**Region 1 GEAR UP Agenda**

**Thursday, May 22, 2014**

Help participants move through “GEAR UP Intro to CX” tns file.

**Friday, May 23, 2014**

1) Explore different types of data collection with the temperature sensor

* Ask participants to use Meter View to determine which is hotter, their left hand or their right hand?
* Have participants do a time-based data collection. Let the sensor return to room temperature. Press play. Hold on to the sensor for at least 30 seconds. Press stop.
* Show participants how to determine the rate of change of temperature using two points from the graph and Scratchpad to calculate the rate. (Do NOT show how to select an area for linear regression at this point.)
* Have participants use Events with Entry mode to collect and display their own hand temperature plus the temperature of three other participants.

2) Do the *Fun with Fizzy Tablets* activity.

3) Do the *Boyle’s Law* activity.

4) Do the *Amontons’ Law* lab. (Do this as a teacher demo using the teacher computer and a gas pressure sensor. Show participants the cable used to connect an Easy Link cable (and a sensor) to their computer. Have another participant use their handheld and a temperature sensor to measure temperature using Meter View.)

* Use Meter View for the gas pressure.
* Check out the gas pressure of air in an Erlenmeyer flask under room temperature and hot water bath conditions.
* Given the temperature, ask participants to predict the pressure of air in a cold water bath. Ask for reasoning.
* Measure the pressure of the air in the cold water bath.
* Some questions for discussion:
  + What variables are held constant?
  + Would this demonstration work with a flexible plastic bottle?
  + How could the data from these three trials be used to extrapolate the temperature of absolute zero?
  + What assumptions must be made to do this extrapolation?

5) Do the *How Does it Stack?* activity (a density simulation).

* Give student handout for recording data and directions.
* Show participants how to use either the calculator page in the document or the Scratchpad.

6) Have teachers open up their teacher software on their laptop. [Note: It is possible that some participants will NOT have been able to load their software. Be patient! ☺ ]

* Have participants connect their handheld to their computer.
* Ask “What happens in the teacher software when this connection is made?”
* Have a few participants dock their handhelds in a docking station. Demo what happens in the teacher software when this dock is connected to a computer.

7) Look at the TI education website (education.ti.com)

* Ask participants…
  + How can you find Science Nspired actvities on the website?
  + How can you find Science Nspired actvities with your teacher software?
  + What types of files are available when you use a Science Nspired activity? (Explain filename extensions: tns, doc, pdf, tnsp)
* Have participants load the ‘*Balancing Chemical Equation Practice’* activity on to their handheld and try it out.  (Demo how to do this for participants. Be sure to explain the difference between downloading individual files or downloading the zipped files.)

8) Do the *Density of Water* lab. (There is no handout or tns file for this lab. Follow the directions below.)

* Have each participant create a new document on their handheld.
* Ask each participant to add a notes page to the document and add a title for the experiment.
* Have teams of participants collect mass and volume data for various amounts of water. Encourage them to collect data for at least 5 samples.
* Show them how to use the List & Spreadsheet app and the Data & Statistics app to input and analyze the data.
* Show them how to add a moveable line and how to adjust it by grabbing the ends or the middle of the line. Have them right down the equation once they are comfortable that they have found the best-fit straight line through the points.
* Now show them how to do a linear regression of the data.
* Show them how to grab and move the regression equation on the screen away from the data.
* Discuss the significance of the slope and y-intercept values in the equation.
* Be sure to have them compare their moveable line equation with the linear regression equation.

9) **Homework for Saturday, May 24**

* Find a Science Nspired file that you might use in the first 6 (or 9) weeks of next school year and load it on your computer.
* Tomorrow you will be creating a tns file. Find an electronic image (either .jpg or .png) of something related to chemistry.

10) Exit Slip: Ask participants to write down responses to these questions:

* + What went well today?
  + What are you still having trouble with at this point?

**Saturday, May 24, 2014**

1) Review Exit Slip comments.

2) Do this activity related to the first homework assignment from yesterday.

