

PRODUCT REVIEWS

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News of the latest technology products for K-12 may be sent directly to Kathie Felix at 5746 Union Mill Road, PMB 605, Clifton, VA 20124 or to kathiefelx@aol.com.

Electronic Resources for Schools

REPORT CARD

- ★★★★★ = Highly Recommended
- ★★★★ = Recommended
- ★★★ = Good
- ★★ = OK in some cases
- ★ = Don't consider

This section provides concise, original reviews of new or important hardware, software, web-sites, and electronic media that relate to the K-12 curriculum. All reviews are written by practicing educators who, in most cases, have used the software in a school environment. Where grouped into broad, age-appropriate categories, these categories should not be viewed as prescriptive. To facilitate "comparison shopping," these reviews are highly structured. Reviewers prepare a "report card" based on a five-star scale.

HARDWARE

LabQuest

Company: Vernier Software & Technology, 13979 SW Millikan Way, Beaverton, OR 97005. Phone: (888) 837-6437; Internet: www.vernier.com.

Price: \$329—LabQuest, single unit. \$449—LabQuest Elementary Science Starter Package (LabQuest unit, stainless steel temperature probe, TI light probe, and motion detector). \$735—LabQuest Elementary Science Deluxe Package (LabQuest unit, stainless steel temperature probe, TI light probe, motion detector, magnetic field sensor, gas pressure sensor, differential voltage probe, and dual-range force sensor). \$179—Logger Pro software, school license. \$45—*Elementary Science with Vernier* lab book.

Audience: Grades 1-12.

★★★★★ REPORT CARD

Installation	A
Content/Features	A
Ease of Use	A
Product Support	A+

Format: Hardware and CD-ROM.

Minimum System Requirements: The optional Logger Pro software works with Windows or Macintosh systems.

For Windows systems: Pentium processor, 500 MHz, 256 MB RAM, 100 MB hard disk space (minimum installation), Windows 2000/XP/Vista, and an available USB or serial port.

For Mac systems: Macintosh OS (PPC or

Intel), OSX 10.3 or 10.4, and a built-in USB port.

Description: LabQuest is a hand-held data collection tool that can be used as a stand-alone device or as a computer interface using Logger Pro or Logger Lite software.

Specifications: The LabQuest hand-held unit provides a 320x240 pixel color touch screen, rechargeable high-capacity internal battery, 40 MB built-in storage, SD/MMC card slot for expandability, and a built-in temperature sensor and microphone. The connectors include six channels for Vernier sensors, USB Standard-A port, USB mini-AB port, DC power jack, and audio in/mic/out. The unit is splash-proof and features a rugged enclosure with rubber molding for shock absorption.

Reviewer Comments:

Installation: I used the *Logger Pro* software on a Power Mac G4 iBook laptop computer running system 10.3. The installation was simple and quick. **Installation Rating:**A

Content/Features: The LabQuest unit includes a stylus and touch screen for navigation and input, four push buttons for quick function access, a five-button navigation cluster, and an on-screen keyboard. A standard USB keyboard may be attached to the device.

LabQuest offers 50 embedded experiments with instructions, figures, and data tables, as well as an onboard periodic table, a software stopwatch, and a built-in scientific calculator.

The unit's six sensor ports are compatible with more than 50 Vernier sensors. Two digital ports can be used for sensors such as motion detectors and drop counters.

Headphones or speakers connect to the audio out port. A built-in microphone can be used for voice annotation. The LabQuest unit works with many printers. A list of compatible printers is available online.

The four tabs at the top of the LabQuest screen are labeled Meter, Graph, Table, and Notes. At the bottom of the screen are Collect, Home, Calculator, Keyboard, Sounds, Battery, and the current time.

The Table screen shows a data table view of the experiment underway and permits the user to create, modify, or delete columns of data.

LabQuest includes built-in graphing and analysis software as well as sound and temperature sensors. The Analyze menu provides features such as tangent line, curve fit, and statistics offering additional ways to investigate data.

Data collection can be viewed as time-based, events with entry, or in other data collection modes. The on-screen keyboard pops up as needed.

