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ABSTRACT

Developed by the Oregon Elementary English Project, the lessons in this first of a two-part unit on the human language are built around Luther Click, a boy who turns into different animals to show that different creatures have different means of communicating. Intended for grades three and four, the six lessons develop the concept that different animals rely on different kinds of signals and on different senses in communicating. And, finally, the students are led to discover that humans also rely on various senses to communicate but are able to communicate many things animals cannot, concluding that the human language system is unlimited. Each lesson is accompanied by a statement of its purpose, suggested procedures and materials, possible extensions, and various student exercises. A bibliography for further information about animal communication is also included. Supplementary materials for some of the lessons are provided in a separate packet. (For Unit II on the Human Language, see CS 200 485.) (See CS 200 482-483 and CS 200 486-499 for related documents.) (HS)

Language Curriculum, Level D

Unit I

HUMAN LANGUAGE

Developed under contract with the
United States Office of Education
Department of Health, Education, and Welfare

by

The Oregon Elementary English Project
University of Oregon
Eugene, Oregon
1971

Unit I

Human Language

TABLE OF CONTENTS

Unit I
HUMAN LANGUAGE
(six lessons)

CHECKLIST OF MATERIAL NEEDED:

1. Material to hand out to each student for each lesson, filed in separate folders.
2. Copy of story "Luther Click" to read to students for Lesson 1.
3. A transparency to use on the overhead or reproduce in some other way for Lesson 5. (There is a copy in the Supplementary Material envelope.)
4. (Optional.) A collection of books from your school library on animal communication for students to use in Lesson 2 and to read independently. Also a collection of pictures of animals.
5. Curiosity.

PURPOSE: To introduce students to the study of language and to begin to develop the following concepts:

1. All creatures, including man, have a special means of communicating.
2. Each kind of creature uses different kinds of signals and relies on different senses to interpret the signals.
3. Only those who understand the system and the signals can use the system; and both the producer of a message and the one receiving it must understand what the signals mean.
4. Animals are limited to communicating about what is at hand and necessary for their existence. Man, with human language, can communicate about anything, both what is at hand and what is far away in time and space.

WHAT YOU NEED TO KNOW TO TEACH THIS UNIT:

This unit is designed to introduce the fourth grade language program. The only other lessons that might precede it are the preliminary lessons in Unit IV (Fun With Words) where students begin the practice of keeping a word bank. See the suggested sequence in the General Introduction. The lessons in the unit are closely related and should probably be taught fairly close together. Unit II logically follows this one and complements it.

BACKGROUND INFORMATION

All living creatures have a system of communication ranging in complexity all the way from the simple tactile movements of single-cell creatures to the complex system we call human language. Although the systems appear to differ greatly in many ways, it is possible to identify certain characteristics which they have in common. For example, all systems use signals of some kind which are related to meaning. Some signals may be tactile (based on the sense of touch); in some systems the signals are visual; in some they are sound signals. The simpler systems have very few signals and use each one in isolation. The more complex systems have more signals and use them in combinations. But even in the most complex systems, the signals can be combined in such a way that a limited number can be used to produce an unlimited number of messages. For example, human languages use a limited number of sounds but combine them to produce thousands of words which can be combined to produce an unlimited number of sentences.

In this unit we are concerned with comparing some of the different kinds of signals used in animal communication and the senses which are used to perceive these signals. Bees use a complicated dance which other bees perceive by feeling of the dancing bee. Monkeys use a series of facial expressions which other monkeys must see to understand. Bears have a system of growls and coughs which the other bears perceive through hearing; and ants exude a chemical which is a meaningful signal to other ants which detect it with the sense of smell. What all these systems have in common is that each uses a signal or signals to which meaning is attached by the particular species using the signal. It is meaningful only to them. Each of the creatures within the species can both produce and understand the signals. Although the lessons in the student material emphasize the different kind of signals and the different senses used by each species, it is important to remember that most of these species are not limited to just the one kind of signal and one sense in communicating. Apparently the sound of the bees' wings and the smell of the pollen are also meaningful to the bees. The monkeys have a system of cries that they use to communicate with. Bears rely on the sense of smell and sight to interpret marks other bears place on trees to indicate how big they are and to claim territory. But all of these creatures are limited in the messages they can produce. The messages all seem to be related to the immediate needs of the creature or to be responses to situations right at hand.

Man also relies on various senses and various kinds of signals. Man uses facial expressions and gestures which are perceived by sight. But man's chief means of communication--human language--uses vocal signals which are perceived through the sense of hearing. Whereas animal communication is triggered by immediate stimuli--that is, by what is at hand at the moment: present danger; present hunger; present affection; present discomfort or well-being; a present threat to territory--man can communicate with human language about what has happened long ago and far away, about what may happen in the future, and about what may never happen.

Man can communicate about anything that he can think about. There is certainly a relation between man's ability to use human language and the complex civilization he has developed.

RESUMÉ:

The lessons are built around a boy, Luther Click, who turns into different animals and thus discovers that different creatures have different means of communicating. In conversations with Professor Know-It-All Luther (and the students using the lessons) are given information about the different animals Luther has been and discover something about how these creatures communicate. The lessons develop the concept that different animals rely on different kinds of signals and on different senses in communicating, and finally students are led to discover that humans also rely on various senses to communicate, but with human language they are able to communicate about many things animals cannot. The human system is unlimited.

If you are interested in more information about animal communication, the following books will be useful.

BIBLIOGRAPHY:

Movies:

Animals and How They Communicate. Coronet, 1966. 11 min. Color. Grades 4-12.

Beaver Valley. Walt Disney, 32 min. Color.

Student:

Evans, William F. Communication in the Animal World.

Gilbert, Bil. How Animals Communicate. Pantheon Books, New York, 1966.

Goudey, Alice E. Here Come the Squirrels. Charles Scribner's Sons, New York, 1962. (There are similar books on lions, wild dogs, raccoons, seals, elephants, dolphins, bears, beavers, bees, deer, and whales.)

Pettit, Ted S. Animal Signs and Signals.

Selsam, Millicent E. The Language of Animals.

Teale, Edwin Way. Insect Friends. Dodd, Mead, & Co., New York, 1955.

Williamson, Margaret. The First Book of Bugs. Franklin Watts, Inc., New York, 1949.

Adult:

Altmann, Stuart A., ed. Social Communication Among Primates. University of Chicago Press, Chicago, 1967.

Borgese, Elizabeth Mann. The Language Barrier: Beasts and Men. Holt, Rinehart & Winston, New York, 1968.

Cahalane, Victor H. Mammals of North America. The Macmillan Co., New York, 1947.

Devoe, Alan. This Fascinating World. McGraw-Hill Book Co., Inc., New York, 1951.

Evans, Howard Ensign. Life on a Little-Known Planet. E. P. Dutton & Co., Inc., New York, 1968.

LeComte, Jacque. Animals in Our World. Holt, Rinehart, & Winston, New York, 1966.

Litly, John Cunningham. The Mind of the Dolphin. Doubleday & Co., Inc., Garden City, N.Y., 1967.

McGill, Thomas E., ed. Readings in Animal Behavior. Holt, Rinehart, & Winston, New York, 1965.

LUTHER CLICK

PURPOSE: To introduce students to the fact that other creatures communicate in many different ways.

MATERIAL: Story, "Luther Click," to read to students.
Student activity sheet to pass out to each student after the story has been read.

SUGGESTED PROCEDURE:

1. Introduce the lesson by putting the words Luther, communicate, and animals on the board or the overhead. Without giving the students any clues, ask them to write down as many sentences as they can by adding no more than five words to the ones you have put on the board. Have some of the sentences read. They will vary, of course. Ask students what the word communicate means to them, and whether animals communicate.

