# Technology Integration Lesson Plan

**Name:** Peter Mathwig  
**Date:** 4/24/12

<table>
<thead>
<tr>
<th>Lesson Title:</th>
<th>Calculating Profits from Selling Virtual Lemonade</th>
</tr>
</thead>
<tbody>
<tr>
<td>Subject/Topic:</td>
<td>Mathematics, Social Studies/Economics</td>
</tr>
</tbody>
</table>

**Brief Description:** Students will learn how a business works by playing a virtual lemonade stand game on the internet. Factors such as price, weather, and customer attitude will be considered as the students work through this simulated game.

**Objectives:**
1. Employ technology in the development of strategies for solving problems in the real world.
2. Understand the basic concept of profits and losses.
3. Purchase ingredients for making lemonade.
4. Determine the cost to produce one cup of lemonade.
5. Assess weather forecasts and customer behavior patterns to determine how much lemonade to make each day.
6. Use an Office Excel spreadsheet to collect data and record outcomes.
7. Write a report reflecting on their data and the outcomes and present it.
8. Work cooperatively in small groups to complete the virtual lemonade stand.

**Standards:**

**NCTM (Grades 3-8)**
- Design investigations to address a question and consider how data-collection methods affect the nature of the data set;
- Collect data using observations, surveys, and experiments;
- Represent and analyze patterns and functions, using words, tables, and graphs;
- Build new mathematical knowledge through problem solving
- Solve problems that arise in mathematics and in other contexts
- Apply and adapt a variety of appropriate strategies to solve problems
- Monitor and reflect on the process of mathematical problem solving
- Organize and consolidate their mathematical thinking through communication
- Communicate their mathematical thinking coherently and clearly to peers, teachers, and others
- Analyze and evaluate the mathematical thinking and strategies of others;
- Use the language of mathematics to express mathematical ideas precisely.

**NSSS**
- Social studies programs should include people organize for production, distribution, and consumption of goods and services.

**McREL-Economic Standards**
- Understands that scarcity of productive resources requires choices that generate opportunity costs
- Understands characteristics of different economic systems, economic institutions, and economic incentives
- Understands the concept of prices and the interaction of supply and demand in a market economy

**NETS-S**
- 1a-Creativity and Innovation: Students apply existing knowledge to generate new ideas, products, or processes.
- 1b-Creativity and Innovation: Students create original works as a means of personal or group expressions.
- 1c-Creativity and Innovation: Students use models and simulations to explore complex systems and issues.
Grades 3-8 (Adapt to the grade level you teach)

6 days of 30 minutes

Internet
Computers
Projector (only if you wanted everyone to see something on a site)
Calculator (optional)

Instructional/Procedural sheet for students to use (See Below)
Microsoft Excel Spreadsheet copy (See Below)

1. Make enough copies with the instructions and procedures for all of the students.
2. Make copies of the prepared spreadsheet for the students to record their data (if not doing on the computer)
3. Reserve computer lab for the week.

1. Ask the students to define “market” and “business”.
2. Have the students list some businesses that they’ve heard people start and were either successful or unsuccessful.
3. Discuss with the students what the ultimate goal is in running a business.
4. Have students make a list of questions people need to think about when starting and running a business.

1. Today, we will be learning about how to run a successful lemonade stand. We will be discussing profits, losses, supplies, costs, and other factors that will impact the business. You will work in small groups to play a simulated game running a lemonade stand on the internet. The goal is to see how successful you can run a lemonade stand while paying attention to the factors that affect the sales of the lemonade.
2. Day 1: Introduce the activity. Have the students list factors they would need to pay attention to when running a lemonade stand. Explain to the students that they will be expected to collect and record data from their lemonade stands. Show them the Excel spreadsheet they will be using to collect their data.
3. Day 2: In the computer lab, demonstrate how to use the simulated game by going to the following website http://www.coolmath-games.com/lemonade/. Discuss with the students some of the factors they listed yesterday they will pay attention to as they
purchase supplies and determine price for their lemonade. Have the students view how the people react to the lemonade stand during the game. While that is happening, discuss with the students why they think the customers are reacting that way. After the day is complete on the game, have a discussion of how successful it went and what they could do differently.

4. Day 3: Students have the chance to practice playing the game. Hand out the Instructional sheet on how to get to the program. Remind the students that this is a practice run before the actual activity. Answer any questions they may have on recording the data.

5. Day 4: Students work in groups to complete the activity. Students will only run their lemonade stand for 7 days on the game and record their data. Hand-out spreadsheet.

6. Day 5: Analyze the data and prepare a 3 minute presentation sharing the results.

7. Day 6: Presentations and closing comments on running a business

URL List: http://www.coolmath-games.com/lemonade/

Assessment: A Rubric will be used to assess each group’s presentation and written work.

Charts or images:

RUBRIC

GROUP: ________________________________

Written Work:

1. Recorded all collected data on a spreadsheet. ___/10pts
2. Data supports group’s evaluation of their lemonade stand. ___/5pts
3. Written summary explains how they made decisions on a daily basis. ___/5pts
4. All written work is organized for anyone to read and understand. ___/2pts

Presentation:

5. Presentation last 3-4 minutes. ___/2pts
6. Explained factors that affected their decision making. ___/5pts
7. Spoke clearly. ___/1pt

TOTAL: ___/30pts
Calculating profits from selling lemonade

Student guide

In this activity, you will each set up and run your own business—a lemonade stand. You will make all the business decisions about materials, costs, and how to make the lemonade. You will run the lemonade stand, record your data, and then analyze how much money you made or lost.

Step 1
Run your lemonade stand and record your data

Read all the directions in this Student Guide carefully before you begin.

On the Internet, go to the Web site: http://www.coolmath-games.com/lemonade/. Read the Introduction and make sure you understand the decisions you will have to make about pricing, quality control, inventory control, purchasing supplies, and weather to run your stand.

Open the Office Excel data collection sheet your teacher has saved to your classroom computer. You will use this spreadsheet to record the decisions you make about how to run your lemonade stand, the data you collect, and the outcomes of your game. Name the spreadsheet (include your name in the spreadsheet name) and save it.

Before you begin collecting your data, you might want to experiment with how the lemonade stand runs for a few days. This will give you an idea of how the decisions you make affect how much lemonade you sell each day. You can click the Help button at any time for advice on how to buy supplies, adjust the lemonade recipe, and so on. When you are ready to stop experimenting and start collecting data, click the Bankrupt! button to see your results. Once you have seen the results of your experiment, start the game over and start recording your decisions and data.

In your Office Excel spreadsheet, record:
- All of the decisions you are making (about supplies, quality control, and so on)
- Your results

Run your stand and record your data for 7, 14, or 30 days.
- Make sure that you record all the data for each day.
- Make sure that you record the decisions you made each day as well as the results.

After the final day, click the Bankrupt! button to see your final results. Did you make a profit?

Save your Office Excel spreadsheet.

Step 2
Analyze your profits and losses

Open a new Microsoft Office Word document. Write the answers to the following questions, and be sure to use mathematical terms in your answers:
- How did you do? Do you think your lemonade stand was successful?
- List several reasons why you made a profit or why you did not make a profit.
- What did you learn from playing the game?
- Look over your data. Do you see any patterns?
What advice would you give to someone who wants to be successful at playing this game?

Save your Office Word document.