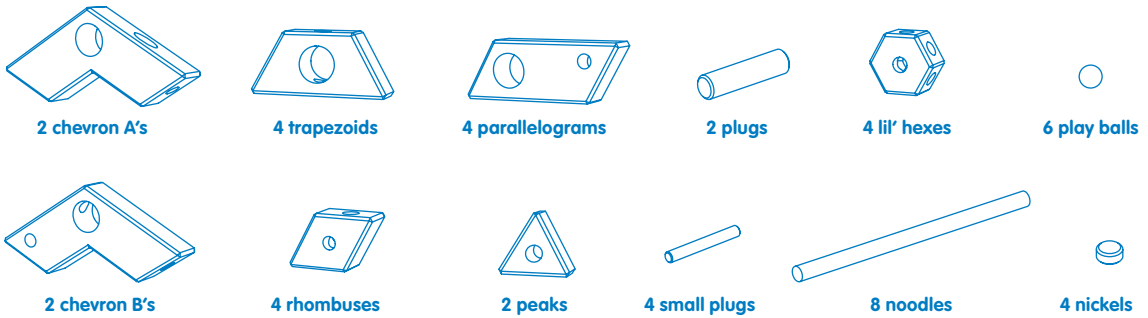
Please be mindful of particular safety issues:

- Do not allow children to stand on or jump off of stacked Blocks.
- Do not allow ropes and fabrics to be used on fixed equipment, or tied around children to avoid the possibility of strangulation.
- Blocks should not be stacked more than three feet in height (except for storage).
- Check that the play area is safe.
- Remove garbage, sharp objects, or debris from the site.
- Make sure there are no sharp points, corners, or edges on your Blocks or Loose Parts.
- Know who are the key point people who can come to your assistance or call for help, and have their emergency contact information readily available.

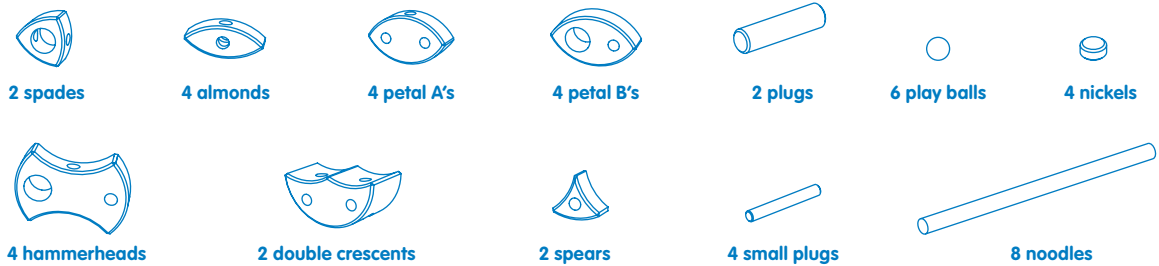
105-piece classic block set



46-piece angles add-on set



46-piece curves add-on set



the provocations

changes without adding or removing

1. Furniture That Changes Function
2. How Many Patterns from These

challenges to define an identity

3. The Monsters Are Coming
4. New Bugs, but Still Bugs

spaces built for special environments

5. Dwellings in the Desert
6. Playground in the Dark

structures for wind & light

7. Wobble in the Wind
8. Shadows on a Sheet

spaces built for particular inhabitants

9. The Worm World
10. A Town for Everyone
11. Neighborhood for a Tree

an emphasis on patterns & beauty

12. The Holey Blue Print on the Floor
13. A Garden of Curves
14. A Place to Party

structures that communicate

15. A Place for a Play
16. A Sign for Sharpville

structures that move across places

17. Playground Pinball
18. To Lope or to Roll

structural challenges

19. When Noodles Push Back
20. Arch Across the River

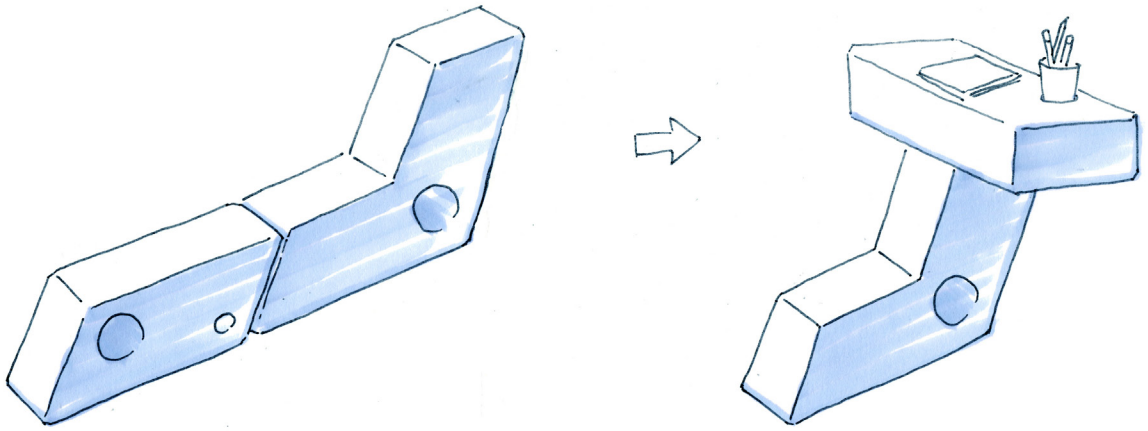


Figure 1.1
Furniture That Changes Function
Chair for sitting back with your feet up,
or sitting up at a table

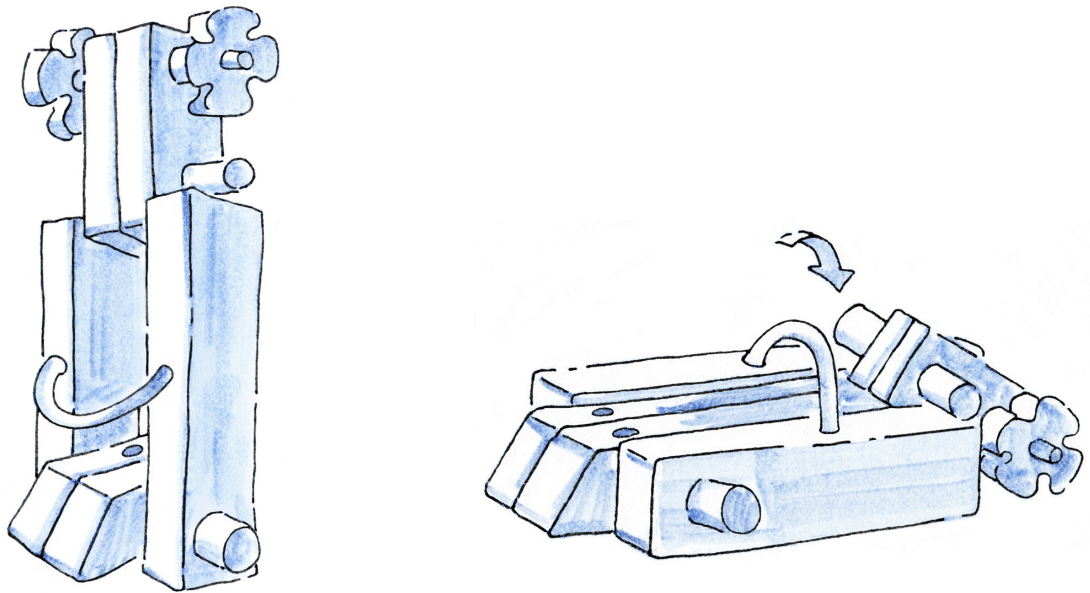


Figure 1.2
Furniture That Changes Function
Robot that transforms into a jet ski

changes without removing or adding

1

Furniture That Changes Function

Presentation: Some furniture can be used for two different occasions, such as a sofa that becomes a bed, a table that expands to seat additional people, or a cabinet that folds out into a writing desk. Examine the Imagination Playground parts, and figure out what type of furniture you can make that can change from one function to another by moving some of the parts. Try not to add or remove any of the parts when changing your structure. As a variation on this provocation, create a story about a character or superhero who transforms from one identity to another, such as a lowly bicycle that becomes a mighty jet. Using the Blocks, build and design this transforming character to change into its other identity by rearranging its parts.

Significance: The children will have to think about how one form is “latent” within another form. With the adjustment of a few elements, a new form may become manifest. The children will need to modify the final version of each form so that one can smoothly transition from one form to the other, and back again. For designs that are practical, children might consider if the two different formations make sense in the same space. For example, would it make sense for a bed in the bedroom to change into a dining table? For the transformable identity, would it make sense for a bicycle to become a closet if the story requires something mighty to transform from something weak?

Possibilities: A complete rearrangement of all the Blocks in the structure will be easier than changing a form by pivoting a few Blocks without taking the structure apart. Advanced designs will look natural, and easily reflect functionality in both forms. These designs will also avoid using new Blocks or subtracting current Blocks to transition from one form to the other. Some children may enjoy designing whimsical furniture such as a chair that becomes the basket for a hot air balloon. This kind of alternation back and forth should still have a rationale.

How Many Patterns from These?

Presentation: The assortment of Block shapes in any of the Imagination Playground sets allows you to make a wide range of patterns in one plane on the floor, as well as vertically. Select just twelve Blocks, and in a set amount of time, make as many interesting and distinctive patterns as you can using all twelve Blocks for each variation. Consider the depth, height, and width of the Blocks. Try to make each pattern as different from the others as you can. If possible, document your patterns by drawing or taking pictures of each pattern made with your twelve Blocks.

Significance: Creativity is often measured by how many different ways one can use a single element. For a newspaper or a section of surgical tubing, for instance, the creative mind can go beyond standard responses like “to light a fire” for the newspaper or “to siphon gas” for the tube. Creativity requires one to re-arrange or reframe the object into completely novel contexts, such as rolling the newspaper tight to make a bat, or tying the tube in a loop to make a sling shot. Rearranging the same Blocks into more and more novel patterns also requires this ability to reframe the relationship of shapes to each other.