2. Read the story to the students, or have students take turns coming up to read parts of it.

3. After the story has been read, pass out the student activity sheet and have the students write the answers. Conclude by discussing their answers. (1. T; 2. F; 3. F; 4. T; 5. F; 6. F.) As motivation for the next lesson ask and have students consider answers:

   Why do you think the bees were dancing?

   Why did the bear make marks on the tree?

   Did he have a cold? Why did he cough?

   Were the monkeys communicating? How?

   How do you think the ants knew where to go?

POSSIBLE EXTENSION:

1. Encourage students to make a habit of watching animals that seem to be communicating. They might keep notes on their observations.

2. Have a writing assignment to report on an animal they have watched.

LUTHER CLICK

One fine day, Luther Click bought a sack full of gumballs with his last dime. On his way home, he put all the gumballs, one right after the other, in his mouth and began to chew.

"I think I'll blow a bubble," said Luther.

Luther undid his belt and took such a breath that the wad of gum exploded in his mouth, and suddenly he found himself changed into a bee. Another bee, passing by, strapped a sack of pollen on Luther's two hind legs and led him away to the hive. There he saw hundreds of honey bees swarming all over each other.

"Gosh!" thought Luther. "What a place!"

All the bees seemed to know what to do. Some worked on the big wax combs that hung down from the ceiling of the hive. Some made honey. Others guarded the doorway and threw out anyone that was not a proper bee.

"I wonder what I'm supposed to do?" said Luther to himself.

He asked around but the bees didn't understand English. Then, too, they were really too busy to answer him. He stuffed his pollen into a cell of the comb and jammed it down tight with his head. It gave him a bit of a headache. But that's what he'd seen the others do, so he went along.

He hurried over to a corner of the hive where a lot of bees were milling around and flapping their wings. He was only there a moment, however, when a strange thing happened.

One of the bees, a newcomer, suddenly started to dance on the wall of the hive. He made a big circle, then ran up the center of the circle, shaking and buzzing fit to be tied. The other bees watched this a couple of times. Some of them felt him with their antennae (or feelers). Then they all took a mouthful of honey and flew out of the hive as if they knew just where to go.

Luther shook his head.

"Beats me," he said. "The dance must mean something. I wonder what? I've seen a lot of dances here in the hive but they didn't mean anything to me. I think I'll leave."

As he flew away from the hive he saw a hawk nosed witch stewing rosemary berries and chicken's teeth in a big iron pot.

"Care for a cup of broth, Sweetie?" asked the witch. "You look a little peaked."

"Don't mind if I do," said Luther. "Maybe it'll wash the honey down."

The witch cackled and handed him the broth in a rusty tin can.

Luther took a big sip out of the can. No sooner had he done so, however, than the two big bones in the center of his brain slammed together with a terrific force. Everything began to spin. Luther keeled over in a faint.

When he next saw the light of day, he discovered he had turned into a bear living with a family of bears in a dark forest cave. It wasn't a very happy experience.

In the first place, Papa Bear had a rotten personality. If things didn't go his way, he'd charge around growling and coughing in a throaty sort of way. When he really got steamed up, he'd rush right at you, hair bristling, and if you weren't fast, you were sure to get cuffed or bitten.

Then too, Papa was peculiar. He always took the same path to the berry fields and the river. Along the way, he'd pass a tree or two with scratches high up on the trunk. He'd always stop to sniff the ground there. Then he'd stand up on his hind legs and sniff the scratches in the bark. Last of all, he'd reach up above the highest marks and lay on some scratches of his own. He always seemed so serious about it that Luther began to wonder if all that sniffing and scratching meant anything.

He tried to ask about it a few times but didn't get anywhere. If he didn't cough just right, Papa Bear would be all over him, slapping and clawing away.

Well, Luther just couldn't stand Papa's beating, so off he went. But a curious thing happened to him as he ran away. He began changing again. At first he thought he must be going crazy. But sure enough, when he collapsed on the ground, all tired out, he was a monkey!

There he was, swinging through the trees. The band of monkeys in which he found himself numbered about a dozen or so. They were forever on the move, led by an old male who didn't appear to do much but yell and make funny faces. But the monkeys were not confused. They always came when he called.

The old monkey would yell and the entire bunch would be off through the branches looking for something to eat. What they found to eat, however, really wasn't all that good. Luther didn't mind the fruit and wild honey. But the bird eggs and insects were rather hard to swallow.

When the monkeys weren't eating, they were making faces. This one would rush up and frown. That one would grin. Another would look puzzled and scratch his head. Everyone greatly enjoyed the game. Through it all they chattered and scampered around until Luther could hardly keep up.

A monkey's life was just too fast for Luther. He slid out of the tree one night when everyone else was asleep and curled up in a hollow log. When he woke up, what was his surprise to find that he was now a tiny ant.

Almost before he knew it, there he was, marching along a little forest trail with hundreds of other ants. They all seemed to be going somewhere in a big hurry.

Luther stayed in line and moved along with them, following some sort of trail. Actually, he didn't care where he was going because he had discovered something very interesting about himself. There were two antennae or feelers growing out the top of his head. He noticed that he could smell with these. Whenever he passed something that smelled good, he'd know it because his feelers told him so.

He noticed something else about the feelers, too, though it didn't make much sense. Once in a while, as he marched along, he'd see a couple of ants face each other and touch their feelers together. They'd stand there for a second or two rubbing feelers. Then they'd go their separate ways as though something had been decided.

"I don't get it," said Luther to himself. "I wonder what's going on?"

Before he got an answer he was whomped on the head. The world spun around like a yoyo with a fifty-foot string. When he came to his senses, he was himself once more, just turning in at the old home gate.

"Any news from over town?" asked his mother when he came into the kitchen. Luther shook his head.

"Nope," he said. "Nothing going on but the same old thing. Mulie Winkler's all broke out in his summer rash and it looks like rain."

Human Language
Lesson 1
Student

Language D

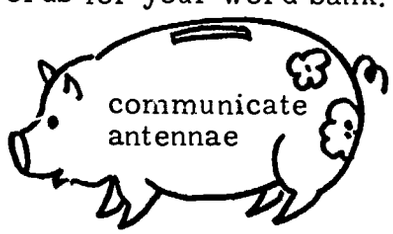
LUTHER CLICK

WHAT DID THE STORY TELL YOU?

Directions: On another piece of paper number from 1-6. By each number put T for true, if the sentence below with the same number is true. Put F for false by the number if the sentence below with the same number is false. Be sure to read each sentence carefully.

1. Bees can communicate with other bees.
2. Monkeys never use their faces to communicate.
3. Luther changed into a bee, a bear, a monkey, and a grasshopper.
4. Each kind of animal had a special way to communicate.
5. The bear could tell the bees where the honey was.
6. Ants use their antennae to hear with.

Words for your word bank:



PROFESSOR KNOW-IT-ALL

PURPOSE: To provide background information for developing the following concepts:

1. Each kind of animal has its own communication system.
2. Different animals use different senses in communicating and different kinds of signals.
3. Animals can both give and receive messages with their own system.

MATERIAL: Student lesson which consists of an introductory page and four sections to be used either by each student individually or in groups.

SUGGESTED PROCEDURE:

Note: Since this section contains four separate sections, you will probably want to spend at least two days on it.

1. The following are several different ways to teach this lesson:

   a. Separate the class into four groups, one for each animal. On the first day hand out the student material and read the introductory page with the class. Then have students working in groups read the section assigned to them and complete the activities and prepare to present the information found in their section to the rest of the class. On the second day have each group inform the class about the animal in their section. Perhaps one student could be appointed spokesman for each group. Use the questions below to guide discussion following each presentation.