* Have participants transfer their homework file (from Science Nspired) to their handheld.
* Have participants find another person (preferably NOT from their own school), transfer files between handhelds, and then discuss what they like about the other person’s choice of activity.

3) Do the *Celsius to Fahrenheit* lab. Follow the directions below. This is a modified activity from Science Nspired to accommodate only 1 probe per handheld. There is no handout for this activity. Walk the participants through the activity.

* Have participants work in pairs.
* Ask each participant to create a new document on their handheld.
* Ask each participant to add a DataQuest page.
* Ask each participant to attach a temperature sensor via an Easy Link cable to their handheld.
* Using meter view, ask one participant to measure temperature in degrees Celsius and the other person to measure in degrees Fahrenheit. (Show them how to adjust the units in Meter View if needed.)
* Ask one member from each team to grab onto both of the temperature sensors with the same hand. Write down the highest hand temperature reached in both degrees Celsius and degrees Fahrenheit.
* Ask participants to get a small sample of tap water in a cup/beaker. Place the C and the F thermometers in the tap water. When the values have stabilized, ask them to write down their observations about the temperatures of water.
* Now ask participants to add a few ice cubes to their tap water cup/beaker and add to keep their two sensors in the ice water.
* Again write down the temperature values for this third ‘icy’ trial.
* Analyze the data to determine the relationship between degrees F and degrees C. Have participants
  + Input the data into a Lists & Spreadsheet app
  + Add the Data & Statistics app
  + Select degrees F on the y-axis and degrees C on the x-axis.
  + Run a linear regression on the data. Write down the linear equation. (Discuss the meaning of the slope and the y-intercept for this lab.)

4) Show the *Atomic Structure and Periodic Table - Bell Ringer* from Science Nspired. Explain that this is a PublishView document and how that is different from a tns file.

5) Waves and Spectrum simulation

* Have participants download the *Waves and Spectrum* simulation from Science Nspired onto their computer.
* Have them transfer the simulation to their handheld.
* Have them try out the simulation on both the computer and the handheld.
* Ask them to notice the difference in simulation running speed in both cases.
* In case participants want to modify a Science Nspired file, show them how to edit an existing tns file on the computer to either create more pages or to delete pages. (There will be more practice with this technique in the activity at the end of the day. For now, just make sure that they know that the activity can be edited by adding or removing pages and can then be saved.)

6) Do the *Thirst Quenchers* lab.

* At the end of the lab show participants how to move the bars in the bar graph by grabbing the name/abbreviation of the drink and moving it around.
* Participants usually wonder why their bars are in a pastel and not a primary color. Remind them that the pastel color is related to a highlighted bar. Clicking on a white space in the graph will deselect a bar and result in a primary color.

7) Do the *Freezing and Melting of Water* lab. (found in the Vernier lab manual).

* This is a time-based data collection experiment. Show participants how to alter the data collection rate and the experiment length.
* After the experimental data has been collected, have participants transfer the file to the other teachers’ handhelds in the group.
* Then have participants transfer the file from their handheld to their computer.
* Show them how to do a screen capture (Mac-Command J, PC-Control J) of the graph from the DataQuest app and how this screen capture can be added to word processing software like Microsoft Word.

8) Activity: Create a tns file on the computer.

* Show participants how to…
  + …create a new handheld file on their computer.
  + …create a title page with a split screen (title on one side/image on the other side).
  + …insert an image into the title screen.
  + …create a new page with a multiple choice (single response) self-check question. (Use Teacher Tool Palette and Question Properties.)
  + …copy and paste pages in the page sorter view.
  + …move pages around within the page sorter.
* Have participants transfer their new file to their own handheld.
* Have participants transfer their new file to two other handhelds and discuss the files with the other participants.

9) **Homework for first day of July session:** Create a new tns file to share with other teachers in July. Make sure that it has at least a title page with an image and at least three self-check questions. These are the minimum requirements. Challenge yourself to go beyond these requirements!

10) Exit Slip: Ask participants to write down responses to these prompts:

* + I have learned…..
  + My question(s) at this point are…
  + I would like to learn more about…