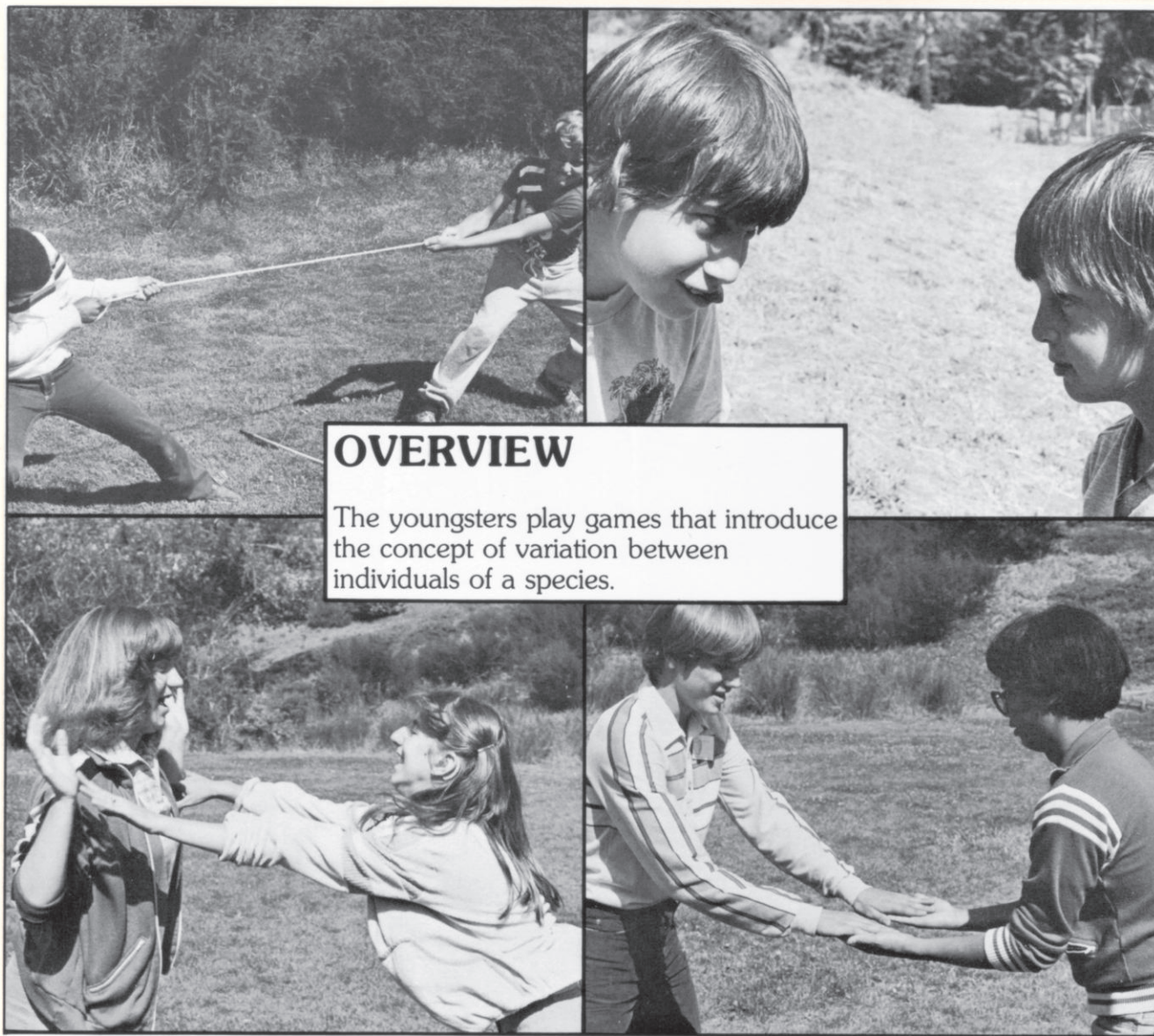


# VARIATION GAME

**BIO** Game/Simulation  
**KEY** Variation  
Competition



## OVERVIEW

The youngsters play games that introduce the concept of variation between individuals of a species.

## BACKGROUND



A close inspection of a daisy patch reveals that individual flowers have different numbers of petals. Footprints in the sand disclose a wide variation in the sizes of human feet. We know giraffes are tall, but there will always be one that is taller than the rest. These differences between the individual members of a species are called **variations**.

A variation can be an advantage, a disadvantage, or meaningless to an individual organism's ability to survive or to adjust to changes in the environment. For example, a "tall" giraffe might be able to reach the highest leaves in the trees after all the lower leaves have been eaten. The daisy with the fewest petals might be the one that survives a strong wind storm, thus being able to produce seeds for reproduction.



The youngsters in your group undoubtedly vary in strength, quickness, coordination, intuition, and luck. The games suggested in this activity have been selected to focus attention on these variations. The concept of **variation** is introduced after the youngsters have experienced the differences (variations) in their abilities to play the games.

