Activities
The Magic School Bus Gets Programmed
Grades: PreK–K, 1–2, 3–5

Overview
Following the theme of the Magic School Bus Adventure, kids form small groups and attempt to carry out simple instructions as if they were programmed computers.

Field Trip Notes
Ms. Frizzle's class arrives early to open the school for Mr. Ruhle. But there's so much to do! 'There must be a way of doing all these chores without actually doing them,' says Carlos. The school handyman, Mr. McClean, is in total agreement. Enter Mr. Ruhle's new computer! Then enter Mikey, Carlos's whiz-kid brother, who programs the computer to do all the chores. But when Ms. Frizzle shrinks Mikey and sends him inside the computer for a guided tour, everything goes crazy. And the only person who can fix the problem is Mikey - who is somewhere between the CPU and the hard drive!

I Compute
Time: 40 minutes
Group Size: 4
One tiny mistake in Mikey's computer program has the school's system in an uproar. Your kids learn that computer tasks must be broken into small parts.

What You Need
For each student:
- Copy of I COMPUTE page
- Pencil

Talk About It
Ask: What do computers do? How are computers like other machines? How are they different?

What To Do
1. Ask: What tells a computer what to do? (a program in a computer language) What is a program? (a set of step-by-step instructions to accomplish a task) Can you follow a program?
2. Space groups in separate squares, with four pencils in the center of the square.
3. Have kids act out the Pencil Pass Program instructions. Are more instructions needed for Bit #1 and Bit #2? Are there “bugs” - mistakes? If so, challenge kids to fix them.
4. Have groups compete the program to pass out pencils. Let them present the programs they write. Ask: How many ways did we find to accomplish the same task?
I COMPUTE

What to Do

Get with the program! A computer program is a list of step-by-step instructions. It tells a computer how to do a task. Can you follow a program?

1. Number group members: Bit #1, Bit #2, Bit #3, Bit #4.
2. Stand in a square, three steps apart.
3. Each Bit must do exactly what the program commands—no more, no less.

PART ONE:
Follow the "Pencil Pass" Program

Bit #1
1. Turn to face the center of the square.
2. Walk forward in baby steps.
3. Stop when you reach the pencils.
4. Pick up four pencils.
5. Turn around halfway.
6. Return to your original position.

Bit #2
7. Turn one quarter turn to face Bit #1.
8. Walk forward three steps.
9. Stop when you reach Bit #1.
10. Say, "Please give me three pencils."

Bit #1
11. When Bit #2 speaks, hand Bit #2 three pencils.

Bit #2
12. When Bit #1 gives you three pencils, say, "Thank you."
13. Turn around halfway.
14. Walk forward three steps, and stop.
15. Turn one quarter turn to face Bit #3.

PART TWO:
Write Your Own Program

- First write instructions to give pencils to Bit #3 and Bit #4, then to collect and return all pencils to the center of the square. Use the back for your program.
- Act out your program. Does it work? Are there "bugs"—mistakes? Write new instructions to fix them. Then test again.

Take-Home Challenge:

With your family, write a step-by-step program for putting away dishes. Then practice it to find and fix any bugs.