      If time permits, you might allow students to see what additional information can be found in books in the library. Suggestions of some helpful books are given in each section, but you may have others in your library.

   b. Have students work independently to complete each of the sections. This would allow those that work faster to look for additional information in the library. Or you might want to have additional books available in your classroom. See the bibliography in the introduction.

      Follow up the independent work with a class discussion. Suggested questions for guiding the discussion are given below.

   c. Read the material to the class, having the students complete the activities individually, and use the discussion questions below to guide the discussion.

d. Do your own thing.

Possible questions for class discussion:

The Dancing Bees

1. Do you think bees can tell cows where food is to be found? Why or why not? (Each creature has its own communication system, which is not understood by other creatures.)

2. How can you prove that bees communicate? (By watching a bee come back from a flower and dance, and then seeing the other bees go out and fly straight to the same flower.)

3. What senses did the bees use to communicate with? (They used the sense of touch. See discussion in the teacher's introduction to this unit.)

(Answers to questions in student section on bees: Activity 1: A-2; B-3; C-4; D-1)

Monkeys

1. What is the most effective way for monkeys to communicate? (By using signals that can be heard because they can be used even when one monkey can't see another.)

2. How can you tell that one monkey understands another monkey? (By watching how it behaves when it hears cries of certain kinds or sees certain facial expressions.)

3. How many different things do you think one monkey can tell another? (Answers will vary. Try to help students see that there are probably a limited number.)

(Answers to questions in student section on monkeys: Activity 1: 1. Monkeys communicat by facial expressions. They also communicate by certain cries and sounds. 2. Because only monkeys can understand other monkeys.)

Bears

1. Why do bears know what the growling and coughing of another bear means? (Because they are bears and understand the bear system of communication.)

2. What can happen when the bear coughs? (A fight.)

3. Do you think all bears would cough if they hear the cough? (Answers will vary. Some factors determining if a bear will fight are the size of the bear and whether one bear can bluff the other.

(Answers to questions in student section on bears:
Activity 1: 1. Dogs growl. 2. A bear is very dangerous when he coughs.
Activity 2: Help students see that only those who have agreed on what the signals mean can use them. This activity provides motivation for Unit 2.
Activity 3: Bears make marks high up on a tree to mark a trail and to indicate how large they are.)

Ants

1. Discuss the four questions in the student activity, especially #4.
(Answers to these questions:
1. The antennae and the part of the body that secretes the chemical. 2. The ant marks the trail with a chemical. 3. Ants clean their feelers to keep them sensitive. 4. The trail can be destroyed by rain or wiped out by other animals crossing it, or by things falling on it.)

2. Ask the students:
Why would ants stay in a line? (Because they have to follow the trail and to make the trail more clear.)

What are some chemicals that you know? (Answers will vary. Some examples are ammonia, sulphuric acid, salt, soda.)

POSSIBLE EXTENSIONS:

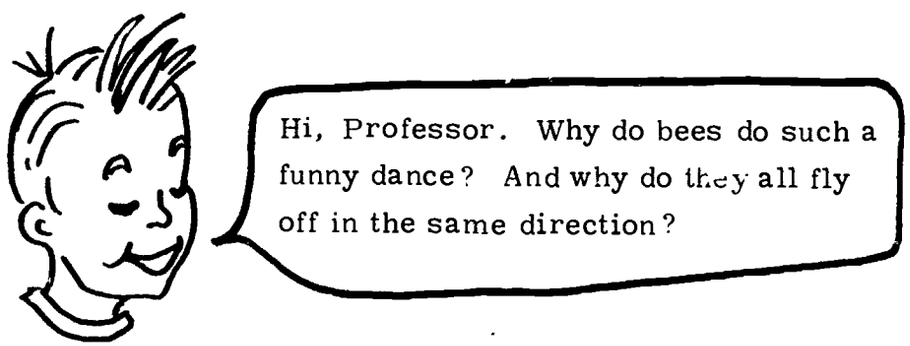
1. Have students develop a bulletin board with pictures of animals, particularly if they are engaged in some kind of communication. Have sections of the bulletin board devoted to different animals and have students find pictures and also list all the ways the particular animal communicates.

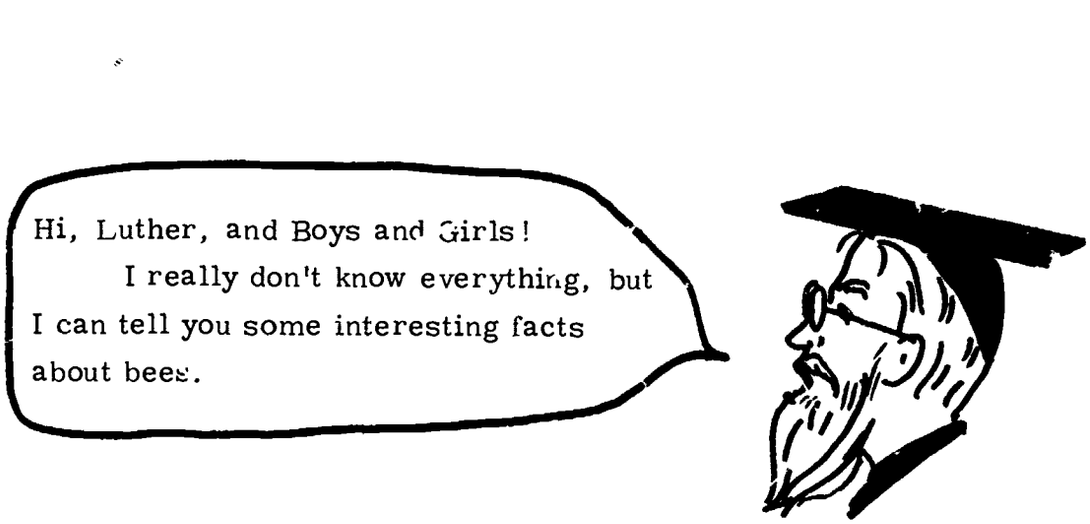
2. The Walt Disney film "Bear Country" might be shown in connection with this lesson. A follow-up discussion could bring out the different kinds of things a mother bear can teach her young, or communicate with them about. Point out that they are all things related to the immediate needs of the animal.

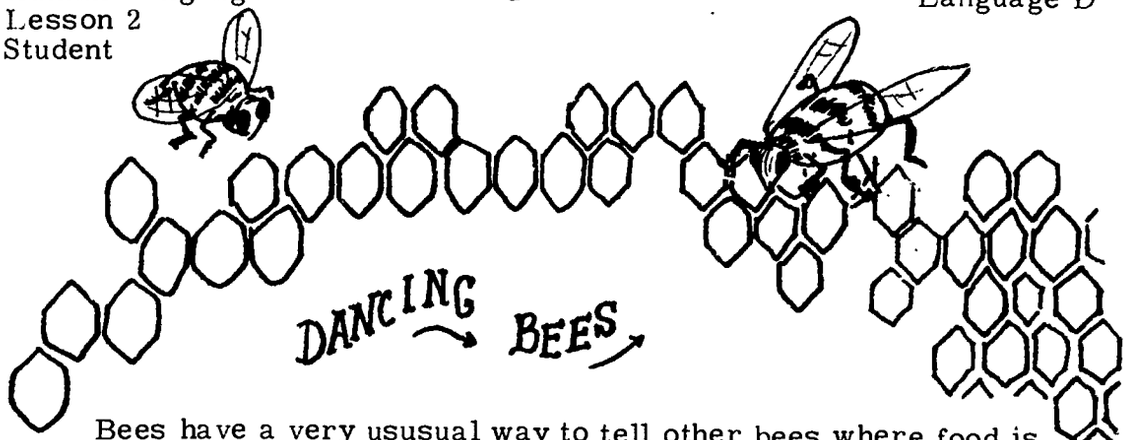
3. Students might enjoy trying to approximate the bee dance. Different students could do a dance and the others could try to interpret the message by the kind of dance and the direction. Perhaps the child doing the dance could hide something in the room and then try to tell the others where it is by means of the dance.

