

Unit Plans

The *Designing Effective Projects* resource includes a collection of over 60 exemplary Unit Plans that integrate technology into classroom projects, align to standards, promote higher-order thinking, and engage students in authentic project tasks. Most of the units were developed by teachers participating in the Intel® Teach professional development program. Some of the teachers also incorporate critical thinking about data in their Unit Plans, including the units summarized here.

To find more Unit Plans, go to www.intel.com/teachers and click **Designing Effective Projects** or any of the Thinking Tools links, such as **Showing Evidence**.

Unit Plan	Summary
Meet the Bears Grade: 2 Science, Math	Working with older buddies, primary students become experts on eight species of bears. Students engage in a variety of comparison activities, including estimating and measuring the differences between themselves and bears. Students also compare the habitats, sizes, and needs of two bear species. Finally, students dig deeper to learn all they can about one bear species and apply their expertise as they make a guide for children who visit the local zoo.
Pond Water and Pollywogs Grades: K–2 Life Science	The local zoo has a new amphibian exhibit and needs a newsletter to help visitors understand and appreciate frogs. On their way to becoming frog experts, students investigate the universal features of habitats, observe frogs in their natural environment, and raise frogs from eggs in an artificial habitat. Students record their observations and reflections in words and pictures in a science log, and use a spreadsheet to record their data collection. They show their understanding of habitats in general and the specific features of a frog habitat in a slideshow presentation. Students create a newsletter illustrating the frog life cycle and habitat, both natural and man-made, and give specific details about the frog exhibit.
Seasoning the School Year Grades: K–2 Life Science	Students become botanists and climatologists, and investigate seasonal changes. This unit can be done in conjunction with the FOSS <i>Trees</i> science curriculum by studying a deciduous "class tree." Students observe the changes the class tree goes through as the seasons change. These changes are recorded in observation journals. Students contrast and investigate changes in the weather, day length, and personal accommodations made due to seasonal changes. With guidance, students create multimedia presentations and weather graphs to compare weather in other parts of the world. Students publish seasonal newsletters and class books for the National Arbor Day Foundation.

<p>Food for Thought Grade: 5 Science, Math</p>	<p>Students study their own health, activity, and nutrition needs as they develop menus of healthy and appealing foods for their own restaurants. Students develop consumer awareness by evaluating the persuasive elements advertising, and write and present their own convincing commercials to encourage people to visit their restaurants. As a culminating activity, the restaurants open, and students pretend to take orders, figure bills, compute 15 percent tips, and count back change.</p>
<p>Red Light, Green Light Grades: 3–5 Social Studies</p>	<p>After a car and pedestrian accident occurs near the local school, concerned students, parents, and neighbors launch a neighborhood safety project. Students consider potential hazards and then collect traffic and pedestrian data that might shed light on the situation. A survey is conducted to determine how children in the neighborhood travel between home and school, and students challenge their classmates to increase their use of human-powered (foot and pedal) transportation. Students use spreadsheets to enter and represent data, analyze their observations and survey data to determine the most significant problems, and study possible solutions. They develop a proposal for improving traffic safety, create slideshows and brochures, and present their ideas to the local city council.</p>
<p>The Great Bean Race Grades: 3–5 Science</p>	<p>The Great Bean Race is on! Compete with classrooms from other regions to see which collaborative team can grow the tallest bean plant. Controlling for certain variables (including growth time and bean seeds), seven or eight teams in each classroom design and conduct a controlled bean-plant experiment to investigate ideal conditions for growth. Students synthesize bean-plant information into a newsletter that describes the project, their group bean plan, and facts about beans.</p>
<p>Wave of Spring Grades: 3–5 Science, Math, Social Studies</p>	<p>Students track the arrival of spring by growing tulips and sharing their experiences with other tulip-growing classes spanning the Northern Hemisphere. Each participating class collects and posts plant growth data on the Internet. Student groups pair up with buddy classes and share specific tulip growing information through the Internet and e-mail. When students study the emerging data, they begin to see how seasonal climatic factors influence plant growth, and they make predictions about bloom times in the different latitudes. They make specific predictions about bloom dates in comparison with their buddy class and share their findings in a slideshow presentation.</p>