Possibilities: Look for patterns that are more than a jumble, incorporating motifs, repetition, and balance. Look for patterns that use vacant space or patterns distinguishable by the rhythm of intervals between Blocks. Notice why the child chose those particular twelve Blocks. Did they choose pairs so they could create symmetry, or Plugs to fill in holes? Also note which patterns the children think are most interesting, and what makes them so. Their sense of design will be revealed during this provocation.

challenges to define identity

3

The Monsters are Coming

Presentation: What does the word “scary” mean? Think about what makes an almost human figure or creature look scary. Show on paper or talk about how you might use the Imagination Playground Blocks to design scary figures. As a group, or in several smaller groups, decide on a few designs and build your scary creatures. You might even arrange a group of them in a way that makes you feel they are working together to come after you. Focus the challenge on using these rather neutral, geometric shapes to express scariness. If you’d like, create accents with other materials like fabric, masking tape, and yarn, if age appropriate.

Significance: This provocation encourages children to add expressivity to a figure, like adding an adjective to a noun. “Scary” actually refers to the effect caused by an object, not simply the object. Children will need to think of how to make an object or a group of objects menacing.

Possibilities: Literal interpretations will involve representations of physically threatening elements like sharp teeth or daggers. More advanced, metaphoric solutions might manifest as bent-over postures, masking tape scars, or eyes on long stems. An even more abstracted approach might involve a group with a united front. Look for these indications of high-level thinking without specifically suggesting them.

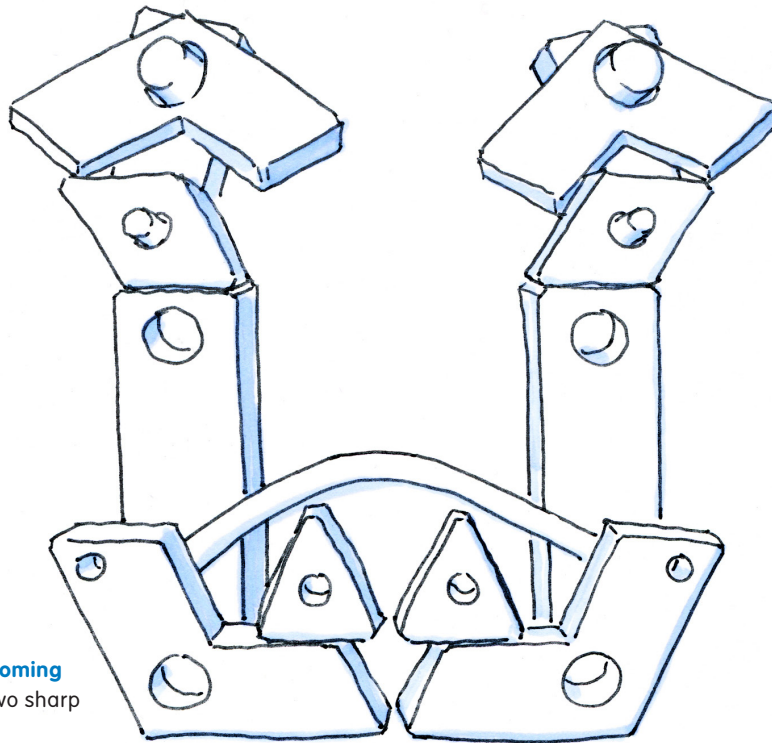


Figure 3
The Monsters are Coming
Monster face with two sharp lower teeth

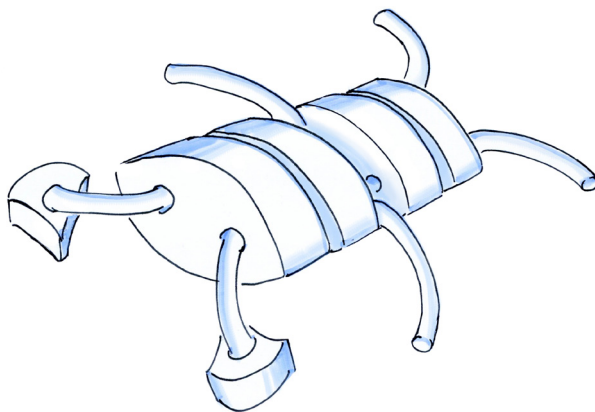


Figure 4.1
New Bugs, but Still Bugs
Bug with antennae and legs for crawling

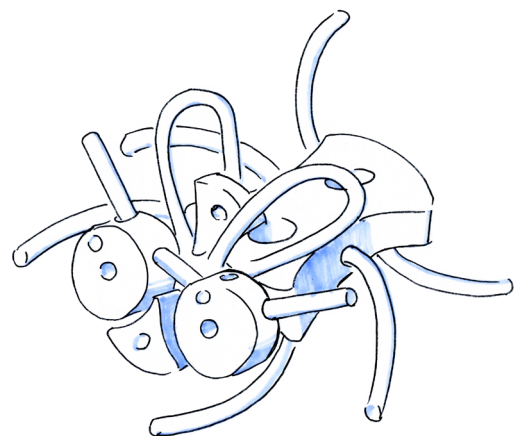


Figure 4.2
New Bugs, but Still Bugs
Improved bug with wings for flying and large eyes for seeing at night

4

New Bugs, but Still Bugs

Presentation: New species of bugs evolve each year, but somehow we still know what is and is not a bug. Bugs of one species are somewhat similar to other species of bugs, and they do not look like snakes, cats, or birds. What tells you that something is a bug? As a group or smaller groups, draw on paper how you might use the Imagination Playground Blocks to make a new species of huge bug, and then build these designs. Try to follow the original design in your drawing, but adjust your construction if necessary. When you have made your new species, discuss how we can know it is a bug but also how it is different than bugs we already know. Explain how and why your construction is different from your drawing. Next, improve your bug to make it a new, improved species. Discuss how they are different, but why they are both still bugs.

Significance: This provocation encourages children to think about superordinate and subordinate features, like the class insect is superordinate to the class beetle. They will need to think this way both during the planning and during the execution of the challenge. It will be interesting to see what compromises they make when the foam Blocks cannot provide the same details that appear in their drawings.

Possibilities: The children will attempt to define core bug features and species-defining features. They could settle on a few defining attributes for bugs, such as long legs (Noodles) and a proboscis (Spade), and then add unique features for each species like horns or protruding eyes. They will have fun making their second species as different as possible from the first while still having the core features of a bug.

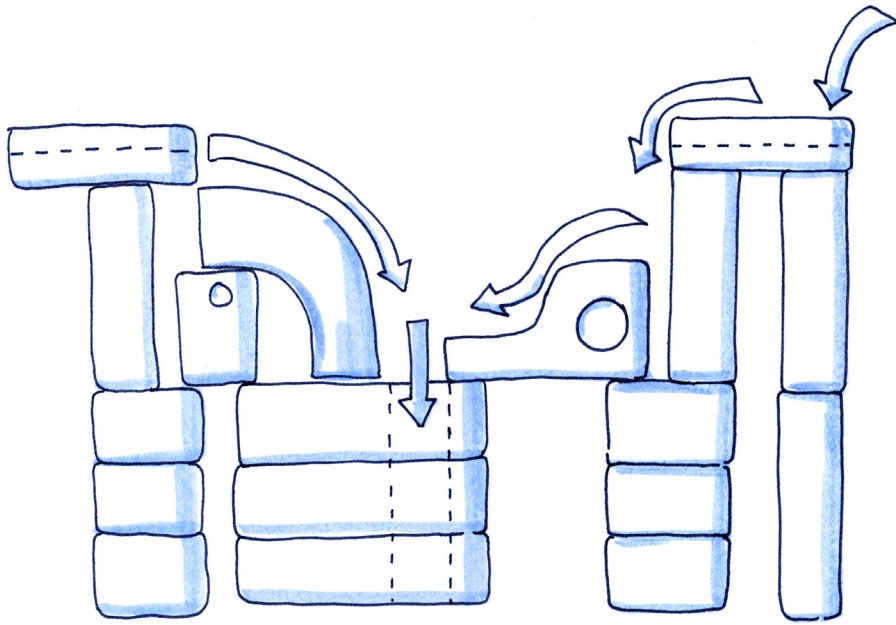


Figure 5.1
Dwellings in the Desert
Water collection system

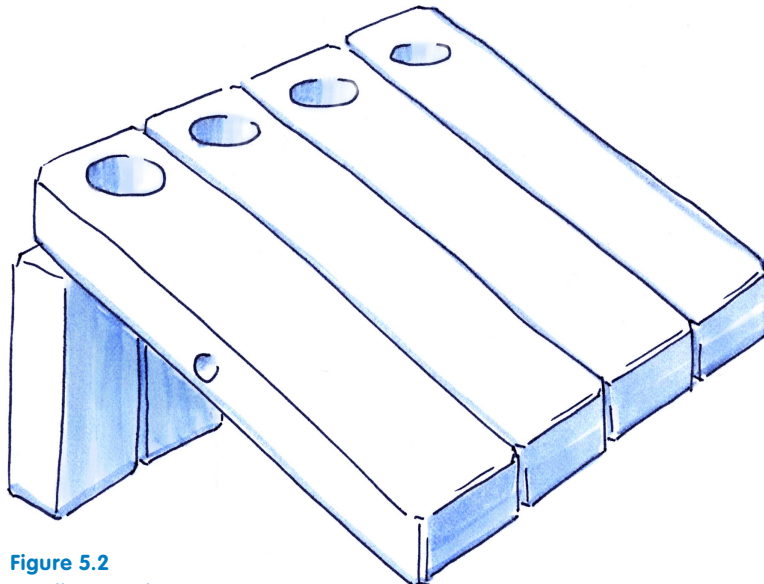


Figure 5.2
Dwellings in the Desert
Lean-to for shade

spaces built for special environments

5

Dwellings in the Desert

Presentation: The desert is an environment of extreme heat and intense sunlight. Do some research into life and conditions in the desert using books, articles, or the Internet. Can you imagine life in a place with little water, few trees, and shifting sand? Pretend that your Imagination Playground setting is located in a desert. What would you build if you were to play or to live in the desert? Construct your ideas with the Blocks, and explain your constructions including aspects that may be pretend, such as the building materials you might use. What you construct does not have to actually function, but can help you describe your ideas.

Significance: The design of any architecture or structure should account for the conditions of the environment. This provocation will sensitize children to how structures can make the human experience more comfortable and more fun and also attune them to the problem-solving aspects of design. It might turn out that the Block structures serve more as scaffolding for the children's theories than as structures with visible functionality, more of a shared referent for dialogue than a simulation of a working model.

