Teachers Teaching with Technology™
Professional Development from Texas Instruments

Getting Started with TI-Nspire™ Technology in High School Science

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Materials for Workshop Instructor*

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Lab Equipment	Quantity (per 5 people)
Ring Stands	3
Beakers (100 mL or 250 mL)	4
Beakers (1 L)	2
Stirring rods	3
Burettes w/clamps	3
Cuvettes	5
Test tube rack w/five 20x150 mm test tubes	3
Thermometers	2-3
Meter sticks	3
Wash bottles	3
Hot plate	1
Hair dryer (optional)	1

Consumable	Quantity (per 5 people)
Styrofoam cups (8-16 oz.)	10
Various box labels w/ weight identified in both g and oz. • Rice, pasta, cereal, etc. • At least 5 different sizes	5 labels or more
Ice	1-5 lb. bag
Distilled water	1 gal.
Coffee filters	10
Green food coloring	1 oz.
Paper towels/ Kleenex®/Kimwipes®	1 roll/box
Masking tape	1 roll
Germinated pea seeds	50
Non-germinated pea seeds	50

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Conversion – Direct or Inverse Variation?

PD Objectives

- Participants will learn to use all of the built-in TI-Nspire™ applications at an introductory level.
- Participants will use common measurements to do conversion in the Calculator, Lists & Spreadsheet, Data & Statistics, and Notes pages.
- Participants will get an introduction the Vernier® DataQuest™ app where they will gather Celsius and Fahrenheit data.
- Participants will save their work on the handheld for access later.

Materials Needed/Set Up Requirements

- TI-Nspire™ Lab Cradle, two EasyTemp™ temperature probes.
- 5 labels with ounces and grams on them for each participant.
- 1 cup (Styrofoam) per participant, ice, hot plate, and 1 liter beaker or tea pot.
- *Conversion_Solution.tns* (Instructor use only).

Main Focus – Suggested Questions/Strategies for Accomplishing Objectives

- Have the participants work in groups of two or three for this activity.
- Discuss the importance of having students make predictions about the relationships between the ounces and grams.
- Discuss the idea of students building conversions as opposed to being given conversions.
- When participants are graphing a line in Data & Statistics, focus in on the slope, and explain how this value is a conversion factor.

Technology Tips

- You will need to discuss with them how to add an application and discuss each application as you add one.
- You will not use Menu until you get to the Data & Statistics page. This allows them to focus in on the Home button and the applications first and not get bogged down on all of the possibilities in the first application.
- On the spreadsheet, point out that the column names become variables that will maintain their values on all other pages within the problem.
- You might want to point out how to start the data collection by clicking the **Start Collection** arrow in the lower left corner of the screen.

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Nspired Learning Exploration

PD Objectives

- This introductory activity is designed to get participants excited about how TI-Nspire™ technology can be used in the science classroom.

Materials Needed/Set Up Requirements

TI-Nspire™ document	Subject > Unit > Module
Ring_of_Fire.tns	Earth Science > Earth's Surface > Earth's Lithosphere
Recipe_for_a_Living_World.tns	Biology > Cells > Photosynthesis and Transpiration
Periodicity_of_Properties.tns	Chemistry > Atomic Structure and the Periodic Table
Free_Body_Diagram.tns	Physics > Forces and Motion

Main Focus – Suggested Questions/Strategies for Accomplishing Objectives

- This is intended to be the first activity on Day 1. You want to engage the participants and get them excited about the power of TI-Nspire technology.
- You might want to demonstrate one or more of the activities instead of sending the TI-Nspire™ documents to the participants. This allows you to "wow" the participants without getting too bogged down in the details of how to use the TI-Nspire handheld in the first activity of Day 1.

Technology Tips

- Restate how to change from one page to another.
- Discuss how to changes values on sliders.
- Talk to the participants about using escape to release objects or when in doubt of where they are.

Summary Reflection Questions

- How can these activities, and activities like these, help your students learn science?
- Will these activities "wow" your students?
- How is this possibly better than using online simulations?

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Getting Started with the TI-Nspire™ CX Handheld

PD Objectives

- Introduce participants to the TI-Nspire™ CX handheld.

Materials Needed/Set Up Requirements

- *Getting_Started_3_2.tns*. (preloaded in the *Examples* folder on the TI-Nspire CX handheld.)
- TI-Nspire™ CX Family Overview (optional)
- *TI-Nspie_CX_Family_Overview.pptx* (optional)
- TI-Nspire™ Scavenger Hunt – The Calculator Application (optional)

Main Focus – Suggested Questions/Strategies for Accomplishing Objectives

- You may want to do the first few pages of the *Getting_Started_3_2.tns* document with everyone working together and then let the participants work individually to complete the activity.
- Participants who don't have time to complete the activity can finish it for homework.
- The following activities are optional and are included in case you would like to use them:
  - TI-Nspire™ CX Family Overview
  - TI-Nspire™ Scavenger Hunt – The Calculator Application

Technology Tips

- You may want to use the TI-Nspire™ Navigator™ System to monitor the progress of the participants.