### CHALLENGE: OBTAIN ENOUGH RESOURCES FOR SURVIVAL.

## MATERIALS

(The quantities listed here are for a group of twenty-four participants; adjust numbers for larger or smaller groups.)

#### For the group:

- 100 resource counters\* (popsicle sticks, cardboard pieces, or similar small objects)
- 15 5" x 8" index cards\*
- 1 "Games Monkeys Play" Rules card\*
- 1 watch or kitchen timer\*
- 1 data board\* and marking pen\*

#### For the "Pulling Roots" Game:

- 4 two-meter lengths of heavy rope\*, old garden hose, etc.

#### For the "Building a Shelter" Game:

- 8 bolts\*, at least 5 cm long
- 24 nuts\* to fit the bolts

#### For the "Catching Termites" Game:

- 8 sewing needles\*
- 8 corks\*
- 1 spool of sewing thread\*

\* Available from Delta Education.

## PREPARATION

**Group Size.** This activity is suitable for medium to large-sized groups.

**Time.** Plan on forty to sixty minutes for this activity.

**Site.** Choose a lawn or similar area that allows for running, jumping, and shouting.

### Materials

**1. "Catching Termites" Game.** Insert the needles into the corks to cover the points, and tie or tape a half-meter length of thread to each cork.



**2. Resources.** Write the word "RESOURCES" on each of the 5" x 8" index cards. Just prior to the activity, place resource cards on the lawn two to three meters apart, one card for every two youngsters. With each card, leave eight resource counters, thus creating a "resource pool."





# VARIATION GAME

**BIO** Game/Simulation  
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## ACTION

1. Tell the youngsters that they are going to act as monkeys trying to get enough resources (food, shelter, and space) to survive. Point out the resource pools (cards and counters) on the lawn.
2. Give the youngsters this explanation of the activity:
  - a. The activity consists of three different "eras." Each era is characterized by different environmental conditions, which present different challenges to the "monkeys."
  - b. Each resource pool has a challenger and a defender. The challenger challenges the defender for his resources by selecting one of the three challenges (games) of the current era. The object is to get as many resources as possible during each era.
  - c. After the challenge has been decided, the winner claims a resource counter and stays at that location; the loser moves to another resource pool and challenges the defender of that pool.
  - d. The youngsters can engage in as many challenges as time permits.
3. Read the story of the *Early Era*: "Long ago a population of monkeys lived in a tropical rain forest. The major difficulty they faced was building and maintaining a dry shelter. The rain also created large puddles that provided numerous breeding places for disease-carrying mosquitoes. Much time was spent swatting the bothersome mosquitoes. The monkeys' favorite food was termites, which they coaxed out of the termite nest by threading a grass stem into the small opening." These are the challenges of the *Early Era*:
  - Building a Shelter
  - Swatting Mosquitoes
  - Catching Termites
4. Demonstrate the three simple games that correspond to the challenges. (See the "Games Monkeys Play" Rules card.) Then

have the kids count off by two's, and send the *one's* off to stand by the resource pools as defenders. Hand out the materials required for the games to the *two's*, and send them off to challenge the resource defenders. Note the time, or set the timer, and let challenges go for six minutes.

5. When the *Early Era* is over, write everyone's name on the data board, and record the number of resource counters each youngster won during that era. Ask the youngsters to return their resource counters to the pools before moving on to the next era.

NUMBER OF RESOURCES WON DURING ERAS:			
NAME	EARLY	MIDDLE	MODERN
RAY	1		
JUDY	3		
CINDY	1		
BERT	2		
ELIZABETH	5		
JULIE	0		
ELMER	0		
JIM	5		
LOLITA	4		
GREG	1		
VICKI	1		
JACK	2		

6. Read the story of the *Middle Era*: "The environment became warmer and drier; competition for food increased. The monkeys' primary food was the roots of large shrubs, which they pulled from the ground. While feeding, they had to be alert for other monkeys that would try to take their food. If a monkey was attacked, it had to escape quickly by jumping away with its food. If it could not escape by jumping, it had to wrestle its challenger." These are the challenges of the *Middle Era*:
  - Pulling Roots
  - Jumping to Escape
  - Wrestling





7. Repeat steps 4 and 5, recording in a separate column for the *Middle Era*.

8. Read the story of the *Modern Era*: "Humans invaded the monkeys' territory and started building homes and developing the land. Many of the resources used by the monkeys were lost. The monkeys were forced into greater competition for the few remaining resources. The monkeys tried to outdo each other by stare-downs and ritualistic 'hand games.' If those measures failed, the monkeys resorted to pushing to keep each other off balance." These are the challenges of *Modern Era*:

- Stare Down
- Hand Game
- Palm Push

**Note:** To represent loss of resources, remove about one-third of the resource pools from the playing field.

9. Repeat steps 4 and 5, recording in a third column for the *Modern Era*.

10. After the youngsters have struggled through all three eras, call the group together. Discuss the special abilities required to compete successfully in each era. List the youngsters' responses on the data board. Kids usually suggest:

- Early Era: hand coordination, quickness
- Middle Era: size, strength
- Modern Era: good eyes, luck, timing

11. Review the accumulation of resources by various individuals. Did the same youngsters accumulate the most resources in each era? Discuss reasons why different kids succeeded during different eras. Emphasize the fact that natural differences, both physical and behavioral, exist within any **species** (group of organisms of the same kind). Define these natural differences as **variations**.