Possibilities: Advanced designers will consider a number of environmental variables, such as intense sun, high heat, cool nights, few trees, loose sand, and arid ground. They might create compensating solutions such as umbrellas for shade, fans to cool, cozy places for evenings, large sand pits for play, and water fountains for drinking. As the children explain their pretend structures they may mention the use of indigenous building materials, such as adobe and mud, or mention how their designs protect humans from wildlife like scorpions or snakes. Of course their imagination of a desert environment will be more vivid if they work outside on a hot, sunny day.

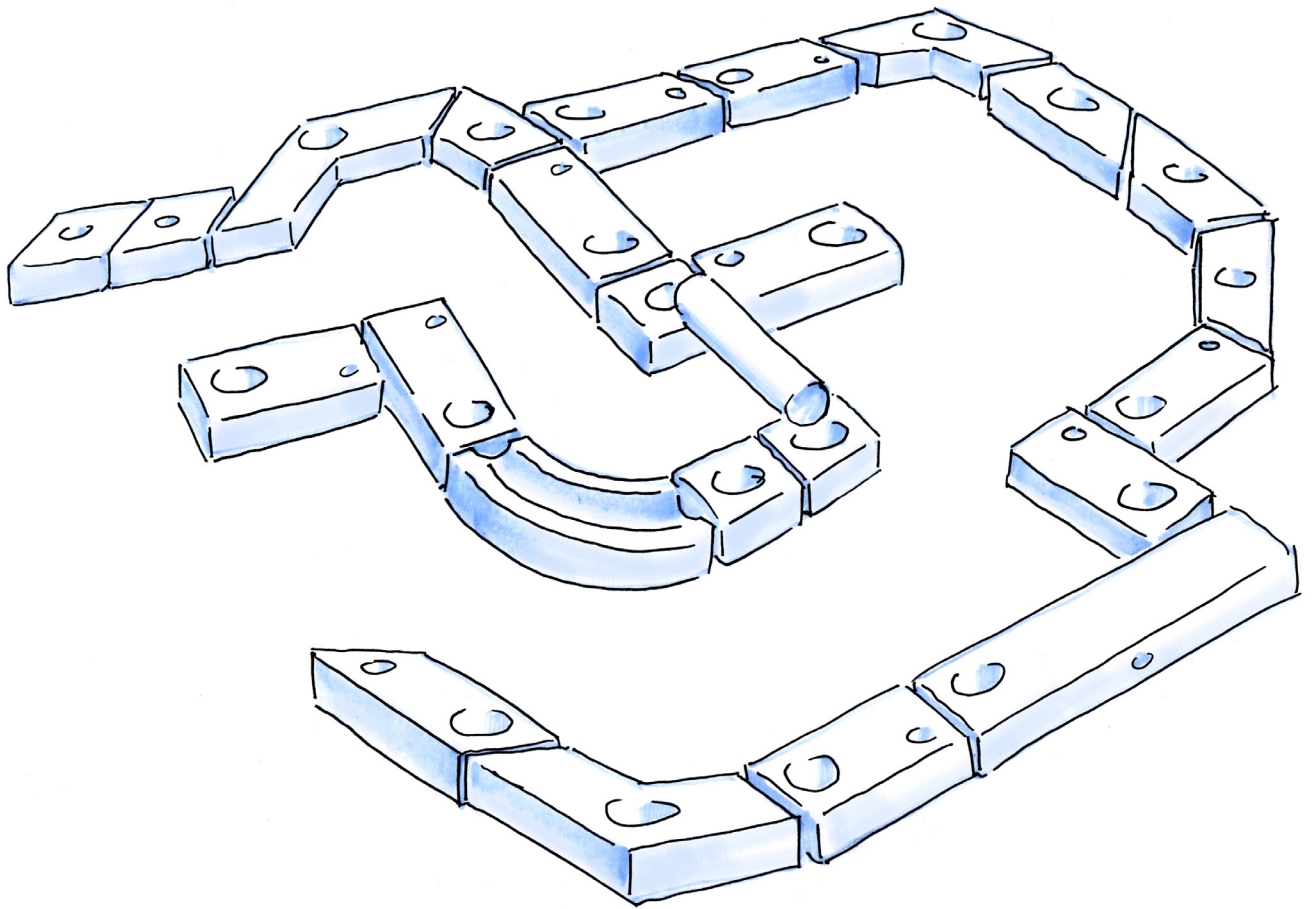


Figure 6
Playground in the Dark
Maze with a cylinder for crawling under

6

Playground in the Dark

Presentation: Have you ever been outside when it was really, really dark? Perhaps you were camping or out late on Halloween? Design a playground that could be used at night without any light outside. It can be difficult to move through a space with different walls and obstacles in the dark. How would you build a playground for a setting in which you could not see or could see only dimly? Build your designs with the Imagination Playground Blocks. You can add paper, masking tape, or paper cups and plates to create helpful details that may be difficult to construct with the Blocks alone. To help keep focused on the purpose, invent a story giving reasons why children would play here in the dark. When you're done, step back and explain what you have created.

Significance: The best way to raise consciousness regarding the role of a sensory channel is to consider an experience without it. This provocation will help children appreciate that structures can be “read” by their functional features, such as handles, steps, gridded platforms, and degree of slant (slides). It will prompt them to figure out how these features could be “read” via touch or hearing without sight.

Possibilities: Some designs might take safety into consideration, and increase the cushion of the ground or railings around the perimeter. Children may invent signage that can be touched to inform people what type of play each structure invites and its physical properties like height, incline, etc. More abstract solutions might address the layout of the different structures to make it easy to navigate among the structures, or Blocks that represent speakers to announce where things are. A fun variation might be a playground navigated by crawling, as one might want to do in the dark.

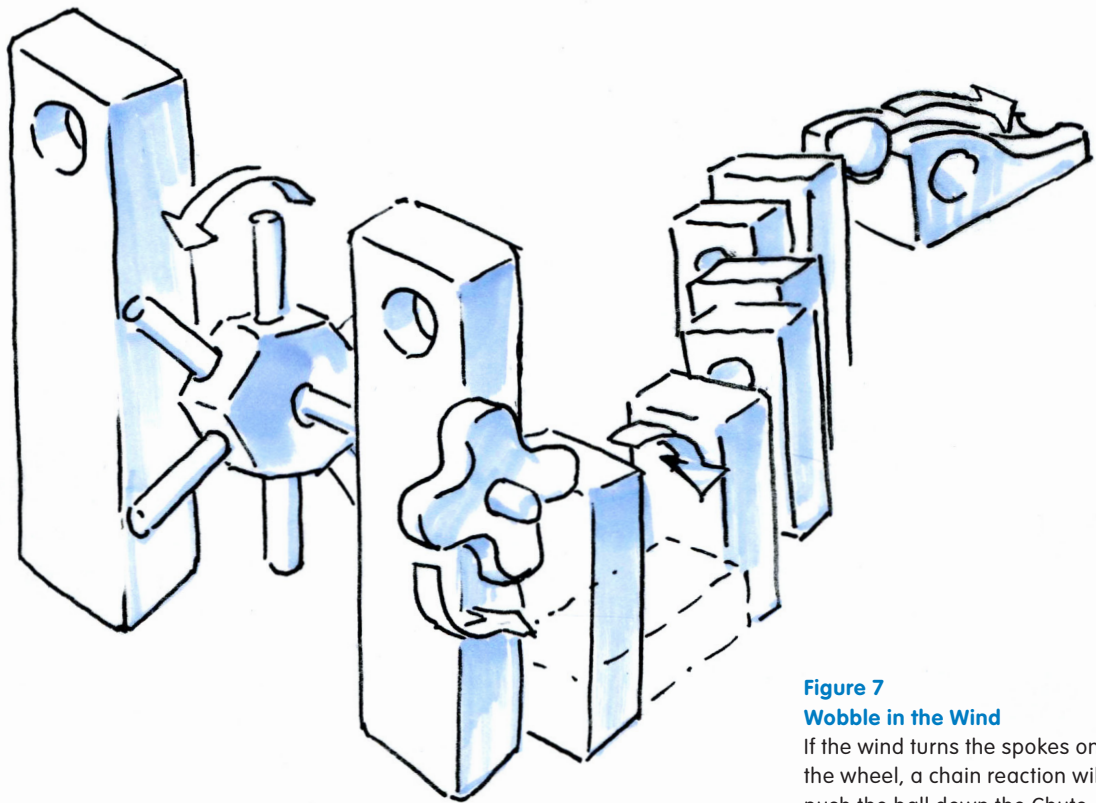


Figure 7
Wobble in the Wind
If the wind turns the spokes on the wheel, a chain reaction will push the ball down the Chute

structures for wind & light

7

Wobble in the Wind

Presentation: The wind has a force that can knock things down, but can also make things move, such as trees, tall grass, and windmills. Examine the Imagination Playground Blocks and speculate how any of these Blocks would move in the wind. Design structures that could spin, tilt, or rock if placed in the wind. Pretend that these structures create electricity and therefore need to keep moving as long as the wind is strong; or pretend that you are making a set of sculptures for a park that are more interesting to look at when the wind comes and moves them this way and that.

Significance: In creating structures that could move or rock, children will begin to consider the relation between form and movement. That is, they will “read” potential changes in a structure based on the form, position, and balance of its parts. Pretend moving structures can spur a conversation about the direction and force of wind, as well as ways to potentially harness the energy of wind.

Possibilities: Children might discuss how one Block might reduce the effects of the wind on another Block downwind from the first. For wobbling in the wind, the children might also figure out that a Double Crescent with two Plugs will rock more than the Double Crescent alone. The adult, from time to time, can make small adjustments, and ask the children to speculate on how these changes would create new wind-driven movements.