PROFESSOR KNOW-IT-ALL

Do you remember Luther Click. He is the boy that had the strange adventure with the bees and the bears, the monkeys and the ants. Luther couldn't forget his experience. He had many questions. One day he went to see his friend Professor Know-It-All to see if he could get some answers.

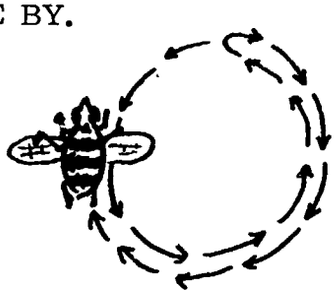






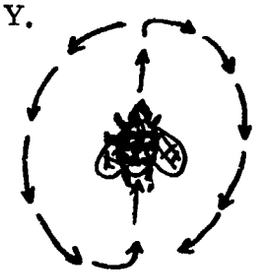
Bees have a very ususual way to tell other bees where food is. Bees get their food from flowers. When a bee finds food in a flower he returns to his hive. The other bees touch his antennae and taste the food by putting out their tongues. Then the bee that has found the food begins to dance. He dances on the side of the hive. The dance tells the other bees something. Bees have two kinds of dances to give two kinds of messages.

MESSAGE 1. FOOD IS CLOSE BY.



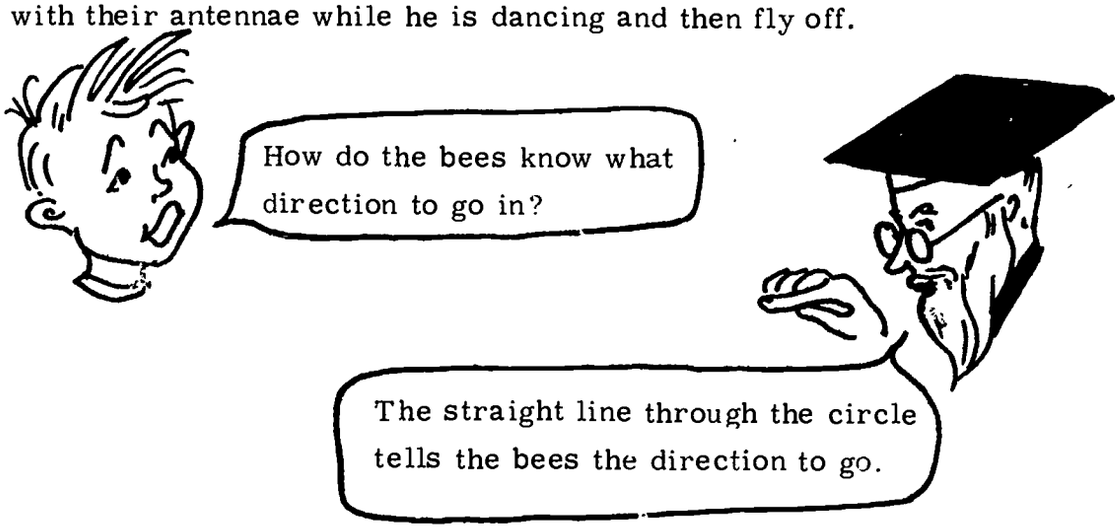
This is a round dance. The bee moves around in a circle in one direction and then turns and moves around in the other. The other bees feel him with their antennae and follow his circle for a few minutes. Then they fly off to look for the food close by.

MESSAGE 2. FOOD IS FAR AWAY.

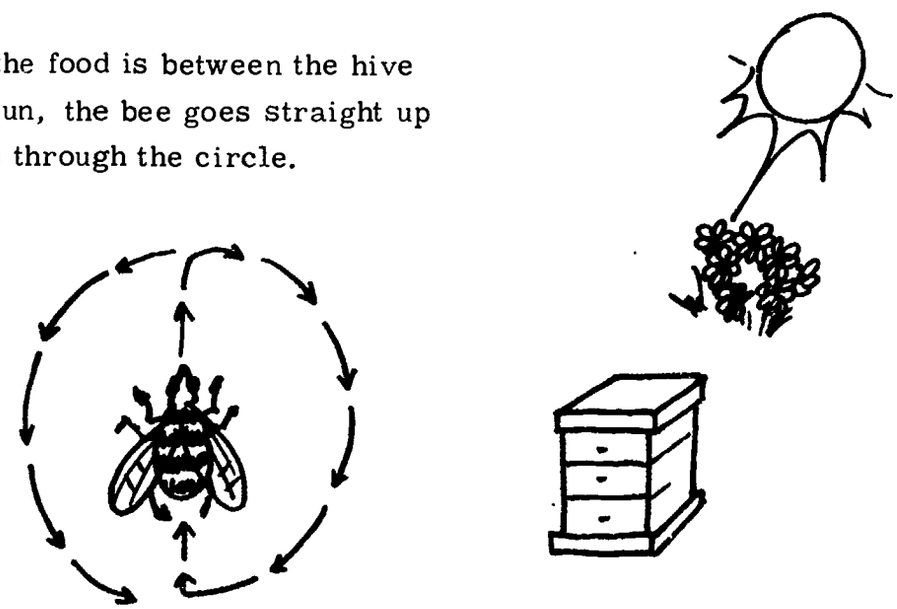


When food is far away the dance is more complicated. It is a wagging dance. The bee goes half way around a circle. Then he goes straight through the circle. Then he goes half way around

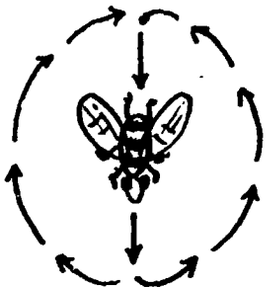
the other half of the circle and back through the center again. As he goes around the circle and through the middle he wags his body back and forth. The closer the food is, the faster he wags. The farther away it is, the slower he wags. The other bees feel him with their antennae while he is dancing and then fly off.

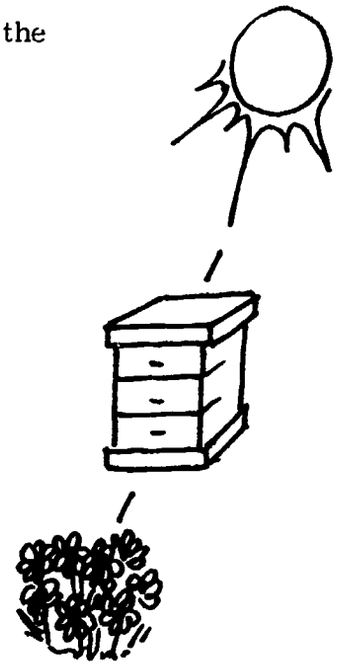


If the food is between the hive and the sun, the bee goes straight up the comb through the circle.

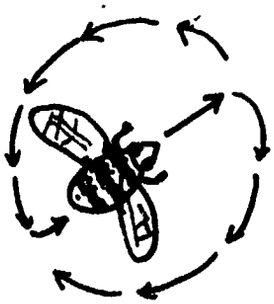


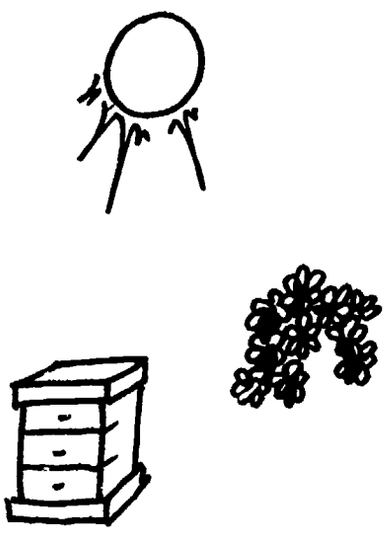
If the hive is between the sun and the food, the bee goes straight down the comb through the circle.





