

Working Through the Investigations

Here is a sample of how you might carry out the first session with Far Out Logo Investigations. Keep in mind that by using your strengths as a facilitator, you will be able to excite your students to learn Logo throughout the activities provided in the book while learners reinforce their knowledge of other subjects.

Taking off with Logo

In the beginning of this lesson, students will participate in a bodily-kinesthetic activity in which they become the turtle. As the turtle, they move across a grid to reach a target. Students also apply their knowledge of direction and distance in a simplistic way to build a foundation for more complex thinking later on. They are also encouraged to reflect on their thinking: to clarify processes and redefine solutions. Through writing and discussion, students communicate their thinking to their peers. They are encouraged to question and to seek answers on the road to finding solutions to situations as they are presented.

First Day

1. Take students to the web site http://nlvm.usu.edu/en/nav/topic_t_3.html
2. Assign 10-20 minutes for them to play the Ladybug Leaf game. Then discuss what they know about moving the ladybug.
3. Next, assign 10-20 minutes for the Ladybug Maze game. Ask them to compare their experiences.
4. Finally, use a floor grid to introduce to students the idea of moving the turtle in Logo using basic commands of FD, BK RT and LT. It is also good to explain the necessary format the commands need to work. This is similar to the Ladybug experience, but requires clear instructions for each movement. See Kid Logo Investigation.
5. The homework assignment is based on item #4, i.e., to write the commands that draw their initials in LOGO. Use “Writing your initials in Logo” from the web resources (www.terrapinlogo.com/faroutresources.php)
6. Journal writing activity is aimed to encourage students to put into words what they are thinking and learning.

Second Day:

1. Review basic commands with the whole class, using a projector and screen. Explain that there are two windows in Logo: the Listener window where you type in the commands and the graphic window where you see how the turtle carries out the commands.
2. Demonstrate what happens when you type in the following commands in the Listener: FD 50, RT 90, FD 100, BK 200, etc.
3. Review the basic turns on a compass rose, relating them to turns on the grid ranging from 0 to 90 to 180 to 270 and to 360 (returns a full circle to 0).
4. Using the Listener, encourage students to test out their commands from the homework assignment. (**Hint:** Have students type their name at the top of the Listener before working on their initials. Use the command PRINT “MyName (no spaces) to avoid an error message. In this way, you can identify their work later on when they print out their commands.)
5. When students are successful with their initials, they should print out their work
 - a. Print the listener to see the commands used – to compare with homework commands
 - b. Print the graphics window to see the results of their work
6. Share student successes with the class.
7. Journal writing

This book is designed to help you blend a number of curricular areas with the use of technology, specifically the learning of a first programming language, called LOGO. Progression through the book introduces new ideas with successive investigations, building student skills in the development of the Logo language. Most importantly, the format of the book enables students to progress at their own pace. Instructions are placed on the page preceding the student investigation, providing suggestions on how to successfully work through the investigation. There are no single answers to any of the investigations. The purpose is to excite students to try their ideas and make adjustments as they work through their solutions.

Student Investigation	Accompanying Resources
1. Taking Off With Logo!	A. Ladybug Leaf and Ladybug Maze B. Kid Logo Investigation C. Writing your initials in Logo
2. Night Sky	A. Gazing at the Night Sky
3. Shooting Stars	A. Website: http://seds.lpl.arizona.edu/nineplanets/nineplanets/meteorites.html
4. Moon Landing	A. Moon Landing Game Sheet B. Instructions for Compass Rose Direction Finder
5. Designing a Rocket	A. Designing a Rocket
6. Docking with a Space Station	A. Docking with a Space Station
7. Mission Possible	A. Mission Possible Score Sheet B. Mission Possible Grid C. Mission Possible Cards
8. Ground Control, Are You There?	A. Website: http://quest.arc.nasa.gov/people/bios/space/foster.html
9. Lost in Space	A. Mission Possible Grid (Reference)
10. Space Station	A. Space Station
11. Dig This Planet	A. Website: http://starchild.gsfc.nasa.gov/docs/StarChild/space_level1/travel.html
12. Variety is the Spice of Space	A. Website: http://spaceplace.nasa.gov/en/kids/amazing_facts.shtml
13. Construction Project	A. Construction Project B. Construction Project Planner
14. The Right Stuff	A. Getting Ready for the Right Stuff
15. Far Out	A. Far Out