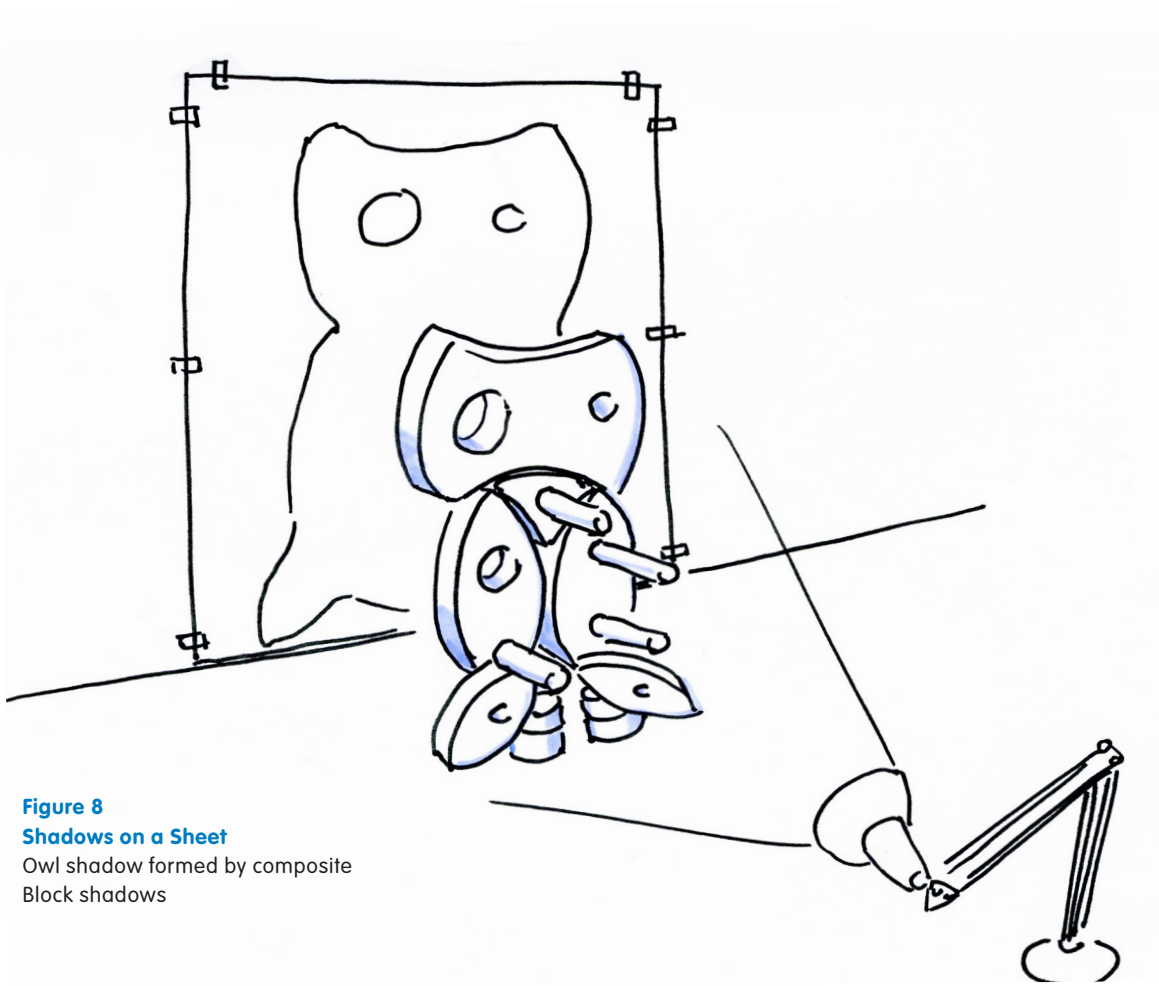


Figure 8
Shadows on a Sheet
Owl shadow formed by composite
Block shadows

Shadows on a Sheet

Presentation: You can create dramatic shadows with the Imagination Playground Blocks. Use the light of an old slide projector or overhead projector, or something with a focused beam of light like a flashlight or spotlight to create shadows. Experiment with the way Blocks in front of Blocks can make one combined shadow on the wall. If you can hang or stretch tight a sheet in a vertical frame, divide into two teams and let one team make composite shadows on the sheet. The team on the other side of the sheet (who cannot see the Blocks) can guess what Blocks were used to make that particular shadow. You might also use this set up to act out a shadow puppet play using different Imagination Playground parts.

Significance: To understand shadows, children have to translate the two-dimensional silhouettes into a three-dimensional world of objects. They also have to figure how the contour of a background Block will be occluded and merged with the contour of a foreground Block. A shadow cast from an object in an unusual perspective challenges a child to guess which Block was used.

Possibilities: There are many ways to make shadows that look like objects that are nowhere to be found in the individual Imagination Playground Blocks. These shadows will be the most fun to analyze. For an enactment of a story using shadows, look for the clever use of negative space (the holes, for instance) and the use of moving parts (say, when an alligator opens its large mouth). Children may also play with the size of the shadows as they move closer or farther from the light source.

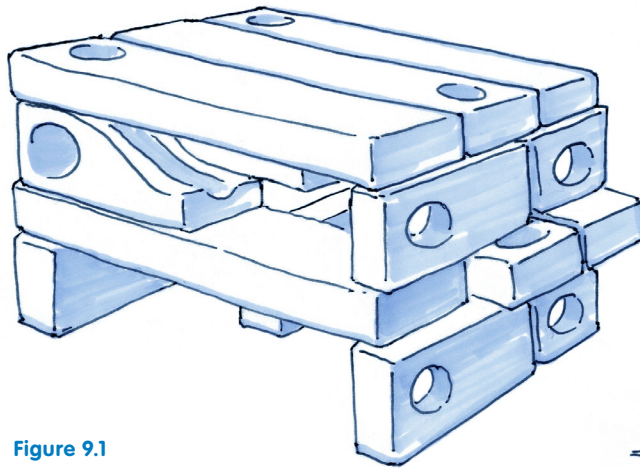


Figure 9.1
The Worm World
Multi-tiered worm world

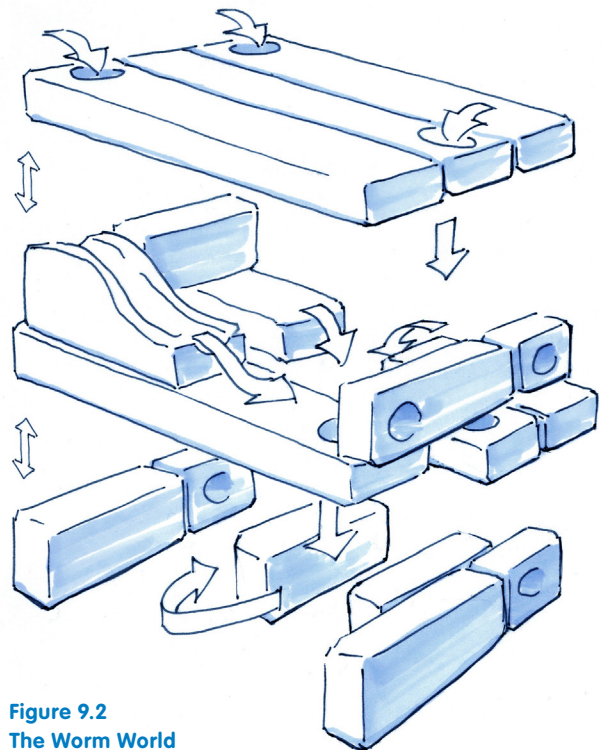


Figure 9.2
The Worm World
Exploded view of worm world
shows passageways inside

spaces built for particular inhabitants

9

The Worm World

Presentation: Worms live underground, and make tunnels and holes in the earth. They also make small chambers so that a group of worms can get together. Some of the tunnels go up to higher levels, some go down, and some go around on the same level. In general, worms do not like to come above ground. Create an underground world for worms using the Imagination Playground Blocks. Once you're finished, explain what is interesting about the holes, tunnels, and chambers, and how the worms use them. (Note: This provocation will work just as well with ants instead of worms.)

Significance: This exercise makes children shift focus from positive to negative space. They will consider how the holes connect to provide the continuity of a tunnel, and how the flow of worm traffic will need places to pause and places to rest. The challenge will be to use both the holes and the gaps between Blocks as pathways for the worms without requiring the worms to crawl on the top in the sun.

Possibilities: Children might assume that their bodies have to crawl through their tunnels, and others might use the holes and chutes in the Blocks as holes for pretend worms. For the latter, they might create windows that are not intended for the worms, but only for the purpose of making the interior pathways visible to the non-worm viewer. It may seem pointless to the younger children to make tunnels they cannot see. There are structural complexities in aligning holes and sandwiched Chutes to make a network of tunnels. The advanced designer will delight in making a network with many branches and levels. They will also consider the need for different sizes of vacant space for a single worm, a group of worms, or a cluster of newborn worms.

A Town for Everyone

Presentation: Towns have a little bit of everything from shops and offices, to houses and roads, to parks. Think about the ideal town, one that contains most of the structures and spaces you would miss if absent. Study the Imagination Playground Blocks considering that you will be building this ideal town. Discuss your ideas, and draw them on paper. Build as much of this ideal town as possible with the Blocks. If you run out of Blocks, build the town in sections and take pictures of a completed section before moving on to the next. You can also use paper drawings or cutouts of the shapes. Put all the photos together at the end of the project, and if you'd like, include labels describing the buildings and spaces.

Significance: Children will need to think about both the total layout of multiple landmarks and the critical features of a house versus a shop, or a fire station versus a hospital. They will need to consider the type of traffic (in-coming emergencies for hospitals or outgoing emergencies for fire stations, for instance). They will need to think about their limited resources of foam Blocks, make compromises and approximations where needed, or shift to drawing their ideas on paper. They will need to think about the need for more houses than office buildings, and other issues of proportion, proximity and distribution.

Possibilities: The possibilities are endless. Think in general about the role of a town planner who has to think about services such as power generation, water, sewage, retail mix, density of houses, proximity to open space, etc. Do not expect the children to think at this level, but be alert to how their discussions approximate some of these issues, such as in questions like, "Where does the rain water go when it rains really hard?"

Neighborhood for a Tree

Presentation: Find a large tree in a space that's clear enough for building with the Imagination Playground Blocks. Take several days to get to know this particular tree, the shape of its bark, the expanse of its limbs, the animals it may house. Think of this tree as a person who might feel lonely or frustrated that it cannot walk around. Think about what kind of surrounding neighborhood might cheer it up. Brainstorm ideas together, being as fantastical as you would like, about what this tree wants, needs, or would find amusing. Use the Imagination Playground Blocks to build your ideas for the tree.