If the flower is to the right of the sun, the straight line points toward the right.





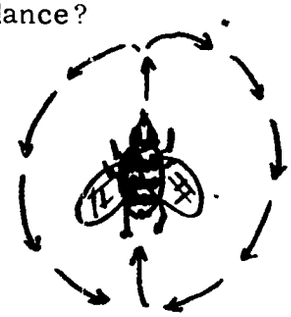
Bees must be able to feel each other in order to communicate. They learn how they can find food by the kind of dance and its direction and also by how fast the dancing bee is dancing.

Activity 1:

Can you match the right message to the right dance?

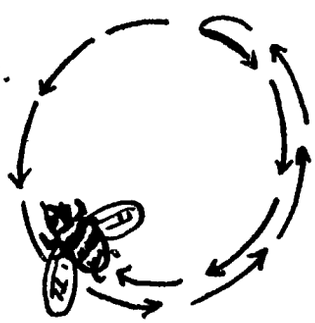
A. FOOD IS NEAR.

1.



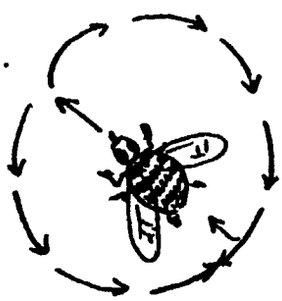
B. FOOD IS FAR TO THE LEFT OF THE SUN.

2.



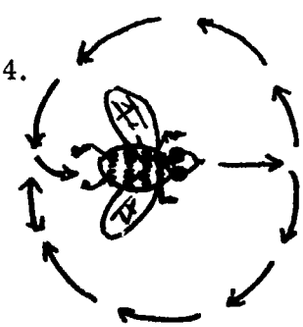
C. FOOD IS FAR AWAY AND TO TO THE RIGHT OF THE SUN.

3.



D. FOOD IS FAR AWAY AND BETWEEN THE HIVE AND THE SUN.

4.



Activity 2:

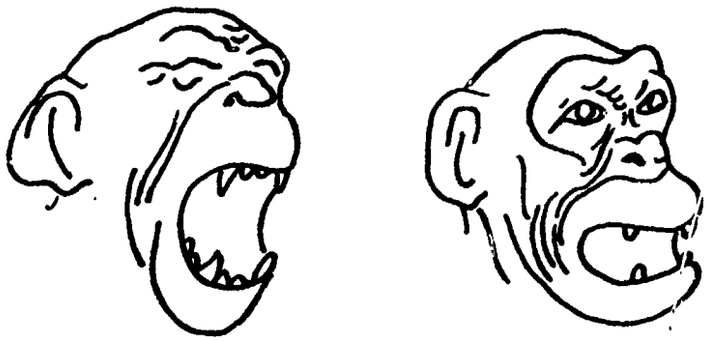
If you have time, see if you can find out some more about bees in your library. Here are some books you might like to look for.

HERE COME THE BEES, by Alice E. Goudey
THE LANGUAGE OF ANIMALS, by Millicent E. Selsam
HOW TO UNDERSTAND ANIMAL TALK, by Vinson Brown

Luther asked Professor Know-It-All about the monkey faces that he saw. Why were they always making faces at each other? Here is what Professor Know-It-All said.

Words from the Professor:

Monkey use their faces to tell other monkeys many things. Here are some pictures of monkeys. Can you tell what they are trying to say?



You probably had some trouble because you are not a monkey yourself. You don't understand the monkey system, but other monkeys do. With their faces they can tell other monkeys that they are afraid or happy or angry. They can also understand when other monkeys make faces to show they are afraid or happy or angry. The faces monkeys make are a kind of monkey language.

Here are some more pictures of monkey faces.

Many different kinds of monkeys and apes use their faces to warn other monkeys and apes. Of course they can only communicate with their faces when other monkeys can see them. But they also can communicate with sounds. Maybe on television you have heard and seen gorillas pounding their chests and apes screeching. They could be saying, "I'm hungry," or "Get out of here; this is my area!" or "Danger!" or "Now look here, stop this nonsense or I'll have to get tough."

Activity 1:

1. List the important facts Professor Know-It-All told you about monkeys and how they communicate.

2. Why is it hard for you to understand the facial expressions of monkeys?

3. Copy two of the faces of monkeys and write what you think they could be saying.

Activity 2:

If you have time, go to your library and see if you can find out anything else about how monkeys communicate. A book that you might look for is this:

THE LANGUAGE OF ANIMALS, by Millicent E. Selsam

BEARS

When Luther was a bear he heard bears making many different noises. But one noise seemed to be very important. That was the cough. When he asked Professor Know-It-All about it, this is what the professor said:

Words from the Professor:

Bears use sounds to tell other bears many different things. They can tell them when they are hungry, or when there is danger, or when someone is coming. Luther is curious about the bear's cough. When he heard it he thought the bear had a cold. But that wasn't true.

When two bears come together they growl to show anger.

But if one of the bears coughs, the other bear knows that the coughing bear is about to attack. The other bear may either stay and fight or run away. Or he may cough back, hoping that his cough will sound more fierce than the other bear's cough. The coughing contest may bluff the other bear into not fighting. But if it doesn't work, the fight begins.

One important thing to remember when you are near a coughing bear is WATCH OUT!

Activity 1:

Answer these questions:

1. What does a dog do when he threatens another dog?
2. Why is it helpful to understand what the cough of a bear means?

Activity 2:

With a friend or a small group, agree upon some signals to tell each other the following things:

I'm hungry.

Jiggers, here comes the teacher.

Let's play baseball.

How will you understand these signals? Will anyone else understand? Why or why not?

Use your signals to communicate with your friend.

Activity 3:

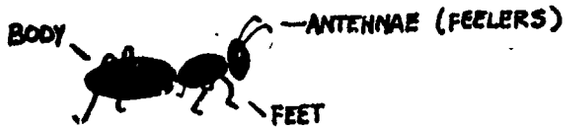
If you have time, go to the library and see if you can find out how bears mark their trail and how they can tell other bears how big they are. A book that you might look for is this:

ANIMAL SIGNS AND SIGNALS, by Ted S. Pettit

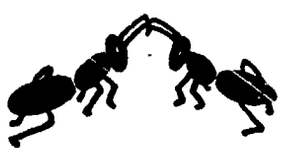
While Luther was an ant, he followed some very mysterious trails. Every time he followed one, it led to food. Where did these trails come from? Who put them there? To answer these questions, Luther asked his friend Professor Know-It-All. This is what the Professor said.

Words from the Professor:

Luther, if you look carefully at an ant you will see some things like little thin wires sticking out of his head.



These things are called antennae or feelers, and they are the important parts that the ant uses to communicate with. If you have watched ants, maybe you have seen them clean their feelers to keep them sensitive so that they can pick up smells. That's right, SMELLS. Ants use their feelers to smell with. Here are two ants exchanging smells.



Luther asked about ant trails. These are made by ants touching their stomachs to the ground. When they do this, some fluid from the bottom of their stomachs leaves a trail. If one

ant finds food anyplace, he marks the trail with this fluid for other ants to follow. As other ants follow the trail by smelling with their feelers, they also leave behind some fluid. The trail becomes easier and easier to follow as more ants go along it. The fluid is a chemical, so we could call the trails "chemical trails." The ants have to be able to smell it before they can follow it.

Activity 1:

Answer these questions:

1. What two parts of the ant are important for communicating?
2. What does an ant do to leave a trail?
3. Why do ants clean their feelers?
4. Name some problems that ants might have in marking their trails.

