

Design Project Ideas

Various Intel Web resources have detailed unit plans that incorporate thinking critically with data in design projects.

Math Design Projects

Grow a Business: *Why take the risk?*

http://educate.intel.com/en/ThinkingTools/VisualRanking/ProjectExamples/UnitPlans/GrowABusiness/VR_UnitPlans1.htm

Grades 3–5, Mathematics, Social Science, Language Arts

Elementary students become entrepreneurs and develop business acumen by marketing flowers for Mother's Day. They survey schoolmates to determine flower popularity but also learn that they must consider market price and profitability. The *Visual Ranking Tool* helps students set priorities, debate differences, and seek consensus as they make important business decisions in order to grow their business.

Playground Design: *How can our voice be heard?*

<http://educate.intel.com/en/ThinkingTools/VisualRanking/ProjectExamples/UnitPlans/PlaygroundDesign>

Grades 3–5, Mathematics, Social Studies

Elementary students apply creativity and problem solving skills as they design a new playground for their school campus. Taking the role of project planners and architects, students use the *Visual Ranking Tool* to help them prioritize a list of desirable equipment, compare their priorities with those of their schoolmates and the faculty, negotiate differences of opinion, and share their thinking with school and district decision makers.

Fair Games: *Is life fair?*

<http://educate.intel.com/en/ProjectDesign/UnitPlanIndex/FairGames>

Grade: 6–8, Mathematics

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.

Why Math?: *What processes do you use to make important decisions?*

http://educate.intel.com/en/ThinkingTools/SeeingReason/ProjectExamples/ProjectIdeas/SR_Ideas3.htm

Grade 9–10, Math

In this math unit, students analyze the processes used in making important decisions that affect their future—specifically, analyzing the benefits of taking more math classes in high school. Students use the *Seeing Reason Tool* to create a map that represents research and data to support their own answer to the question, *What processes do you use to make important decisions?*

Science Design Projects

Float That Boat!: *How can we explain the things that happen around us?*

<http://educate.intel.com/en/ProjectDesign/UnitPlanIndex/FloatThatBoat>

Grade: 3–5, Science

We B Toys just completed their annual customer satisfaction reviews of their toy boat line. They have learned that customers have complained that their boats tend to sink. They are looking for new toy boats and are offering to purchase \$1 million worth of merchandise from the company that produces the best boat. Student teams design new boats that will float and prepare proposals to market their boats.

Go-Go Gadget: Invent a Machine: *How can we make life easier?*

<http://educate.intel.com/en/ProjectDesign/UnitPlanIndex/InventAMachine>

Grade: 3–5, Science

Young inventors put their knowledge of simple machines to the test as they create new, labor-saving machines of their own.

Accidental Discoveries: *How can we benefit from our accidents?*

<http://educate.intel.com/en/AssessingProjects/AssessmentPlans/SecondaryAssessmentPlans/AccidentalDiscoveries>

Grades 6–8, Science

Students role-play scientists/inventors who have been hired to find a marketable use for a new substance. They must use their knowledge of properties of matter and experimentation processes to prove that their idea will work and that people will want to buy their product.

Bridge the Gap: *How can math help me understand my world?*

<http://educate.intel.com/en/ThinkingTools/SeeingReason/ProjectExamples/UnitPlans/BridgeTheGap>

Grades 6–9, Science

Student groups of civil engineering firms design and construct a bridge that will hold the most weight for a given span. In preparation for their project, students build different structures, investigate properties of triangles and rectangles, take a virtual bridge field trip to learn about various types of bridges and examine famous bridges from around the world, and conduct several design and strength tests.

Plugging In to the Sun: *What causes people (scientists) to consider new alternatives to solve problems?*

<http://educate.intel.com/en/ProjectDesign/UnitPlanIndex/PluggingInToSun>

Grade: 6–8, Science

Students take the role of energy engineers as they study the sun's energy, fossil fuels, and the motion of the Earth and moon around the sun. Students also build solar cookers to harness solar energy for an egg cook-off.

Genius Unleashed: *How do we explain what happens around us?*

http://educate.intel.com/en/ThinkingTools/ShowingEvidence/ProjectExamples/ProjectIdeas/SE_ProjectIdeas8.htm

Grades: 7–12, Science

Students as scientists generate an authentic experimental idea through natural curiosity and interest. They use the *Showing Evidence Tool* to gather evidence to support their idea and arrive at a well-researched hypothesis to be used for an independent science research project and future experimentation.

Composting: Why Bother?: *How can I contribute to making a better tomorrow?*

<http://educate.intel.com/en/ProjectDesign/UnitPlanIndex/CompostingWhyBother>

Grade: 8–10, Science

Will we drown in our own garbage? Most organic waste is being trucked and deposited unnecessarily into our landfills. In this study, students learn how to make compost and begin to understand the social impact of composting. Students also engage in the “Rot Off!” composting challenge. In this challenge, student teams divert the school’s kitchen and yard debris from the waste stream into uniquely designed compost bins, turning garbage into “black gold,” beautiful and rich compost.

Density: Got Gas?: *How is science applied in the real world?*

<http://educate.intel.com/en/ProjectDesign/UnitPlanIndex/GotGas>

Grade: 6–9, Science

Students engage in a variety of investigations related to the density of liquids, solids, and gases. They build hot air balloons, experiment with variables that affect flight success, and enter their balloons in a rally.

Don't Trash the Earth: *Social responsibilities—who decides?*

<http://educate.intel.com/en/ProjectDesign/UnitPlanIndex/DontTrashEarth>

Grade: 6–8, Science

In an interdisciplinary conservation project, middle school students are presented with a scenario that their local landfill is about to close because it is too full. Students play the role of waste management consultants, and analyze past and current waste management practices at their school and community. Teams devise a cost-effective and user-friendly recycling program. In a culminating event, students turn trash into cash as they sell beautiful and useful crafts made from recycled materials at a holiday fair.