Significance: As with other provocations in this category, children should develop a greater sense of empathy for the protagonist of the theme. They will need to work backwards from the affordances of these particular Blocks toward the projected needs of the tree, much as one does when selecting a gift that a friend will find special and satisfying. The children will be challenged to take the perspective of a tree, and therefore will need to go beyond oneself as a point of reference.

Possibilities: More advanced ideas will combine attributes of a big, immovable, living object with the attributes of a sentient being. A bird house for the tree to have the company of birds would be more advanced than making a slide at the base of the tree for the children to use (unless the children explain that the tree loves to watch children having fun). The more advanced solutions might also discuss what is too much, for example, what might hurt the root system of the tree. Small gifts for the tree are simple solutions, but they are not long-lasting. A huge telephone for a tree would be advanced, even though fantastical, because it means the children are thinking about the tree's need to connect with other trees.

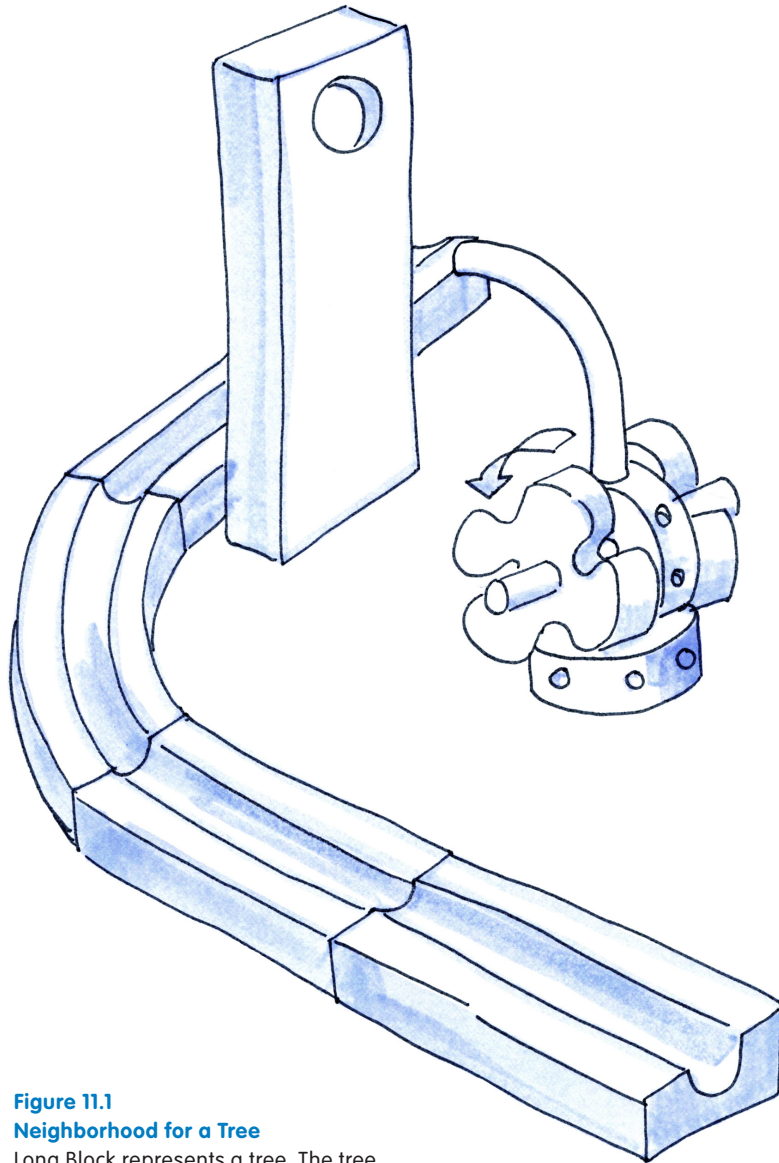


Figure 11.1
Neighborhood for a Tree

Long Block represents a tree. The tree gets a water pump and a nearby canal lets fish visit from the pond

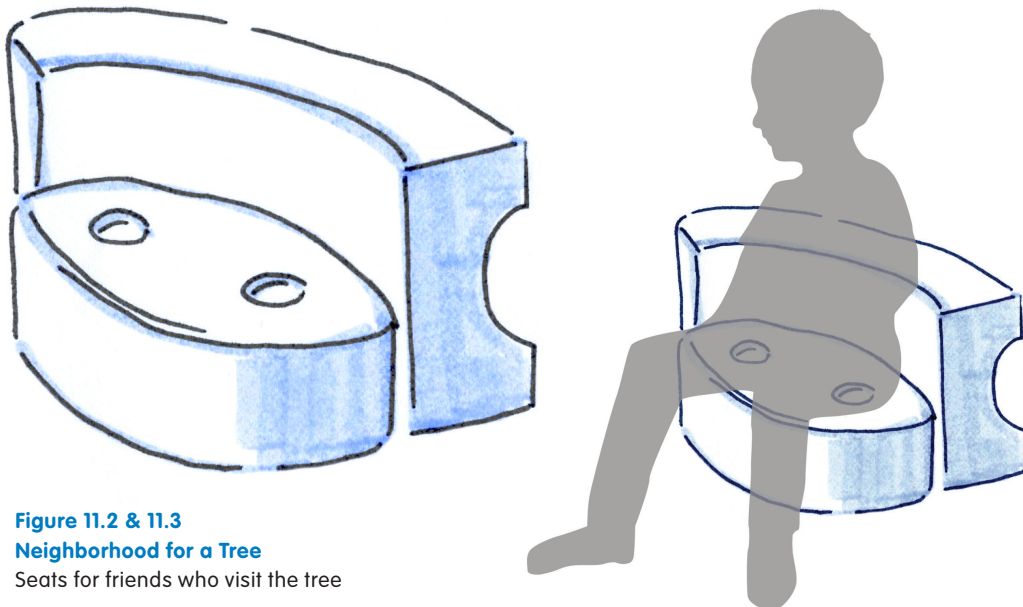
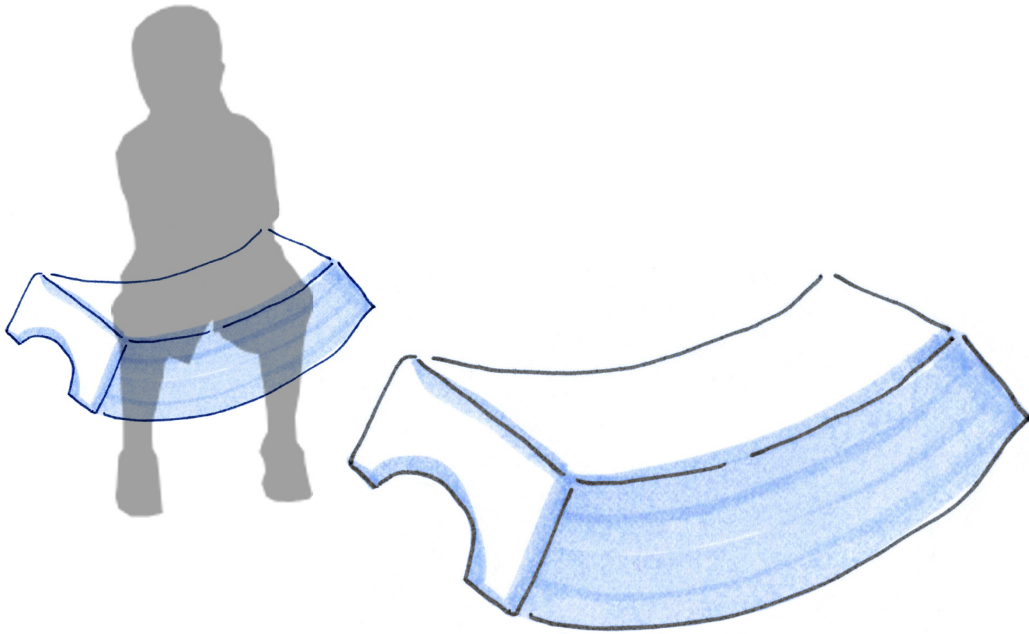


Figure 11.2 & 11.3
Neighborhood for a Tree
Seats for friends who visit the tree

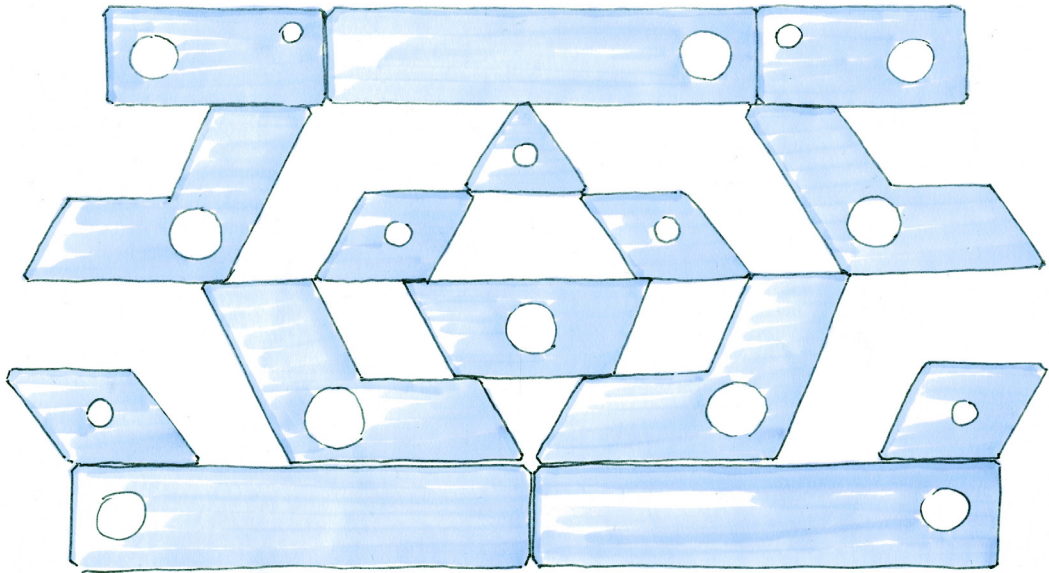


Figure 12

The Holey Blueprint on the Floor

Wall pattern: the top half is a mirror image of the negative space in the bottom half

an emphasis on patterns & beauty

12

The Holey Blueprint on the Floor

Presentation: We often think of holes as something that should be patched and repaired, but holes can also be an important part of a design. Design a wall with a lace or lattice pattern where the holes let light pass through and add to the beauty of the wall. You might want to look at some examples of walls like this in real life. You can lay your wall horizontally on the floor like a blueprint for the masons who will later build the wall. This way you won't have to worry about the Blocks falling. If you'd like, you can also make up reasons why the holes are important, for example, you might need multiple windows to catch the changing angle of the sun.

