

Bruce Cattanach

Technology Educator Lakeview School
44 Cooper Road Denville, New Jersey 07834-3419
+1 (973)366 5336 (1) 4231 FAX +1 (973) 366 4345
bcattanach@denville.org <http://www.denville.org>

Lesson Plans for MicroWorlds 2.03

Week 1

Introduce the graphic program with Drawing/Painting tools. Have students work up a landscape using the painting and drawing tools. Save landscape.

Week 2

Open Landscape. Introduce the concept of a turtle wearing a costume. Have students bring out a turtle and put on a shape. Explain the difference a turtle with a shape and a stamped shape. (Stamped shape becomes part of background rather than a moveable object) Demonstrate the sizing tools to enlarge and reduce the shapes.

Week 3

Open landscape with shapes installed. Demonstrate how students can make their own shapes. Explain how shapes are to be named (no spaces lower case) Students to create one personal shape and save.

Week 4

Loading text. Demonstrate how to make a text box. Load and customize text, eliminate text name, and hide text box. All students to place one piece of text on the initial saved page.

Week 5

Using the Logo command screen (procedures page). Review basic logo procedures (to ***** commands end)
Demonstrate movement using Logo commands

tto [t1]

```
repeat 30 [ fd 20 wait 3 ]  
end
```

Students to start procedure section of their program.

Week 6

New pages and buttons. Demonstrate how to create new page. Show how to make a button and use the button to change pages (button is named: go!)

```
to go!  
page2  
end
```

Emphasize about 30 times that pages need to be called WITHOUT any spaces in their names. ie page2 and not page 2(This is a major problem with the procedure pages)

All students to put a button on first page to start the program and write a Logo program to move to the second page.

Week 7

This week left intentionally without a direct assignment. Students work on their own programs. Instructor to help with debugging and development of student work.

Week 8

Object animation. Demonstrate how the bird1 bird2 shapes can be animated -

```
to fly  
repeat 30 [ setsh "bird1 wait 2 setsh bird2 wait 2 forward 4 ]  
end
```

Remind students that animations can be made using original shapes and not only the shapes in the program. Students to animate on shape and integrate into their program.

Week 9

Set Heading Students to understand the 360 degree compass relationship and how the turtle can be commanded to go in a very precise direction. Command is `seth ###` [ie `seth 90` makes the turtle proceed 90 degrees or "east" or right.]

Students to use command to direct program of turtle progress across the screen.

Week 10

Show position, set position. These commands are difficult and will need drill and practice. Up until now the turtles with costumes have been starting their positions where they left off last.

Show position Demonstrate command [`show pos`]

Demonstrate and explain the grid structure of the screen and how the + and - affects the position. Have students take one turtle shape and find the position of that turtle.

Set position Demonstrate command [`setpos`] emphasize that the command is ONE WORD - `setpos` - and not two. Enter the position shown in "show pos" in the procedure section. Each student to run program and make sure that the turtle will respond to the `setpos` command.

Week 10

Additional review of `show pos` and `setpos`. Each student to demonstrate ability to master this technique. Use `show pos` and `setpos` in conjunction with other programs:

```
to run
tto [ t1 ]
seth 45
setpos [ -20 -20 ]
repeat 30 [ fd 20 wait 2 ]
end
```

Week 11

Multiple Turtles. When ever it is necessary introduce this

concept. More than one turtle can be called to move. Command structure:

```
tto [ t1 ]
setpos [-40 -40 ]
tto [ t2 ]
setpos [ -40 40 ]
tto [ t1 t2 ]
seth 135
repeat 30 [ fd 20 wait 2 ]
end
```

Alternately - have the turtles move in different directions

```
tto [ t1 ]
setpos [-40 -40 ]
seth 270
tto [ t2 ]
setpos [ -40 40 ]
seth 90
tto [ t1 t2 ]
repeat 30 [ fd 20 wait 2 ]
end
```

Week 12

Set shape. Students can change the shape of the turtles costume by calling other shapes from the shapes/graphics page. Student to integrate this technique into their program - where "pokemon" and "bomb" are custom shapes.

```
to bombpokemon
tto [ t4 ]
setsh [ pokemon ]
fd 80 wait 10
setsh [ bomb ]
end
```

Week 13

Music and Sound files. By now the class has probably created and stored any number sound files. We all love to hear our own voice ! Explain the nature of sound files (they must be used to ADD to the program and not DETRACT from the program.) Detail that this is a graphic program and not a musics recording studio. Demonstrate how to make a sound file, label and integrate into the procedure program - where "crashsound" is the sound of a crashing noise.

```
to bombpokemon
tto [ t4 ]
setsh [ pokemon ]
fd 80 wait 10
setsh [ bomb ]
crashsound
end
```

Music files are made using the keyboard and controls located under the musical note icon. Care should be exercised to create short files that ADD to the program and don't DETRACT from the program.

Week 14

At this point it is best to lay off any new commands and let the students create their programs. You will need to debug any number of problems including self made recursions and the hundreds of page 11 (with the space!). Keep in mind that all students will not create with the same level of mastery. Some programs will simply be pages of graphics connected with Logo programming. Others will create complex games that will appear to be impossible to solve. Allow the students time to be creative, to explore and support them in this process. Let them build and develop their own MicroWorlds. It is their World not yours.