Activity 2:

If you have time, go to the library and see if you can find out any other interesting facts about ants. A book you might want to look for is this:

THE LANGUAGE OF ANIMALS, by Millicent E. Selsam

ANIMALS, ANIMALS, ANIMALS

PURPOSE: To reinforce the concept that animals communicate by various kinds of signals--chemical, auditory, visual, and tactile--and that each species has its own communication system.

MATERIAL: Student lesson, "Animals, Animals, Animals," to pass out to each student.

SUGGESTED PROCEDURE:

1. Pass out the student lesson. The first activity can be done individually or in groups of four with each student being assigned one of the spaces. The charts could be put on large pieces of paper or on the board.

   Although the particular senses that were emphasized in Lesson 2 for each animal were the sense of touch for the bee; smell for the ant; sight for the monkey; and hearing for the bears, there may be some variation in answers, depending on how much children have learned about animal communication. The important thing for them to learn is that different animals use different signals and depend on different senses for understanding the signals. To interpret the claw marks on the tree the bear must use sight as well as smell. To interpret the cough he must hear it. The bees rely somewhat on the taste or smell of the pollen as well as on the dance, and recent research indicates that they also depend on the sense of hearing. The sound of the wings is apparently meaningful. Students are not apt to know this. Monkeys rely on sight to interpret the facial expressions, but they also rely on hearing to interpret the cries of other monkeys. So the student may draw more than one animal in each space.

   After students have finished drawing their pictures, compare the pictures and have a follow-up discussion to bring out the points discussed in the paragraph above. Have them defend the choice which they made for each sense.

2. After students have written the answers to Activity 2, follow up with a discussion to compare answers. Bring out the following points:

   A. Bears wouldn't follow the ant trail because they wouldn't be able to interpret the smell of the chemical. They don't have feelers and they don't understand the signal. Nor would the bee understand the monkey's facial expressions because the bee doesn't know the monkey system.

B. Both the sender and receiver of a message must know the system.

Follow up the discussion of the students' answers by asking:

If bees communicate with bees, bears with bears, and ants with ants, what would you say about monkeys?

Could you make a statement that would be true about how all animals communicate?

ANIMALS, ANIMALS, ANIMALS

Hi! Professor Know-It-All sure helped me find out about how animals communicate. Let's see if you remember what he said.

Activity 1:

Copy the following chart on a piece of paper. In each of the spaces, draw a picture of an animal that communicates by means of the sense listed in the space.

COMMUNICATION SIGNALS

Touch	Smell
Sight	Hearing

Activity 2:

Write your answers to these questions on another piece of paper.

WHAT WOULD HAPPEN IF:

1. A bear came across the chemical trail of the ants. Would he follow it? Explain.

2. A monkey made a happy face at a bee. Would the bee understand? Why or why not?

A TALK WITH THE PROFESSOR

PURPOSE: To help students understand that, like animals, man has a communication system in which he uses some of the same senses as animals and can communicate any message an animal can.

MATERIAL: Student lesson, "A Talk With the Professor," to hand out to each student.

SUGGESTED PROCEDURE:

Note: Depending on the ability of your class and the time available, you may want to go right on with Lesson 5 at the end of this lesson.

1. Hand out the student lesson and have students either read the dialog in the cartoon individually or have the class read it together with different students taking the parts of Luther and the Professor. Stop to discuss the points being made as you go along.

2. After the first frame ask students to recall the ways Luther's animals communicated. You might ask such questions as:

   Could the bears communicate in the same way as the bees? (No, the bears do not communicate by signals (dance steps) that other bears have to feel.)

   Could bees communicate in the same way as monkeys? (No, bees do not use facial expressions that have to be seen, nor cries that have to be heard.)

   Continue in this way to bring out the concept that each animal relies on a different kind of signal and different senses in communicating. Each kind of animal has its own system.

3. For frames 5, 6, and 7, where students are asked to help Luther, give them an example to begin with. For instance, you might ask how many ways they can find to communicate the message "I'm mad," or "Let's go," or "I'm tired." (By saying it, using sounds others can hear; by gestures, which other people can see; by writing it, using signals other people can see. A few messages, such as "I'm angry with you" or "I like you," can be communicated physically so that we get the message through the sense of touch.)

   As soon as students understand what they are to do, have them work independently or in groups, but follow-up with a discussion to share their answers. Use the following discussion questions:

Can man communicate all of the messages that animals can? (Yes.) Have students give examples.

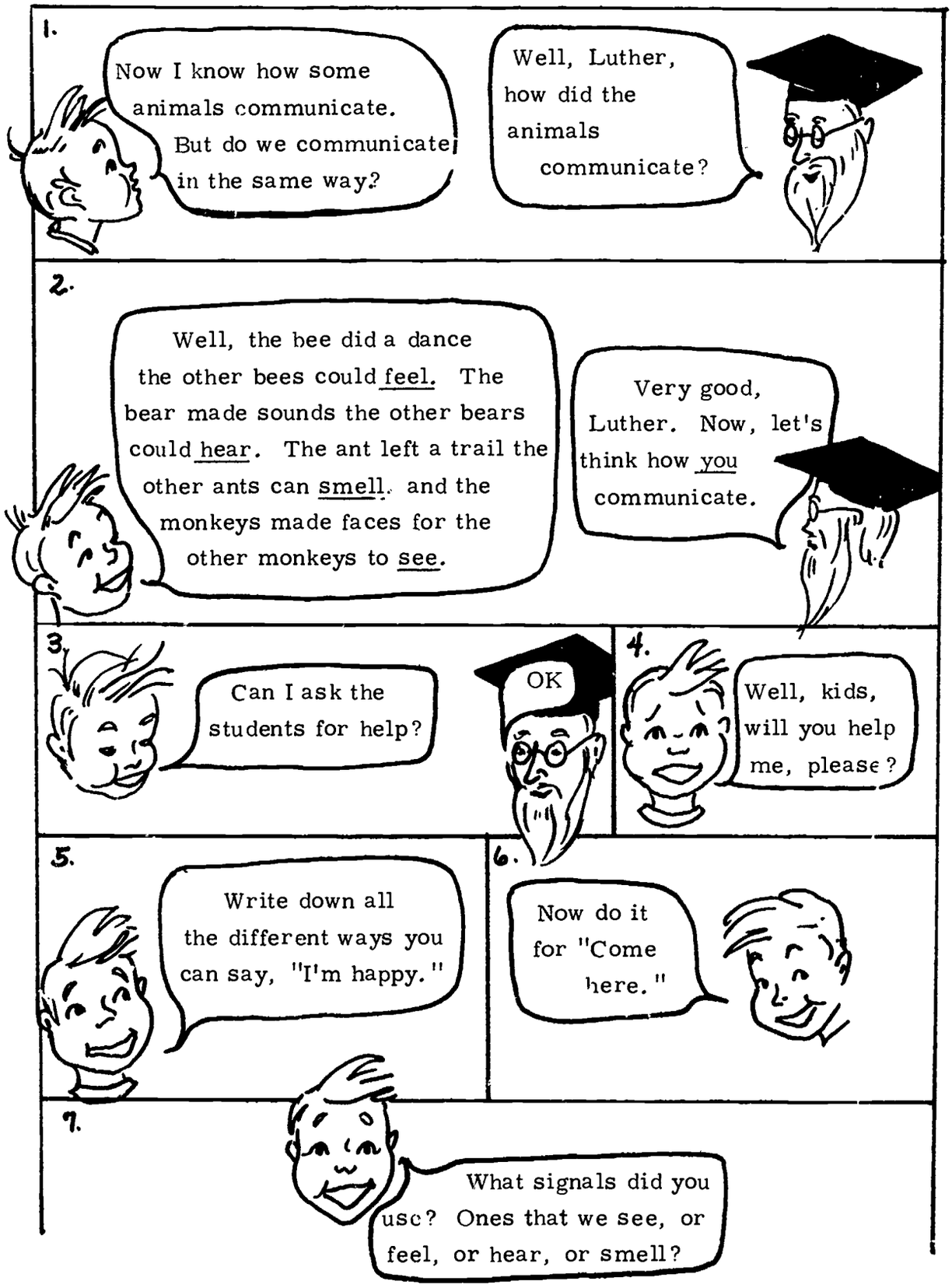
Can you communicate in more ways than any animal? (Humans seem to have more ways than any one animal, although they use some of the same kinds of signals. Humans seem to be able to communicate through all their senses.)