Significance: This provocation encourages children to think about negative space, and to consider the balance between negative and positive space. If the "blueprint" lies on a light colored floor, the children will think about light coming through the holes. They might also notice that the pattern at times can reverse to your eyes, at one time defined by the positive space of the Blocks, and then shifting to the light in the negative spaces. You might try having the children draw their wall by drawing the negative spaces only.

Possibilities: An advanced pattern would entail more variety or complexity. There would be some regular spacing between holes, but also variation in shape, orientation, or interval while still remaining a pattern. Some children will use the pre-cut holes to create patterns with negative space. Others may find them frustrating, attempting to reduce their influence by filling them with Nickels and Plugs.

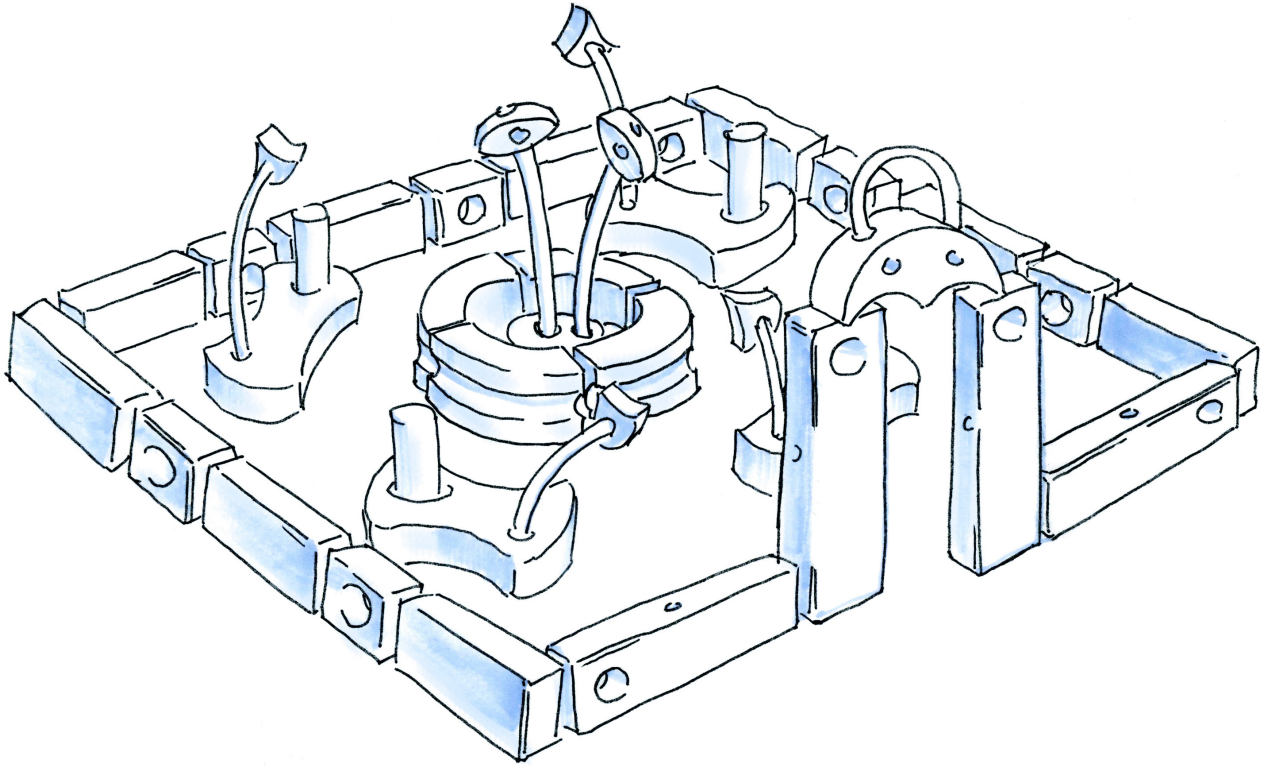


Figure 13
A Garden of Curves
Enclosed garden with central fountain
and repeating topiary motifs

A Garden of Curves

Presentation: Gardens often have a layout intended to be beautiful or serene. Look at some photos of gardens and examples of plans for formal gardens. Study the Block shapes, and discuss how they might relate to elements of a garden. Lay out a plan for your own garden using the Blocks to create a beautiful space. Explain to each other what makes the layout pleasing, beautiful, or calming. Use colored chalk to create accents of color on the surfaces of the Blocks.

Significance: Children naturally create complex patterns with table-top blocks, but this provocation takes the challenge to a larger scale within a specific context. The children will need to consider aesthetic concepts that have no practical or functional consequence other than their visual or internal logic. They will explore the spatial relations among the Blocks to create balance, harmony, and interest.

Possibilities: The children might play with the heights of clusters, making sure there is interesting variation. They also might take care in making sure the entrance to the garden makes one want to continue into the garden. Advanced designs, such as going beyond a row of flowers, will add curving rows, cul de sacs, and focal points such as a fountain or statue. Children with an advanced understanding of color will choose complementary chalk colors instead of random combinations.

A Place to Party

Presentation: What types of parties can you think of? Imagine that you will hold a party within your Imagination Playground space. Discuss the sorts of things that make a space festive and inviting, including how you might furnish it. Think about other elements that make a person feel like they're having a special occasion. Imagine special guests (real or pretend) as you create a beautiful and inviting setting in preparation for your party.

Significance: Beauty can be defined as the good feelings a space or design engenders. But how are these feelings accomplished? This provocation asks children to design their structures and inventions so their space looks like a place to have fun, and to celebrate the goodness of life.

Possibilities: The structures may show a bit of whimsy, such as floppy Clovers on long Noodles. The environments might be embellished with Blocks that represent party decorations and other indicators of festiveness. The children might also create attire or accessories, like a costume or headpiece, to dress for the occasion. They may also attempt to set up party games such as a piñata or bowling pins.

structures that communicate

15

A Place for a Play

Presentation: Invent or choose a story, and compose a short play to perform in a special place. Use the Imagination Playground Blocks to create a stage and props that support the script. Think about the difference between stationary props and props to be carried. You might decide to change the script after studying and laying out the stage set. Rehearse the play, and see how your story evolves as you work with the props. Discuss why you've made these changes.

Significance: Playwrights always have to adjust a story to make it feasible for action on a stage. This requires clear thinking about the range of action in a story, or how props can extend the audience's imagination beyond what is physically possible. Stage action also changes time frames, and the props need to communicate each new place and time.

Possibilities: Designs may have both stationary props to give a sense of time and place, and moveable props to give a tangible focus to what the actors say. Stationary props might remain throughout the play to support its general theme (a scary play, a happy play, or a mystery play). With more advanced thinking, props will not randomly change meaning as in using a Plug as a baby and then a few minutes later as a stool. As students become more sophisticated, they might consider the stage from the audience's perspective, and devices to augment sound or control the lighting.

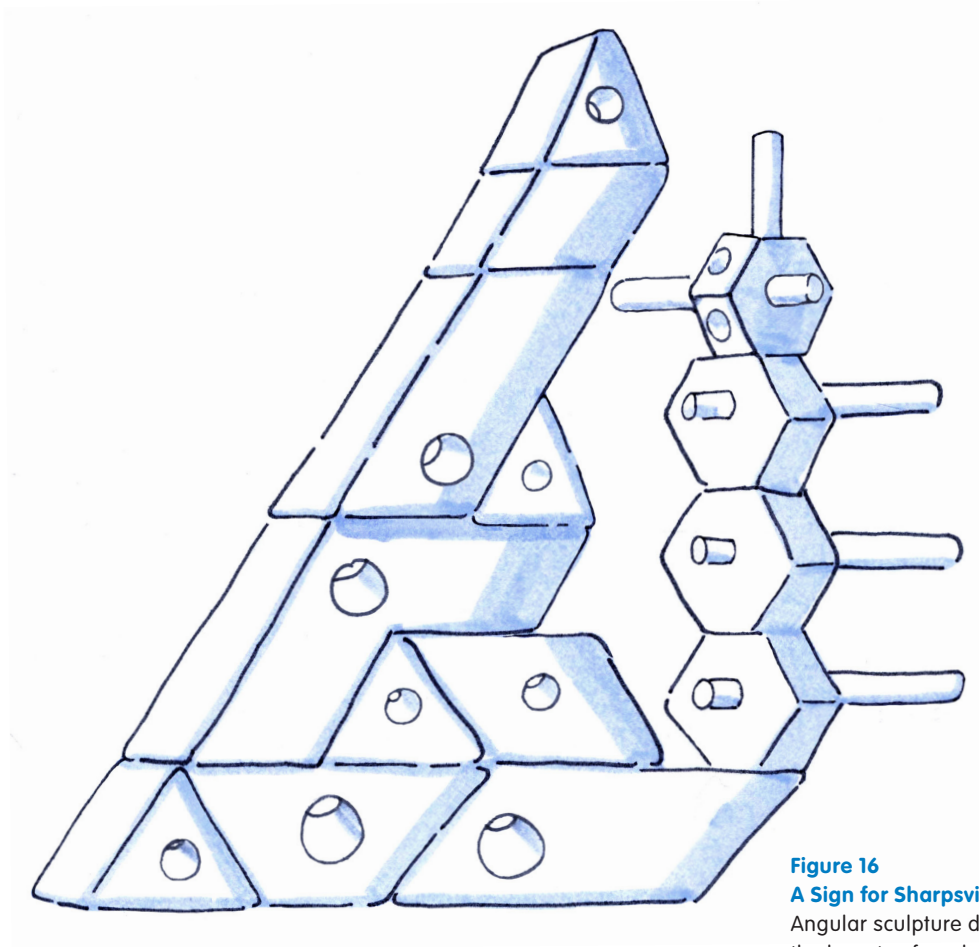


Figure 16
A Sign for Sharpsville
Angular sculpture depicting
the beauty of angles

A Sign for Sharpsville

Presentation: The town of Sharpsville makes hundreds of items for the world using the shapes you see in the Angles set: farm machines, clocks, and mountain climbing gear. Design a large sculpture that the town will place at its entrance. Your sculpture should be an interesting arrangement that lets the visitor know the beauty and usefulness of angles, and expresses the pride the town takes in its creations. Do not make a recognizable object, like a machine gear or racing boat, but create a logo, a pattern, or cluster that shows how much the people of Sharpsville value angles. Look at different company logos for examples.