## VARIED IDEAS

1. Pick one familiar animal (blue jay, skunk, lion). What variations might exist in a group of animals of that kind?
2. If there is a shortage of drinking water next year, what kinds of variations could benefit an individual plant or animal? What type of variation could hurt an individual? What variations might make no difference at all?
3. If all individuals in a group were the same (that is, no variations), what might happen if there was a change in the environment?

## BRANCHING OUT

Have the kids make the following investigations of variations among individuals of the same kind:

- Count the number of petals on several flowers of the same kind.
- Measure the length of several leaves from different trees or shrubs, but of the same kind. Use the millimeter scale of a small ruler.

# Variation Game

## GAMES MONKEYS PLAY

### Rules

## Side 1



The best way to explain the various game rules is to demonstrate each game with one youngster while the other kids watch you. Many kids are already familiar with some of these simple, two-person games. Feel free to change or adapt the rules as you wish.

The letters used in the game descriptions are C for Challenger and D for Defender.

### THE EARLY ERA

#### Building a Shelter (Threading Bolts)

1. C and D each take a bolt in one hand and three nuts in the other hand.
2. When both are ready, they start threading all three nuts onto their bolts, one at a time. (This represents constructing a shelter.)
3. The first to thread all three nuts all the way to the bolt head has successfully constructed a shelter, and wins.

#### Swatting Mosquitoes (Palm Slap)

In this game, D is a monkey and C is a mosquito. The youngsters alternate roles until one has swatted two mosquitoes in a row. The challenged party has her choice of starting as a monkey or a mosquito.

1. D stands with hands held out, palms up.
2. C faces D and holds her hands palms down just above D's palms.



3. D attempts to move his hands quickly enough to slap the back of C's hand or hands (that is, the mosquito) before C can pull her hands out of the way.



4. If C is able to pull her hands back out of danger before D slaps them, the players reverse roles.
5. If D succeeds in swatting C, he tries for a second swat. Competition continues until one monkey has swatted two mosquitoes in a row.

#### Catching Termites (Threading a Needle)

1. C and D each take a cork with needle in one hand and take the end of the thread in the other.
2. When both are ready, they try to thread the needle (that is, push a straw into the termites' nest entrance).
3. The first to succeed is the winner.

### THE MIDDLE ERA

#### Pulling Roots (Tug-of-War)

1. C and D grab opposite ends of a knotted two-meter length of rope.



2. The players should center the rope over a mark (the resource card, for example) on the grass.
3. When both monkeys are ready, each tries to pull the other monkey over the mark.
4. The winner succeeds in pulling food out of the ground.

#### Jumping to Escape (Standing Broad Jump)

1. C and D agree on a starting point and mark that point.
2. D stands with his toes just touching one edge of the mark.
3. C plays the role of the attacking monkey and roars, causing D to leap as far as possible. C marks where D's heels (or hands, if he falls backwards) land.
4. The monkeys reverse roles.
5. The monkey who jumps farther escapes with the food.

## Variation Game

# GAMES MONKEYS PLAY

### Rules

## Side 2



### Wrestling (Arm Wrestling)

1. C and D lie on the grass with one elbow forward and resting on the ground. C and D grasp each other's forward hand.
2. When both are ready, each tries to pin the other's arm back to the ground.
3. The first to pin the other's arm to the ground is the winner.

## THE MODERN ERA

### Stare Down

1. C and D face each other about one meter apart with eyes wide open.
2. With heads held still and no swinging of arms, each monkey stares intently into the other's eyes, tells jokes, yells, growls, and so forth to get the other to blink.
3. The monkey who goes longer without blinking wins this simple confrontation over resources.

### Hand Game (Scissors, Rock, and Paper)

1. C and D face each other and count "One, two, three," raising and lowering a hand at each count.
2. On the count of three, each monkey makes either a rock (closed fist), paper (open palm), or scissors (closed fist with the forefinger and middle finger held out in a V). The winner is determined by this formula: Rock breaks scissors, scissors cut paper, and paper covers rock.
3. The first player to win two games is the winner.

### Palm Push

1. C and D face each other about 40 centimeters apart with their hands held straight up, palms forward, slightly farther apart than each person's shoulders.



2. When both are ready, each tries to get the other to move his feet by:
  - a. hitting the other's palms (*palms only*) hard enough to knock him off balance, or
  - b. relaxing her arms (faking her opponent out) as he hits her palms, causing him to lose his balance.

