

Title of Lesson:	<i>Graphing Weather</i>
Lesson Created by:	<i>Jane Spina Richmond Elementary School Jane.Spina@cesu.k12.vt.us</i>
Grade Level:	<i>Multiage 3rd/4th</i>
Core Subject Area:	<i>Science – Meteorology</i>
Length of Lesson:	<i>Collecting/entering weather data – daily for 5-8 weeks Creating representation of data – 3-5 days (40 minute sessions) Presenting representation – 1 day (40 minute session)</i>
Targeted IT Performance Assessment Task	<i>Grade 4 – Task #2 Productivity Tools</i> <ul style="list-style-type: none"> • <i>Student can enter data into a spreadsheet template</i> • <i>Student can create a graph using numerical data, copy from the spreadsheet and paste it into a multimedia presentation</i> • <i>Student can add titles and label each axis in a chart or graph</i>
Prerequisite skills:	<ul style="list-style-type: none"> • <i>Basic technology skills (log-on, open an application, open existing files, etc.)</i> • <i>Familiarity with a type of multimedia tool for presentation (ie: KidPix, Powerpoint, HyperStudio) **otherwise this would be a good opportunity to “teach” use of these programs (additional time will be necessary)</i>
Overview of Lesson:	<ul style="list-style-type: none"> • <i>Students will enter daily temperature into existing Excel spreadsheet (created by teacher)</i> • <i>Students will take the data collected and create a graph of their data using Excel (as well as other non-technological means).</i> • <i>Students will paste this representation into a multimedia presentation</i>
Vermont Standards	<p>Field of Knowledge & Evidence 7.15a - <i>Identify and record evidence of change over time.</i></p> <p>Vital Results 1.20 – <i>Communication of Data – Students use graphs, charts, and other visual presentations to communicate data accurately and appropriately</i> 2.2d – <i>Identify patterns and connections</i></p>
National Educational Technology Standards	<ul style="list-style-type: none"> • <i>Students use technology tools to enhance learning, increase productivity, and promote creativity.</i> • <i>Students use productivity tools to collaborate in constructing technology-enhanced models, preparing publications, and producing other creative works.</i>

Lesson ~ Graphing Weather

Each day represents approx. 40 minutes

Grouping	<ul style="list-style-type: none"> Working in pairs 2-3 computers in classroom per team of students – this set up will require the activity to take place over 1 week period – students will need to rotate into computer activity while working on a variety of other tasks
Day 1	<ul style="list-style-type: none"> Collect multiple samples of visual graphs from a variety of sources (they do not have to be related to weather). In small groups have students examine and discuss the graphs. As a whole group, discuss the purpose of the graphs. Discuss qualities that made them interesting, informative representations or qualities that were NOT appealing. Record their ideas on chart paper. Print out a copy of the daily temperature spread sheet for each pair. Have a copy of the data on overhead. Discuss the data as a whole group. Clarify any questions that students have about the data. Introduce the task: create a visual representation of the weather data collected. Create a large poster of a graph by hand and a graph using Excel. The graph from Excel will be used in the multimedia presentation they create at the end.
Day 2	<ul style="list-style-type: none"> In a whole group, discuss the work students will need to be working on for the next 4-5 days. They will need to create 2 visual representations, one electronically and one in poster form, and present their electronic representation using a multimedia tool (ie: Powerpoint, HyperStudio) Discuss grouping (assign pairs or have students pick partners) In pairs, students discuss the information they are interested in representing in their graph and discuss the type of graph they wish to create (Just temperatures for February? Just temperatures from March? Temps from both months?) Students will need to create a rough draft (sketch) of what they hope their graph will look like – they should have a clear title for their display and labeled variables (x/y axis labeled if used)
Day 3 Day 4 Day 5	<ul style="list-style-type: none"> All students should begin by designing and creating their posters While students work independently, teacher will choose 3-5 sets of students to teach Excel lesson to (2 per computer – number of pairs will depend on computers available) Groups will rotate in with teacher. <p>Excel Lesson:</p> <ul style="list-style-type: none"> Students explore the program and the Chart Wizard command (approx. 15 min.) – once they have explored, give them the following tasks to try and complete: <ol style="list-style-type: none"> Select the data range (have kids select the data range prior to opening the chart wizard – it is selected when the black and white blinking line surrounds the data they selected) Students will need to name each Series (color coded key – what does each color represent – ie. January / February / March). They need to highlight the series and then click onto Name – then type in name. This needs to be done for each series represented. Students will name their work (Chart Title - ie. Weather Temperatures Students will name the X-axis and Y-axis appropriately (if their names don't coincide with data – let this happen and they can problem solve and troubleshoot later) Teacher should make note of students who are strong users of Excel, those students can be “tech-buddies” and offer assistance to others throughout this graphing session.

Recommendations:

- Have a parent helper or 2 available during this time to help students while teacher works with small groups
- Have other graphing activities prepared in case students complete their tasks early. These activities should be engaging and meaningful, but ones which require minimal teacher assistance.

Assessment

- *Students will create a “mini” Powerpoint presentation explaining the factors that affected the weather. They will paste their Excel graph into their presentation. They will present this to the class.*
- ** it is assumed that students have experience creating multimedia presentations and that there will be no additional time necessary for specifically **teaching** this task***

Chittenden East Supervisory Union Science Assessment Rubric

Unit: Meteorology

Curriculum Page: 21

Grade: 4 (3/4 Multiage)

**** Taken directly for the CESU Science Curriculum**

	Intern	Apprentice	Weather Forecaster	Meteorologist
Data Collection	<ul style="list-style-type: none"> • Limited data • Data not accurate 	<ul style="list-style-type: none"> • Some data collected • Less than daily collection • Includes cloud cover, temperature or precipitation 	<ul style="list-style-type: none"> • Records daily • Accurate • Cloud cover, temperature, precipitation 	<ul style="list-style-type: none"> • Records daily • Accurate • Cloud cover, temperature, precipitation • Plus other variables, (ie: air pressure, humidity, etc.)
Graph	<ul style="list-style-type: none"> • Attempts graph 	<ul style="list-style-type: none"> • Incomplete labels or plotting 	<ul style="list-style-type: none"> • Axis correctly labeled • Correctly plotted • Neat and easy to read • Title 	All of preceding plus: <ul style="list-style-type: none"> • Color added • Represent the data in more than one way
Report Out	<ul style="list-style-type: none"> • No attempt or inaccurate explanation 	<ul style="list-style-type: none"> • Accurately explains two factors and directly connects to the data 	<ul style="list-style-type: none"> • Accurately explains three factors and directly connects to data 	<ul style="list-style-type: none"> • Accurately explains four or more factors and directly connects to data and makes an extended prediction

**** Student work on Excel Graph and hand-created poster of graph will be assessed using the criteria outlined for "Graph"**

**** Multimedia presentation of Excel graph will be assessed using the criteria outlined in "Report Out"**

**** Student technology skills will be monitored and assessed using the "Technology Skills" checklist (attached). This checklist will be used as ongoing assessment throughout the school year. A variety of skills will be monitored as students work on the Excel Graphing Lesson and as kids work on their multimedia presentation (items marked with ✓ indicate skills that will be assessed during the graphing activity).**