Significance: This provocation requires children to think about visual composition per se rather than representing a common object with a symbol. They should do more than line up a row of pointed Blocks, but create a composite structure or cluster that expresses pride, strength, and affection—all rather abstract concepts.

Possibilities: The emphasis on angles will counter the impulse to create walls with Blocks snugly fitted together. The structure will not only use angles, but also have angles prominent in the contours. The more advanced design will find a way to capture the emotional qualities of love, pride, and strength, perhaps in the cant or bulkiness of the sculpture. These might, for example, use the contrast between obtuse and acute angles to express the “angleness” of the structure, alternating obtuse and acute Blocks such as the Peak and Hexagon.

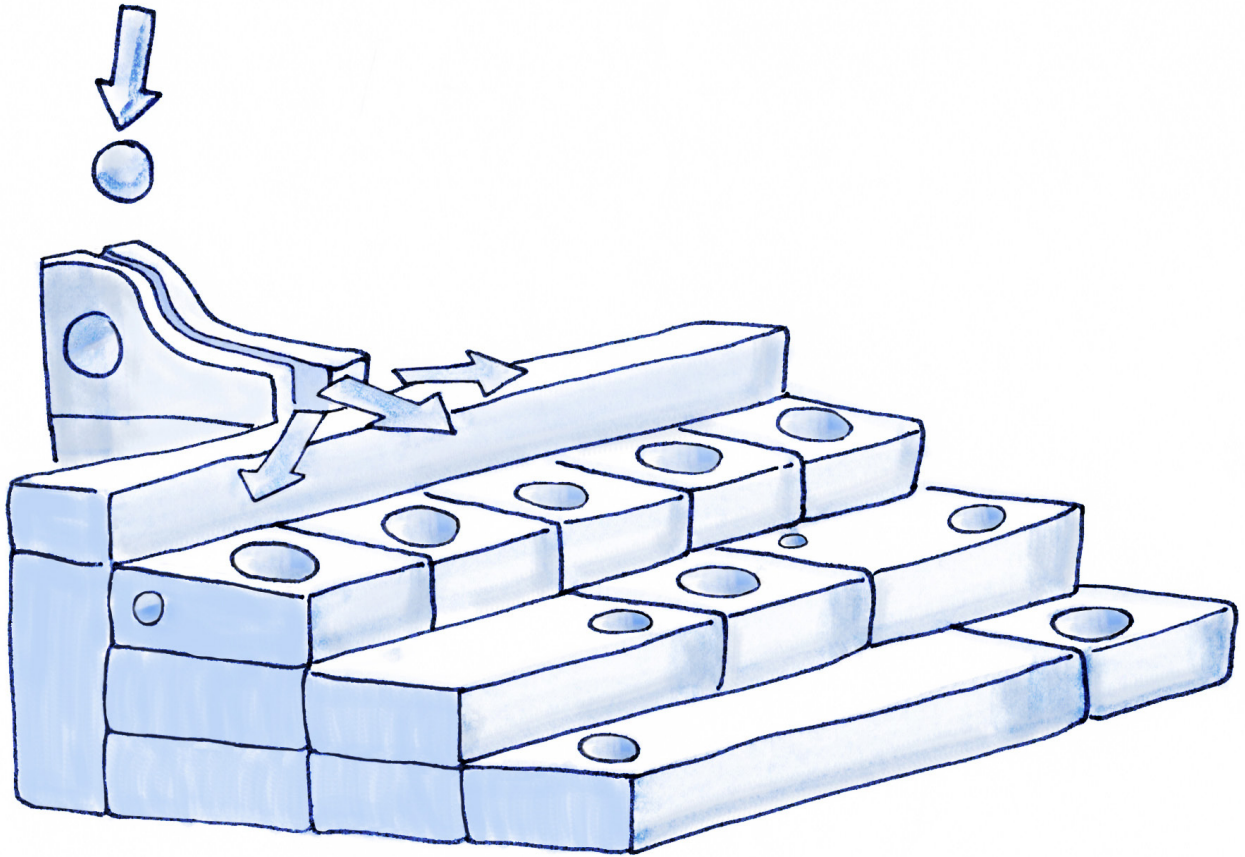


Figure 17
Playground Pinball
Tiered pinball game: the Chute pivots
to determine the direction of the ball

structures that move across places

17

Playground Pinball

Presentation: The ACME Pinball Company has asked you to design a large-scale pinball game using the holes and shapes of the Imagination Playground Classic set and the Angles set. Lay the Blocks out flat to serve as a rolling surface for the balls. If you are working outside and have a slight slope on the ground, you can use this to your advantage. Add bumpers and dividers to make the ball action more interesting, or for added challenge, to get the ball to roll into a particular hole. Design your pinball surface so that the ball stays on the surface until it falls into a hole. You can decide which holes will earn the most points when the ball rolls into it. Explain why you have assigned higher points to some holes and lower points to others. Consider the reverse game of trying to get the ball to reach a designated location without falling into any holes.

Significance: As is true for a number of our provocations, the children will need to think about how solid surfaces and objects can determine the path of an object moving through space. The angle of incidence and coincidence also come into play as children think about which way the ball will bounce off a Plug protruding from a hole or a Hexagon bumper. The provocation could also lead to great discussions about rules to make the game fair or more difficult.

Possibilities: The use of bumpers and barriers will be functional rather than ornamental, and the designer will be able to explain that function. The children may add complexity to their structures to deliberately make the game more challenging and fun. The parts could be moveable to make the game adjustable to different levels of difficulty. More advanced children might create interesting exceptions or qualifications to their rules, such as subtracting a point if a ball lands in a hole that already has a ball in it.

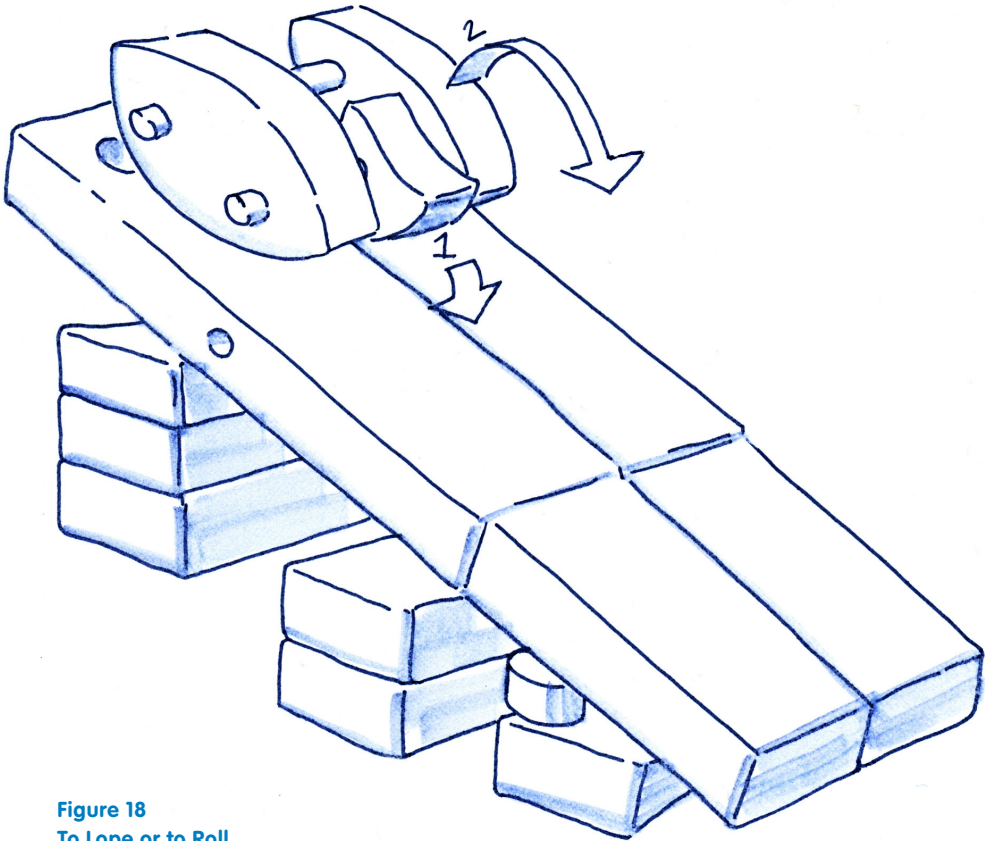


Figure 18
To Lope or to Roll
Contraption that rocks and lopes down
the incline in a two-step motion

To Lope or to Roll

Presentation: Make a variety of wheel and axle sets using the Plugs, Lil' Cheeses, and the Curves set. If you would like the Plugs to fit snugly into some of the holes, you can use a flat slat of folded cardboard to make the fit tight. Create a slightly inclined surface using your Long Blocks and Primary Blocks to test the action of these wheel sets. Before rolling a set, predict which ones will “lope” up and down, which ones will roll at a steady height from the floor, and which ones roll forward a bit before rocking back and forth or stopping altogether. After testing them, think about what you can do to change the actions of each set. Design other wheels that have new actions, considering both the position of the axle as well as the shape of the curves. If you'd like, give each wheel set a name that describes its behavior.

Significance: Anticipating the interaction of a moving curved surface with a stationary flat surface requires one to rotate objects mentally. In this case, the position of the hole or axle also has an effect. The rolling action is determined neither by the curves alone, nor the position of the hole alone, nor just the flatness of the floor. Children will have to go beyond the tendency to think of causes as coming from a single source.