<p>Destination America: Our Hope, Our Future</p> <p>Grades: 6–8</p> <p>Social Studies</p>	<p>History comes alive for students as they develop immigrant personas and become immigrants who make the journey from Europe to the United States. Throughout the process, students analyze primary source data to create multimedia portfolios that illustrate their experiences. Once on American soil, they participate in a simulation of the Ellis Island immigration station. Students then assume the roles of their immigrants and share their experiences with the class. This exercise in creating historical fiction, based on actual documents, photos, and records, enables students to understand the motivations of immigrants and the challenges they faced. This can be part of a larger immigration unit in which students study multiple immigrant groups, immigration during different time periods, or immigration to different countries.</p>
<p>Don't Trash the Earth</p> <p>Grades: 6–8</p> <p>Science</p>	<p>Due to the increasing garbage people produce, the local community landfill is running out of space. Student waste management consultants are hired to evaluate their school and community recycling and waste management practices. After researching and analyzing past and current methods, teams develop a new recycling plan, complete with cost analysis and supporting data. Teams propose recommendations to a committee supported by a slideshow. Brochures inform and persuade the public to take action. A student-designed Web page that promotes recycling is linked to the school Web site. In a final show of social responsibility, student entrepreneurs turn trash into treasure as they divert materials from the waste stream and turn them into attractive merchandise they sell at a holiday business fair.</p>
<p>What Happened to Robin?</p> <p>Grades: 6–8</p> <p>Science</p>	<p>Using actual wildlife injury data from a local wildlife rescue center, students learn what animal species have been injured and the causes of injury. Students use spreadsheet software to sort, organize, and evaluate their findings for recommendations to reduce human-caused injury to wildlife. Students prepare and present a summary of their findings and recommendations to the local Audubon Society, The Humane Society, neighborhood associations, and other interested groups. At the end of each public presentation, students gather public reaction to the data and collect ideas on how to reduce injury to wildlife. These recommendations are compiled into a newsletter and wiki for dissemination to a wider audience.</p>
<p>Fair Games</p> <p>Grades: 6–8</p> <p>Math</p>	<p>Have you ever heard, "That's not fair!" during a game? Any good game must be fair so that each player has an equal chance of winning. Students learn about the mathematics notion of fairness while participating in activities and games of chance. Students take on the role of game designer to create a new game for a toy company, describing the rules for play and explaining why the game is fair. These new designers then present the game to an audience of invited guests.</p>

<p>The World through a Different Pair of Eyes</p> <p>Grades: 6–8</p> <p>Social Studies</p>	<p>Middle school students see the world through another pair of eyes as they communicate with other students from different countries. Students learn about life in other parts of the world, investigate current events, and learn about factors that affect the quality of life and longevity of other cultures. Students address the issue of the possible correlation between where people are born and how long they are likely to live.</p>
<p>Pedal Power</p> <p>Grades: 10–12</p> <p>Math</p>	<p>As a culminating activity to instruction in functions, linear equations, and proportional reasoning, algebra students explore the mathematics of bicycles. Students pair up to investigate one aspect of this two-wheeled wonder. Using bicycle-related relationships (such as wheel diameter and coasting distance, or frame tubing size and weight allowances), applied math formulas and data are explored in depth. Student teams use multimedia to share their learning for the benefit of their classmates.</p>
<p>Phabulous Physics</p> <p>Grades: 11–12</p> <p>Science</p>	<p>Use Physics! Phabulous Physics! To solve physics puzzles presented by linear motion, students learn about motion by working with challenging physics problems. Students use spreadsheet software to analyze and represent data from a physics problem and then present their physics findings to their peers by creating a brochure. To seek community input about local traffic hazards, students then produce a survey or blog and post it on a site. Armed with this community data and their own research, student groups take on the role of members of a highway safety advocacy group. Their task is to create and deliver a slideshow presentation to the city planners proposing changes to a dangerous section of road or intersection.</p>
<p>Track the Trends</p> <p>Grades: 9–12</p> <p>Math, Social Studies</p>	<p>Taking on the role of statisticians, students choose a subject of interest (AIDS rate, rise of average baseball salaries, state population growth, and so forth) and collect statistical information about the subject over time. Using a graphing calculator and an exponential regression function or a spreadsheet and regression trend line function, students derive the equation for curve of best fit for the data. The actual data and curve of best fit are graphed, and future predictions are made using the equation. Finally, students evaluate and present the socioeconomic implications of their predictions and the validity of their statistical investigation as a tool for predicting the future.</p>