

The eProbe™ Educational Approach

Knowledge Revolution introduces eProbe™, a mobile, computer-based laboratory that enables students from 10 years old and up to collect, and visually analyze scientific data. Teachers and students need no longer limit their scientific explorations to the lab or the classroom. With eProbe and the eMate™ 300, students can conduct investigations at home, at school, or at a nearby pond—wherever scientific inquiry takes them.

eProbe is the heart of the *eProbe General Science Discovery Kit*. The kit consists of 3 major components: (1) **eProbe software**; (2) **eProbe hardware**—3 probes (light, temperature, and voltage), a battery-powered serial interface box that connects probes to the eMate; and (3) **eProbe activities**—a set of 25 general science activities that maximize the educational potential of the included probes.

General Characteristics of the eProbe Solution

State-of-the-Art Mobile Lab Environment

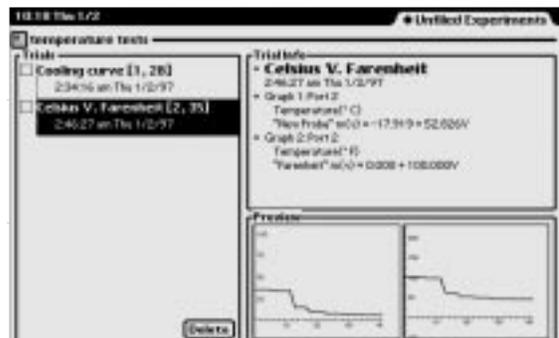
- Designed specifically for the eMate 300.
- Provides a lab environment for any experimental investigation.
- Offers real-time visualization during manual or automatic data collection.
- Supports probe calibration, data collection, analysis, and reflective annotation.
- Handles a wide variety of probes.
- Allows simultaneous collection and data analysis from two probes.

Supports Hands-on, Minds-on Science

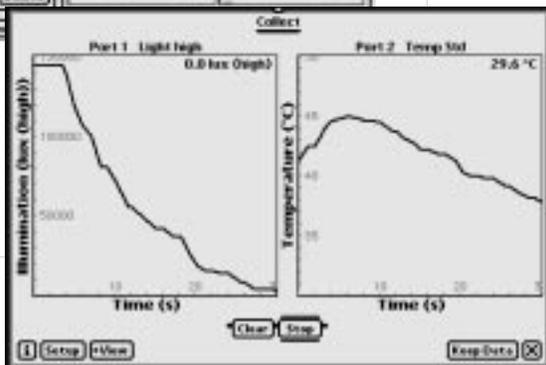
- Empowers students to conduct authentic science investigations.
- Uses a “learning-by-doing” approach.
- Enables visualization of underlying concepts.
- Supports reflection any time during an investigation.
- Offers multiple representations (graphs, tables, sketches, text).

Easy to Learn and Use

- Easy-to-use software interface gets you up and running immediately.
- Connect and select probes easily and quickly.
- Use default calibrations (provided for all supported probes) or calibrate manually.



eProbe's numeric and graphic representations provide immediate visual feedback to users during calibration and data collection.



The eProbe General Science Discovery Kit



eProbe™



Product Features

By integrating the following three major components, the *eProbe General Science Discovery Kit* provides a complete educational solution.

1. eProbe Software. Instead of just collecting data and plotting graphs, the eProbe software supports the entire scientific process. Our approach is based on an experimental view of science where, for example, an experiment may consist of several data collection trials necessary to answer a single question. Within the experiment view, eProbe summarizes all individual data collection trials and their probes. It even offers thumbnails of graphs or tables connected with a particular trial.

In addition, eProbe exploits eMate's unique advantages by incorporating all the best features of note taking, drawing, and the spreadsheet. By integrating these features teachers can create a kind of "Science Writer" that students can use to develop an investigation, reflect on it as it unfolds, and record conclusions about findings. eProbe software provides 4 integrated learning experiences: (a) collection—lets students simultaneously collect and display data from two probes; (b) analysis—lets students export data to a built in spreadsheet (Works), where they can compare and visually analyze data using graphs and tables; (c) annotation—allows students to describe data, probes, tables, graphs, and experiments; (d) calibration—provides the option for students and teachers to calibrate a variety of data-gathering probes.

Collection

- Sample data manually, collecting a single value at a time.
Or, sample data continuously at a user-specified rate up to 4 to 5 samples per second.
- Sample data from two different probes simultaneously.
- Define and manually enter special data for example, distance measurements, colors, locations, etc.
- Display data in one or two graphs or in a table as you collect it.

Analysis

- View data collected at different times with different probes.
- Easily select and import data into an integrated spreadsheet (Works) for more in-depth analysis.
- Once imported, view data from different perspectives using a variety of graph formats (e.g., xy plots, pie charts, bar charts).
- Display data from different datasets in one graph.

Annotation

- Record notes about questions, hypotheses, methods, results and conclusions as text and sketches about each experiment, trial, or probe.
- Import annotations and data into the included word processor in Works to produce complete science reports.

Calibration

- Select built-in default calibrations for probes available for a wide range of scientific disciplines.
- Construct custom calibration by manually collecting data points and comparing these points to a standard measuring instrument. Or manually enter a calibration equation to produce a calibration curve.

2. eProbe Hardware. eProbe hardware consists of: a battery powered (batteries included) Serial Box Interface with complete manual; 3 Vernier probes (light, temperature, voltage) with manuals; and a serial cable to connect the Serial Box Interface to the eMate.

eProbe software supports additional probes that may be purchased directly from Vernier Software, Inc. We also plan to support additional serial interfaces in the near future.

3. eProbe General Science Discovery Activities. The *General Science Activities Guide* includes 25 activities designed to take students out of the classroom to discover their surroundings. Activities are conducted at home, by a stream, and around a car using the 3 probes included. Some activities also include the creation of other probes using household items. All activities have been designed to support discovery by encouraging students to ask questions, make predictions, conduct investigations, and develop lines of inquiry by designing further investigations. A printed teachers guide in a 3-ring binder and floppy disk version of the activities are included.

Product Configurations

eProbe General Science Discovery Kits are available in two convenient product configurations:

Single	8-Pack
eProbe software (1-machine license)	eProbe software (8-machine license)
General Science Activities Guide (1-machine license)	General Science Activities Guide (8-machine license)
1 Serial Box Interface and cable	8 Serial Box Interfaces and cables
1 General Science Probe set (3 probes total)	3 General Science Probe sets (9 probes total)
1 Discovery Kit Carrying Box	1 Discovery Kit Carrying Box



Other Supported Probes

Pressure	Light Sensor
25-g Accelerometer	Barometer
Low-g Accelerometer	Biology Gas Pressure
Conductivity	Respiration Monitor Belt
Colorimeter	Direct-Connect Temperature
Current Probe	Standard Temperature
Dissolved Oxygen	Thermocouple
Relative Humidity	Voltage Measurement Leads
PASCO Force Sensor	Voltage Probe
Student Force Sensor	pH System

Knowledge Revolution

Insight through Interaction

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