Multiple runs enable the user to compare data previously gathered with a specific range of data. Students can enter and view text and images in the Notes screen.

Optional lab books, which are available for purchase online, offer instructor information, instructions for more than 200 experiments featuring data collec-

tion, and word processing files for student pages in a variety of subject areas including biology, chemistry, earth science, elementary science, engineering education, environment, forensics, math, physics, physiology, and water quality.

An NXT sensor adapter allows Lego Mindstorm NXT robots the use of more than 30 sensor-based control systems. Sample programs and movies are available on the Vernier website.

The Quick Start guide is excellent. At the beginning, I found myself referring to it all the time to learn how to use the many LabQuest features.

Each tool is labeled and easy to identify. The moment the Collect button is pressed, the data is continuously displayed in graph form. In this mode, users can choose what is plotted and how the graph is scaled. Two graphs can be displayed at once.

The site license model allows free distribution throughout the school, as well as in students' and teachers' homes. This portability is much appreciated since classroom computers change so often.

Classroom Applications: As an introductory activity to teach students how to use the LabQuest tools, assign groups of students to a different tool (light sensor, temperature probe, magnetic field sensor, or hand dynamometer). Direct the students to read the instruction guide to learn how the tool works and to devise a simple investigation to share with the class.

This activity provides experience in technical reading, places the student in the role of teacher and the teacher in the role of a facilitator, and offers students a challenging hands-on and engaging activity.

I did this with a small group of able learners in my first grade class. The activities they created included using the temperature probe to measure the temperature produced from various colors of construction paper, using the magnetic field sensor to identify objects in the classroom that have a magnetic field, using the light sensor to measure



LabQuest

the intensity of light within different classrooms within the school, and using the hand dynamometer to compare the grip strength of various age groups.

Sample lessons are available online and include experiments that observe the effect of air resistance on falling coffee filters, measure the force needed to lift a backpack, observe the melting of an ice cube, and determine which materials make the best conductors and insulators.

Working with the *Logger Pro* software, students can add pictures to reports, embed movies with data collection, import data collected with TI or Palm OS handheld devices, export data to spreadsheets, draw a prediction on a graph and see how well the experimental data matches it, use video analysis to create motion, or use video capture to record video streaming from a digital camera or webcam. **Content/Features Rating: A**

Ease of Use: LabQuest is extremely easy to use. The device is controlled by touching the screen and by using buttons. Exploring the menus and options is an intuitive task. Navigation keys provide quick access to key features. **Ease of Use Rating: A**

Product Support: The company provides

product support online, by email, and from a toll-free telephone number. Training and demonstrations are offered nationwide at workshops and conferences and in online courses.

Reference materials for the products are available online and include user manuals, product specifications, and an FAQ. *The Caliper*, a twice-yearly publication for users of Vernier products, provides information on product announcements, upcoming workshops, and innovative product uses.

The *Logger Pro* software Help guide provides complete details about the software and includes tutorials. **Product Support Rating: A+**

Recommendation: LabQuest is very easy to use; it's compatible with a wide variety of Vernier sensors. The ease-of-use of Vernier tools is definitely one of their best features, especially for the elementary classroom teacher who has had limited experience using science meters and probes.

The first day I used the LabQuest tools in my classroom, I left the instruction booklet at home, yet my students had no difficulty gathering data to be used in some introductory activities.

This device is designed for all levels of learners. Young children will appreciate the simplicity in operating the main features. At the same time, the advanced features make this tool a must-have in every high school science lab.

Students will enjoy using LabQuest. They can see the rate of change that occurs as they are doing an experiment. The simple operation of the meter allows the teacher to serve in an advisor's role to answer questions and to concentrate on concepts rather than the operation of the unit.

I was impressed by the rugged construction. This is definitely a tool that will last, which makes it an excellent buy—especially with today's tight funding.

I have no doubt that LabQuest is going to get plenty of use in my classroom. I would highly recommend it for every classroom that is serious about engaging students in meaningful scientific investigations.

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