The important concept to bring out is that humans can communicate anything an animal can, though they do it in a different way.

Human Language
Lesson 4
Student

Language D

A TALK WITH THE PROFESSOR



HUMAN LANGUAGE

PURPOSE: To help students realize that humans can do things with their language that no animal can do with its communication system.

MATERIAL: Student lesson, "Human Language," to pass out.
A transparency to use on the overhead. There is a copy in the Supplementary Material envelope.

SUGGESTED PROCEDURE:

1. Follow the same procedure as that used with Lesson 4.

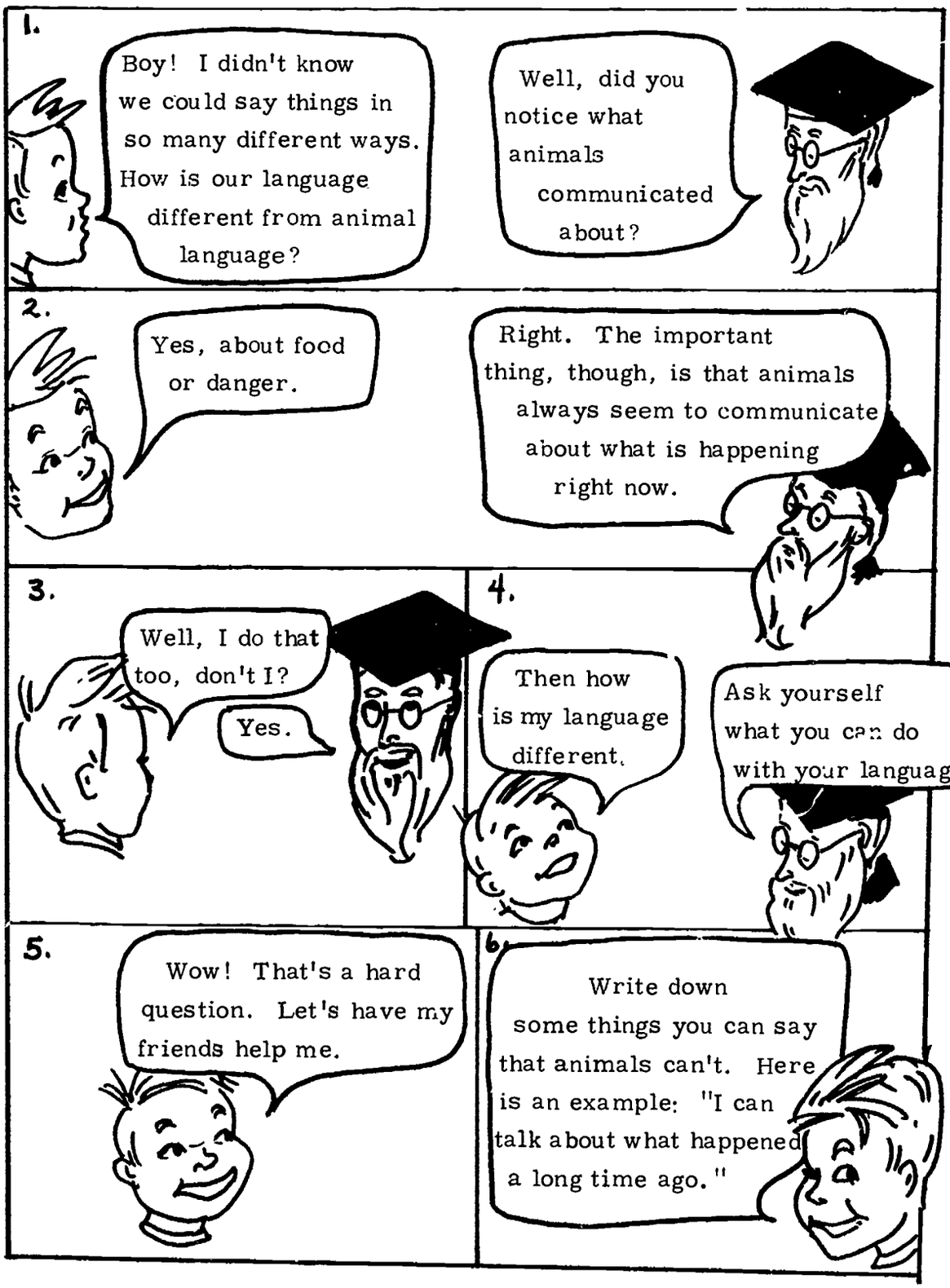
2. When you come to frame 6 you may want to divide students into groups to make their lists, or you could have them work out the answers in a large group, putting them on the board. After they have a substantial list, put the transparency on the overhead. Each of the examples represents one of the kinds of messages that only humans seem able to communicate.

   Try to get students to see that the first message is one in which we go ahead in time. The second is an example of talking about something that happened in the past. The third illustrates how we can use language to get things without ever moving from the spot we are in. The fourth shows that we can use language to learn from other people.

   Discuss each of the examples by itself, leading students to see that animals are not able to communicate this kind of message.

   Then have students find other examples in the list they have made of the same kind of message if possible. Also ask them if they can suggest other examples. You may want to let different students come up an add additional messages of the same kind right on the transparency.

HUMAN LANGUAGE



REVIEW

PURPOSE: To help students recall the major concepts of the unit.

MATERIAL: Review sheet for each student.

POSSIBLE PROCEDURE:

1. The review exercise can be done by each student independently with a follow-up discussion, or it can be a group activity.

2. Make sure that students understand what they are to do by helping them find some possible questions that could be answered by the first item. Answers of course will vary. Here are some possibilities.

    a. What are some ways animals communicate? or, What senses do animals use to communicate?

    b. If two animals send a message which each understands, we say they do what?

    c. For communication to take place between two creatures, what must be true of the signals they use?

    d. What is man's system of communication called?

    e. Who can use language to talk about the past and the future?

    f. What animal uses chemicals to communicate?

    g. What animals communicate by dancing?

REVIEW

Here are some answers. Make up questions for each one.

