



ENGINEERING BY DESIGN™ PROGRAM SERIES GRADES 5-6



INVENTION, INNOVATION, AND INQUIRY (I³)

Invention, Innovation, and Inquiry: Units for Technological Literacy, Grades 5-6, was funded by the National Science Foundation. This project is so named because invention and innovation are the hallmarks of technological thinking and action. Each unit has standards-based content, suggested teaching approaches, and detailed learning activities, including brainstorming, visualizing, testing, refining, and assessing technological designs. Students will learn how inventions, innovations, and systems are created and how technology becomes part of their lives.

All units contain teacher background information, handouts, transparency masters, and a student packet. Each unit is designed to integrate mathematics and science with technology and take 8 to 10 days.

Invention: The Invention Crusade

Students develop an idea for an invention by designing and constructing a working model or prototype of a gadget that helps a small child to do a household task.

P208 - \$15.00; **Members \$12.50** (print version)
P208CD - \$12.00; **Members \$10.00** (electronic version on CD)

Innovation: Inches, Feet, & Hands

Students use the engineering design process to design and develop an improved product that is used by the human hand.

P209 - \$15.00; **Members \$12.50** (print version)
P209CD - \$12.00; **Members \$10.00** (electronic version on CD)

Communication: Communicating School Spirit

Students examine communication processes and mediums by designing, developing, and implementing different types of commercial projects promoting school spirit.

P210 - \$15.00; **Members \$12.50** (print version)
P210CD - \$12.00; **Members \$10.00** (electronic version on CD)

Transportation: Across the United States

Students investigate the systems of transportation and how transportation has impacted the United States. Then they apply their learning by designing a transportation vehicle.

P211 - \$15.00; **Members \$12.50** (print version)
P211CD - \$12.00; **Members \$10.00** (electronic version on CD)

Inquiry: The Ultimate School Bag

Students use inquiry skills to redesign a school bag and construct a model of the "Ultimate School Bag."

P212 - \$15.00; **Members \$12.50** (print version)
P212CD - \$12.00; **Members \$10.00** (electronic version on CD)

Manufacturing: The Fudgeville Crisis

Students explore food preservation and packaging as their companies mass-produce and package "fudge" for a Fudge Festival.

P216 - \$15.00; **Members \$12.50** (print version)
P216CD - \$12.00; **Members \$10.00** (electronic version on CD)

Construction: Beaming Support

Students act as structural engineers and design and construct at least two laminated paper beams—testing, evaluating, and redesigning their beams for maximum strength.

P217 - \$15.00; **Members \$12.50** (print version)
P217CD - \$12.00; **Members \$10.00** (electronic version on CD)

Power and Energy: The Whispers of Willing Wind

Students gain an understanding of wind energy and power as they construct a device that captures wind energy and converts it to electricity.

P218 - \$15.00; **Members \$12.50** (print version)
P218CD - \$12.00; **Members \$10.00** (electronic version on CD)

Design: Toying with Technology

Students explore two-dimensional (2-D) and three-dimensional (3-D) visualization processes and mediums by designing, developing, and building toys that solve a given problem.

P219 - \$15.00; **Members \$12.50** (print version)
P219CD - \$12.00; **Members \$10.00** (electronic version on CD)

Technological Systems: Creating Mechanical Toys

Students investigate two mechanical devices—pneumatics and linkage mechanisms—and design a toy that uses both to create movement.

P220 - \$15.00; **Members \$12.50** (print version)
P220CD - \$12.00; **Members \$10.00** (electronic version on CD)

I³ CD Package A

Save 20% more when you purchase I³ as a package!

Get the five Units above on CD for one special price:

P213aCD - \$45.00; **Members \$37.50**

I³ CD Package B

Save 20% more when you purchase I³ as a package!

Get the five Units above on CD for one special price:

P213bCD - \$45.00; **Members \$37.50**

10-Lesson I³ CD Package

Get all ten I³ Units on one CD:

P213CD - \$90.00; **Members \$75.00**

CD prices reflect a 20% savings.

Save an additional 20% when you purchase your CDs as a package!