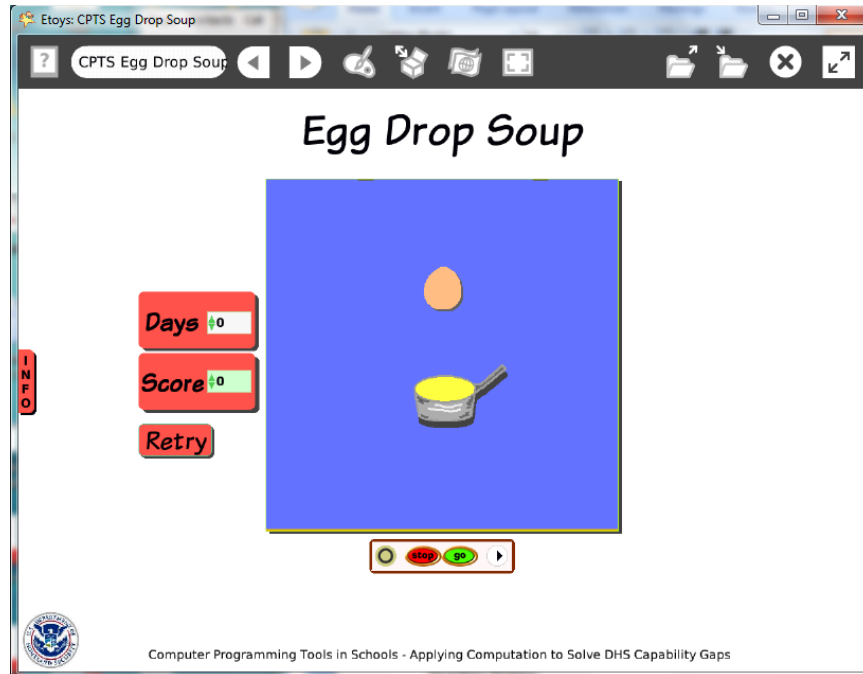# Project: Egg Drop Soup
Difficulty: Level 1

Time: Five 45 minute labs

Challenge:
Make a project that uses facts about the supply chain and distribution of eggs from farm to table to control when events occur in the project. Include a simulation that shows how to test an egg's freshness. Provide directions about how to use the project. Include information from research about eggs.

Programming:
This project uses several conditional statements and variables. There are several tiles from the Scripting category so that one object can control another object. These tiles are not explained in the Quick Guides but each of the tiles is equipped with a help balloon. Experiment with the tiles to develop understanding of the options available and build knowledge for current and future use.

The Office for Mathematics, Science, and Technology Education
University of Illinois Urbana-Champaign
EtoysIllinois.org

Things you'll need to know:
Quick Guides
- Paint Tools/ All
- Halo Handles/All
- Supplies: Text, All Scripts, Add a New Flap
- Script Tiles: X and Y Tiles, Tests Category, Random Numbers
- Menus: Normal Ticking, Viewer Icons Set, Scriptor Icons Set, Button Fires a Script, Watchers, Drop Shadow

Things to think about:
- Could the variables for day and the score be part of egg's scripts, the playfield or, the world and still have the same effect?
- Why are there no scripts for the yellow rectangle? Should it have a script of its own?

Extensions:
This project has a script that announces the end of the game but there are no scripts that make all the action stop. How could this be done?
Make a penalty score to count the number of eggs that have been dropped.
Write scripts to stop the game when more eggs have been dropped than caught.
Make the score decrease if an egg is not caught.
Add speech bubbles to identify good and bad eggs as they drop.
How can the age of the egg be indicated during the game? One complaint from players of this version of the project is that you can't tell when a bad egg is in the game so it can't be avoided. The egg shell does not look different for good eggs and bad eggs in real life either.

