Subject Area: All subjects

Grade Levels: All grades

Time: At least one 45-minute prep period

Lesson Objectives:
Teachers will:

• Learn techniques to better track and analyze levels of student achievement and other variables that might be impacting the learning.
• Look at the relationships between multiple numeric fields and apply a line of best fit, which instantly calculates useful correlation coefficients.
• Learn how to instantly create box plots to assess student performance and determine distribution of data.
• Use a variety of other dynamic, visual plots to analyze data and help draw conclusions to meet the needs of students.

Overview:
This lesson focuses on techniques to help educators better understand student achievement and respond to their needs. InspireData’s many data analysis tools are explored in a visual format to help teachers and administrators go beyond a traditional grade book or spreadsheet. These include displaying box plots, multiple pie plots, and applying a line of best fit to instantly calculate correlation coefficients to determine the strength of the relationship between variables such as absences, gender, curriculum, and tutorial attendance.

Educators can easily compare different classes and instantly show useful statistics such as the mean and median of data sets. Plots and notes are “captured” with the click of a button to form annotated slide shows for personal reference or to share with other educators or parents. Bring data analysis and statistics to life with “dancing data” that moves dynamically as plots and variables change, helping to create a complete picture of what and why students may or may not be performing to their fullest potential.
**Preparation:**

- This lesson requires the InspireData® software application published by Inspiration Software, Inc. You can download a 30-day trial at [http://www.inspiration.com/InspireData](http://www.inspiration.com/InspireData).

**Lesson:**

1. Open the *Classroom Data Analysis* database: InspireData Starter>Databases>Mathematics>Classroom Data Analysis.
2. Review the contents of the table, including the table notes.

2. Switch to Plot View and review the sample plots. (Click the icons in the Slide Sorter or click the Slide Show menu>Start Slide Show.) Note the many types of analyses that can be conducted using the data set. How might the ability to visualize data across multiple classrooms be useful?

3. Practice creating plots via the buttons on the Toolbar. For example, click the Axis plot button and define the x/y axes. See the “Learn to Use” handouts for reference (Help>Documentation>Handouts).
4. Look for correlations among the data fields by adding a line of best fit to axis plots. Select the Line Type button in the lower-left corner of the workspace and choose Line of Best Fit from the menu that appears. Observe that the correlation coefficient is automatically calculated in the upper left. The correlation coefficient always falls between -1 and 1. The farther the coefficient is from 0, the stronger the relationship. Axis plots with lines of best fit are just one way to identify trends among students and identify individuals who may need extra attention.
5. Add a box plot by selecting **Box plot** from the **Plot** menu. Add numeric labels to the plot by checking **Add numeric labels to box plots** under **Box Plot Options**. In this way, the distribution of data can be easily visualized, and outliers can be quickly identified, such as the student with 18 absences marked below.
6. To create bar charts, first click the **Stack plot** button, and then the **Bar Chart** button. Bar charts and multiple bar charts like the one shown below are another excellent way to quickly see the distribution of data. The ability to instantly show mean and median can also be very useful for identifying trends. This chart clearly shows the benefits of students attending tutorials.

![Bar Chart Example](image.png)

7. Use the **Notes** area to record observations, and create slides using the **Capture Slide** button in the **Slide Sorter**.
8. Double-click icons for details. See all scores and other data for individual students with one glance.

9. At any point, switch back to Table View to review all the data in the table or add new data.

10. Use the Database Template tab to record class data, modifying field headings and adding additional fields and records as necessary. Options for entering data:

   - Select File>Import to import data from spreadsheets or databases in comma-separated (.CSV) or tab-separated formats.
   - Type directly into the table.
   - Launch a survey or publish an e-Survey via the Table menu with the Survey or e-Survey tools.

11. Switch to Plot View to analyze the data and capture plots and notes.
12. Share what you have learned with colleagues. They may have additional ideas for assessing issues and analyzing student data with InspireData.

Adaptations/Extensions:

• Add more data directly to the table or by using the Survey or e-Survey tools.
• Enhance plots by adding other InspireData features and computations. See the “Learn to Use” handouts for reference (Help>Documentation>Handouts).