Possibilities: Look for the level of understanding. Some children will consider only the shape of the wheels, but others will also consider the position of the axle and the orientation of one wheel in relation to the other wheel. Younger children might want to swap one shape for another shape. Older children will know when a simple twist of the Almond shape, for example, will completely change the action of the roll. Hopefully the children will also begin to understand the cam-like principles of the curves when rolling over a flat surface.

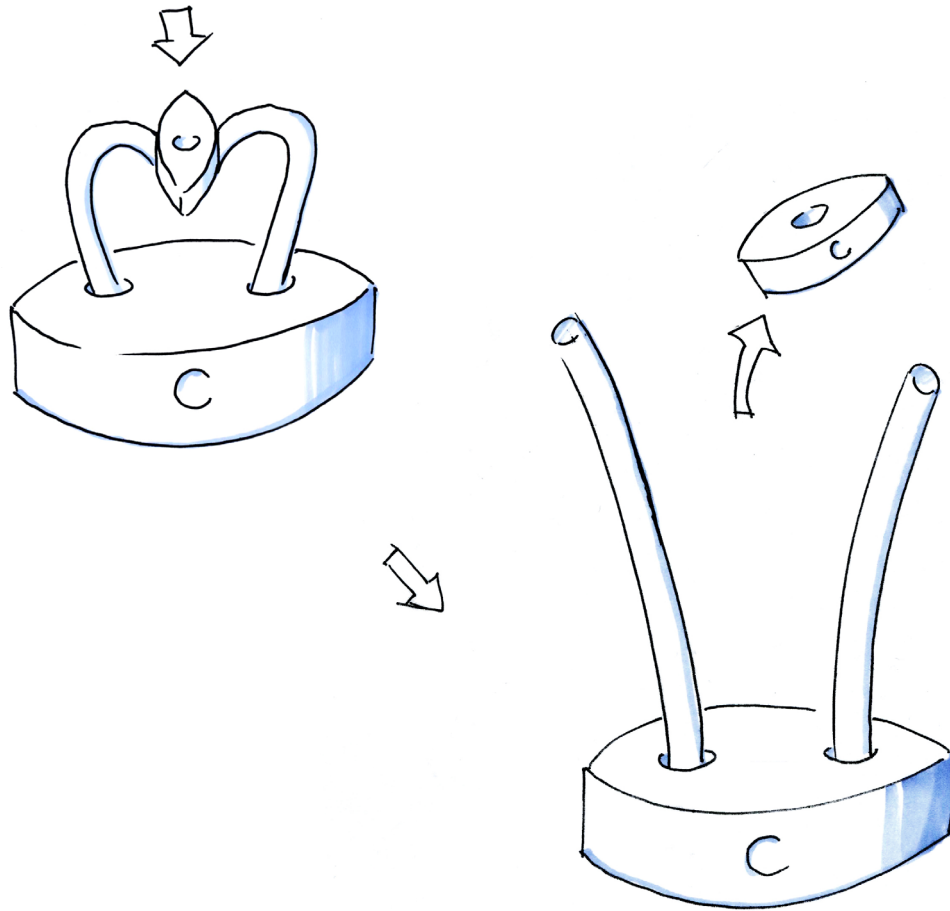


Figure 19
When Noodles Push Back
Noodle spring tosses an almond

structures challenges

19

When Noodles Push Back

Presentation: Notice that when you bend a Noodle end to end, it pops straight back when you release one end. It pushes back much like a spring. Think of ways to make something with the Imagination Playground Blocks that takes advantage of this spring-like property. Perhaps this force can keep something together, make something pop up like a jack-in-the-box, or make something turn when another Block is removed. Make something with the Noodles that uses this pushing force, rather than a design that uses a bent Noodle simply as a visual feature.

Significance: In this provocation the children need to think about a force that is continuous but invisible. In this case, the force pushes outward, whereas the keystone structure in the next provocation prevents gravitational force from collapsing inward. This exercise requires children to design structures that either release force on cue to make something happen, or to provide pressure to prevent something from happening—both interesting principles of structural dynamics.

Possibilities: At first the children might just try to bend the Noodles as tightly as they can. More advanced designs might involve bent Noodles, cocked and released to toss a ball or small Block forward, or a simulated trap that springs when someone steps on it. Use of this torque without movement might include using a bent Noodle to keep loose parts pushed against the inside walls of a channel, like an outward springy hairpin. Children might also use the springing action as a signal, as in a Noodle bent and released to signal the start of a race.

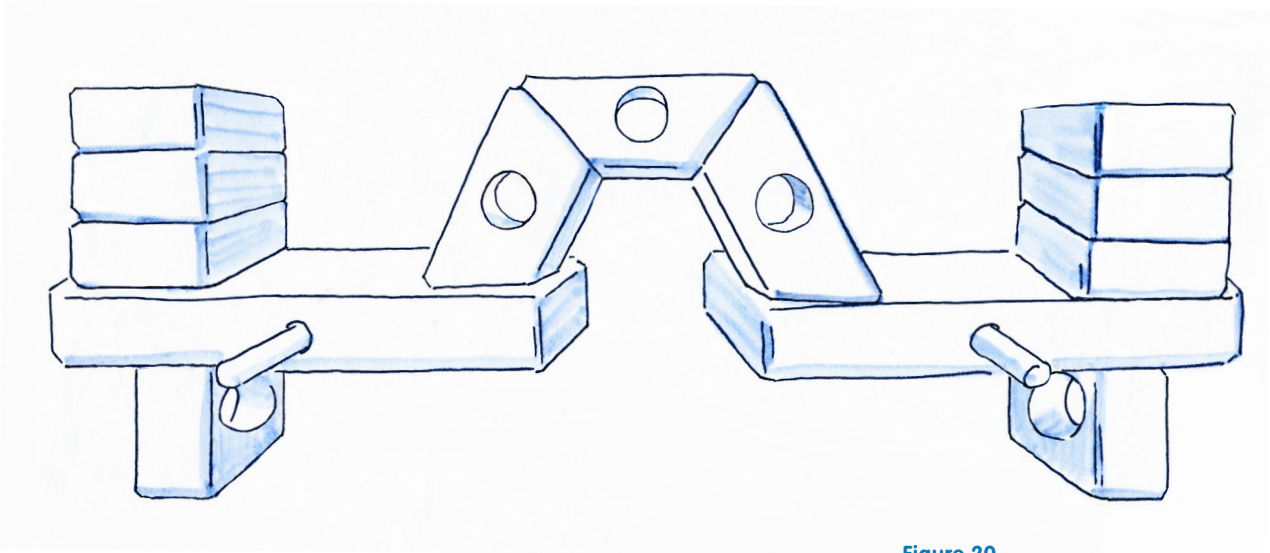


Figure 20
Arch Across the River
Cantilevered arch

Arch Across the River

Presentation: Lay out a pretend river using two long pieces of wide blue ribbon anchored with stones in case of wind. Make the river change from narrow to wide in different places. Using the Imagination Playground Classic set and Angles set, make structures that span the river. Experiment to figure out how to make the longest span possible. The Blocks cannot touch the water between the two blue ribbons.

Significance: To span the widest segments, children may need to invent either a cantilever using counterweights or a keystone structure that sustains the arch.

Possibilities: Children might begin by thinking that making a bridge taller will make the span longer. They will later realize that the Blocks cannot support the span from underneath the bridge, but by clever arrangements on top of the bridge. Advanced designs might involve cantilevers and counterweights using the Long Blocks. Even more complex designs will create a keystone arch with the Trapezoid parts.



about the author

George E. Forman, PhD is Emeritus Professor at the University of Massachusetts, Amherst and President of Videatives, Inc. He has written books that extend the theory of Jean Piaget to early childhood education: *The Child's Construction of Knowledge* and *Constructive Play*. He was president of the Jean Piaget Society from 1983 to 1985. George has also published books in the areas of early cognitive development and the educational value of digital media for young children. He worked for four years on Harvard's Project Zero early symbolization project as head of block play research. Since 1986, George has worked with the city of Reggio Emilia, Italy, to bring their educational philosophy to prominence in the United States by producing three documentary videos and coediting three editions of *The Hundred Languages of Children* with Carolyn Edwards and Lella Gandini. He coinvented The Gravity Wall, a patented reconfigurable rollway found in over 300 children's museums worldwide. He has designed new media formats that layer computer graphics and digital video as hyperlinks under text. Upon retirement in 2003, he cofounded Videatives, Inc., to distribute these new digital formats to early childhood professionals. His email address is George@Videatives.com.



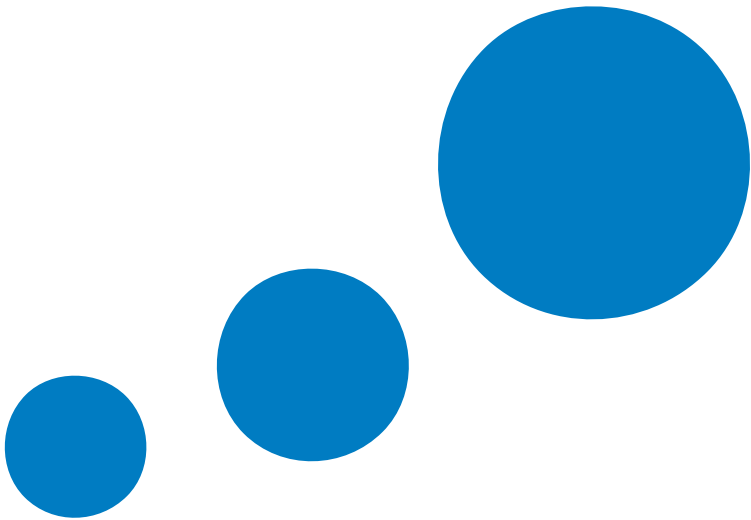
acknowledgement

The completion of this work in all respects resulted from constant collaboration with **Caroline Kim**, project director. She helped make the provocations engaging, the sketches illustrative, and the book flow from principles to practice; this broad competence matched by her kindness and humor. Thank you, Caroline.



conclusion

Enjoy the Classic set and the Add-on sets. Let us know what provocations work best for you, where your students take them, which ones fall flat, and what completely new provocations you have tried. Post your comments, photos, and images to <http://community.imaginationplayground.com/forum>. By sharing in this way, we gain confidence to flow with how the children respond to our invitations without worrying about unexpected responses that might feel off-target. Together we can identify the significance of their choices, and learn how to keep their engagement high.





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