Summary Reflection Questions

- What TI-Nspire features that you find exciting and useful?
- What features are you having difficulty using?
- What applications would you like to learn more about?

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Data Collection 1

PD Objectives

- Introduction activity for all sciences on using data collection
- Introduction to Vernier® DataQuest™ application
- Data analysis

Materials Needed/Set Up Requirements

Activity	Subject	Data Collection Device and/or TI-Nspire™ document
Walk a Line	Physics	CBR 2™ motion detector
Cool It	Biology	Vernier® EasyTemp™
Boyle's Law	Chemistry	Gas Pressure Sensor *Boyles_Law.tns*
Mapping the Ocean Floor	Earth Science	CBR 2™ motion detector *Mapping_the_Ocean_Floor.tns*

Main Focus – Suggested Questions/Strategies for Accomplishing Objectives

- This is intended to be the first data collection on Day 1. You want to engage the participants and get them excited about the power of data collection with TI-Nspire technology.
- You might want to demonstrate one or more of the activities instead of sending the TI-Nspire™ documents to the participants. This allows you to "wow" the participants without getting too bogged down in the details of how to use the TI-Nspire handheld in the first activity of Day 1.

Technology Tips

- Introduce the Vernier DataQuest application and discuss different sampling techniques.
- Discuss default values (180 sec for a temperature probe).
- Show them how to get to menus to change parameters for their experiments.

Summary Reflection Questions

- How can these activities, and activities like these, help your students learn science?
- How long does it take a student to get a set of data?
- How many times can they repeat a procedure in a class period?
- Does this allow more time for analysis?

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Simulations and Data Collection 1

PD Objectives

- Introduction activity for all sciences on using data collection.
- Introduction to data analysis with the Vernier® DataQuest™ application.

Materials Needed/Set Up Requirements

Activity	Subject	Data Collection Device and/or TI-Nspire™ document
Molecular Titration	Chemistry	*Molecular_Titration.tns*
Vernier – Air Resistance	Physics	CBR 2™ motion detector
Beer's Law	Chemistry	TI-Nspire™ Lab Cradle or Vernier® EasyLink™ Vernier Colorimeter *Beers_Law_PD.tns*
How Much Does it Weigh?	Physics	*How_Much_Does_it_Weigh.tns*
Vernier – Cell Respiration	Biology	Vernier CO_2 Gas Sensor
Barometric Pressure in Hurricane Katrina	Earth Science	*Barometric_Pressure_in_Hurricane_Katrina.tns*

Main Focus – Suggested Questions/Strategies for Accomplishing Objectives

- This is section is to allow each group an opportunity to work on one activity from their content area. They are not expected to do them all.
- Talk to the group about focusing in on the variables they are measuring and how they might change the activity for different results.
- Analyze data as a group. Turn over the control to a participant as Live Presenter.

Technology Tips

- Introduce the Vernier® DataQuest™ application and discuss different sampling techniques.
- Discuss default values (180 sec for a temperature probe).
- Show them how to get to menus to change parameters for their experiments.

Summary Reflection Questions

- How can these activities, and activities like these, help your students learn science?
- How can this be used in your class?
- How can you make it more inquiry based?

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Getting Started with the TI-Nspire™ Family of Teacher Software

PD Objectives

- Participants will explore basic features of the TI-Nspire Teacher Software, such as adding applications, exploring menus and submenus, and viewing settings.

Materials Needed/Set Up Requirements

- Computer with TI-Nspire Teacher Software

Main Focus – Suggested Questions/Strategies for Accomplishing Objectives

- As participants explore the Welcome Screen, encourage them to move their cursors over each icon to see a description of the given feature. This is a universally helpful skill when exploring the TI-Nspire Teacher Software.
- As participants move from the Calculator application to the Graphs application, ask them what happens to the menus in the Documents Toolbox under the Document Tools tab. Participants should recognize that each application has its own unique menu.
- Encourage participants to explore the various menus and submenus in the Document Tools tab. Also, encourage participants to explore the Utilities, Page Sorter, TI-SmartView™ emulator for TI-Nspire, and Content Explorer tabs.
- As participants explore the various Document Views and TI-SmartView emulator views, discuss how each view might be helpful in the classroom.
- Though participants will not collect any data during this activity, they are asked to insert a page with the Vernier DataQuest™ application. The purpose is to expose participants briefly to the data collection features of the Teacher Software.
- When exploring the Document Settings, discuss the options available in each field. Make sure participants are comfortable tabbing through fields and changing the settings.

Technology Tips

- Sometimes participants do not immediately see the five icons in the Documents Toolbox. Consider emphasizing the location of these icons.

Summary Reflection Questions

- What types of features are available in the Documents Toolbox?
- How does the Documents Toolbox change when working with different applications?
- How might the various Document Views and the TI-SmartView emulator options be helpful in the classroom?

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