NETS for Students:
http://www.iste.org/standards/nets-for-students/nets-student-standards-2007.aspx
1. Creativity and Innovation: a, b, c
2. Communication and Collaboration: a, b
3. Research and Information Fluency: a, b, c
4. Critical Thinking, Problem Solving, and Decision Making: a, b, c

5. Digital Citizenship: a, b
6. Technology Operations and Concepts: a, b, c, d

CSTA:
CSTA Level II: Objectives and Outline
http://csta.acm.org/Curriculum/sub/CurrFiles/L2-Objectives-and-Outlines.pdf
Level II objectives for middle school students are furthered through studying a programming language well enough that the student is proficient with it. Whether the language is Etoys, StarLogo TNG, or Scratch, it is the ability to use the language to express ideas that is valuable. A student skillful enough to use *any* programming language to express ideas, solve problems, model behaviors, simulate data, or to educate or entertain is an entitled person in today's society. Topics of particular note are:
Topic 2: Problem Solving
Topic 6: Connections between Mathematics and Computer Science
Topic 11: Programming Languages
Topic 13: Multimedia

Common Core Standards Mathematics:
http://www.corestandards.org/the-standards/mathematics
6. EE.2, 6.NS.6b, 6.SP.1, 6.SP.5b, 6.EE.5
7.EE.4
8. F.1, 8.F.4

Teacher Notes:
Materials:
Give students the Student Information or ask them to research the eggs for sale in a local market or in a home refrigerator. Find out: age, proper handling, and storage practices. Note information about sell by and consume by dates.

Comments: Objects - Scripts – Decisions
The project has four eggs, a pan, and a block of yellow to represent the broken yolks of eggs that are not caught.

There are two variables and their watchers show the score and days elapsed time in the game. The "game over" message was painted and only shows when the bad egg has touched the pan.

Example Scripts:

○ egg fall   !   (paused)
egg's ⇕y decrease by ⬥15▸

Test egg's y▸ ⇕< ⬥60▸
        Yes   egg's ⬥x ← ⬥20 ⬥+ ⬥random (⬥400▸) ◂▸
               egg's ⬥y ← ⬥700▸
        No

○ egg hazard !   ~(paused)
Test egg's y▸ ⇕< ⬥90▸
        Yes yolks's ⬥y increase by ⬥15▸
        No

○ anotheregg1 added !   (paused)
Test Playfield's day▸ ⇕> ⬥60▸
              anotheregg1 start script ⬥fall
        Yes anotheregg1 start script ⬥score
              anotheregg1 start script ⬥hazard
        No

○ badegg old !   (paused)
Test Playfield's day▸ ⬥> ⬥95▸
        Yes badegg start script ⬥fall
        No

○ badegg uhoh !   (paused)
Test badegg's overlaps pan
        Yes game ender show
        No

○ do not eat danger !   ~(paused)
Test do not eat's overlaps bowl
        Yes do not eat's ⬥y ← bowl's y▸ ⬥+ ⬥45 ◂▸
        No

○ ok safetoeat !   (paused)
Test ok's overlaps bowl
        Yes ok's ⬥y ← bowl's y▸ ⬥- ⬥48 ◂▸
        No

Playfield scoring ! paused

Test egg's overlaps pan

egg's x ← 40 + random (350)

Yes egg's y ← 700

Playfield's score increase by 1

No

Test anotheregg's overlaps pan

anotheregg's x ← 40 + random (350)

Yes anotheregg's y ← 700

Playfield's score increase by 1

No

Test badegg's overlaps pan

Yes

No

Playfield time ! paused

Playfield's day increase by 1.0

Playfield retry ! normal

Playfield's day ← 0

Playfield's score ← 0

pan's x ← 275

pan's y ← 197

egg's x ← 250

egg's y ← 345

yolks's x ← 250

yolks's y ← -280

anotheregg stop script hazard

anotheregg stop script fall

anotheregg's x ← random (400)

anotheregg's y ← 530

anotheregg1's x ← random (400)

anotheregg1's y ← 615

anotheregg1 stop script hazard

anotheregg1 stop script fall

badegg stop script hazard

badegg stop script fall

badegg's x ← random (400)

badegg's y ← 530

game ender hide

Student Notes:

How fresh is that egg?
Farmers have 30 days to deliver an egg to the grocery store.
Grocery stores have 30 days to sell the egg.
Consumers have 35 days to consume the egg.
If the egg is more than 95 days old, it should be tested before being eaten.

A simple home test is to fill a bowl with cold water and put an egg into it.
If the egg sinks it is fresh.
If the egg floats it is old and should not be eaten.
Really bad eggs stink, if you crack them open, they smell like sulfur.
If you ever smell a bad egg, there won't be any doubt.