1. Touch, see, hear, smell

2. Communicate

3. Both must understand the signals.

4. Language

5. Only man

6. Ants

7. Bees

SUPPLEMENTARY MATERIAL FOR UNIT I--"Human Language"

and UNIT II--"Communication Systems"

Language D

This envelope contains the following:

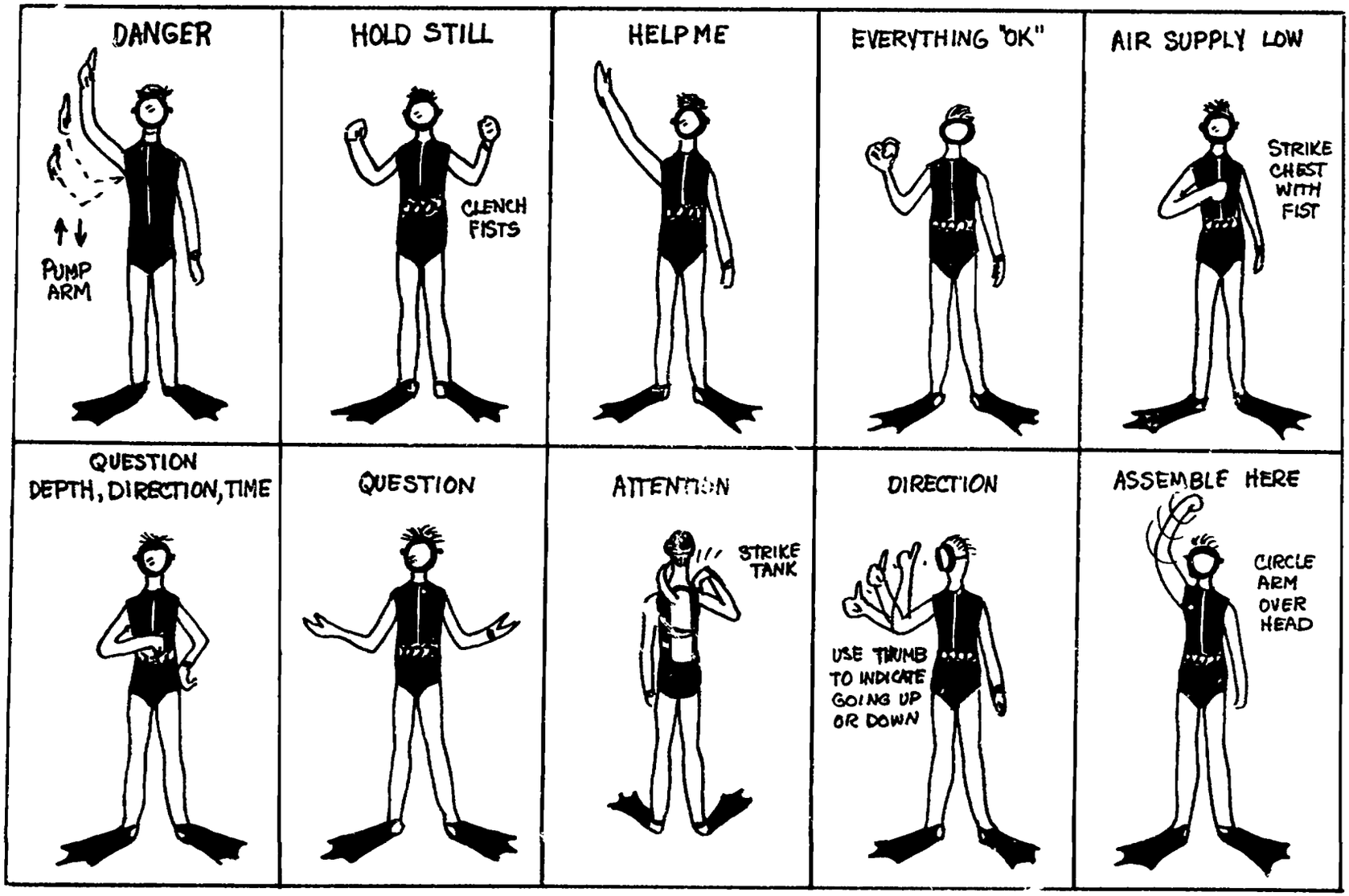
1. A page to be used on the overhead or otherwise reproduced for Lesson 5, Unit I

2. Chart of signals used by scuba divers to use on the overhead or otherwise reproduced for use in Lesson 2, Unit II

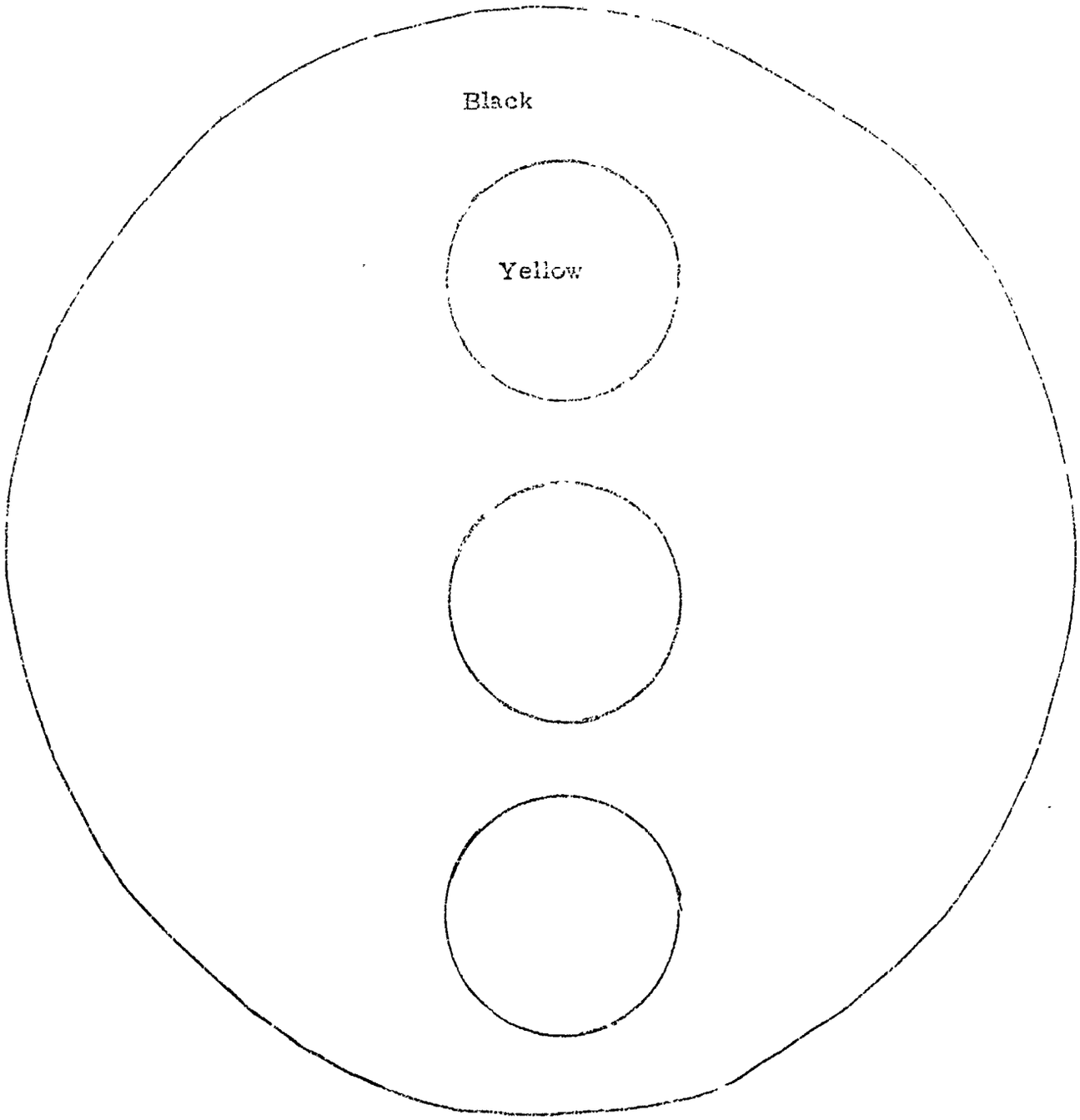
3. A sample model of a railroad signal to be copied for Lesson 4, Unit II

Communication Systems
Lesson 2
Supplementary Material

Language D



This is facsimile of the railroad signal included in the Supplementary Material envelope.



Here are some things that humans can say that animals can't.

TOMORROW, I'LL GO FLY A KITE.

WOW! DID I HAVE FUN AN HOUR AGO.

HEY JOHN, BRING ME THAT CANDY BAR.

BOY, THAT BOOK SURE TAUGHT ME A LOT.