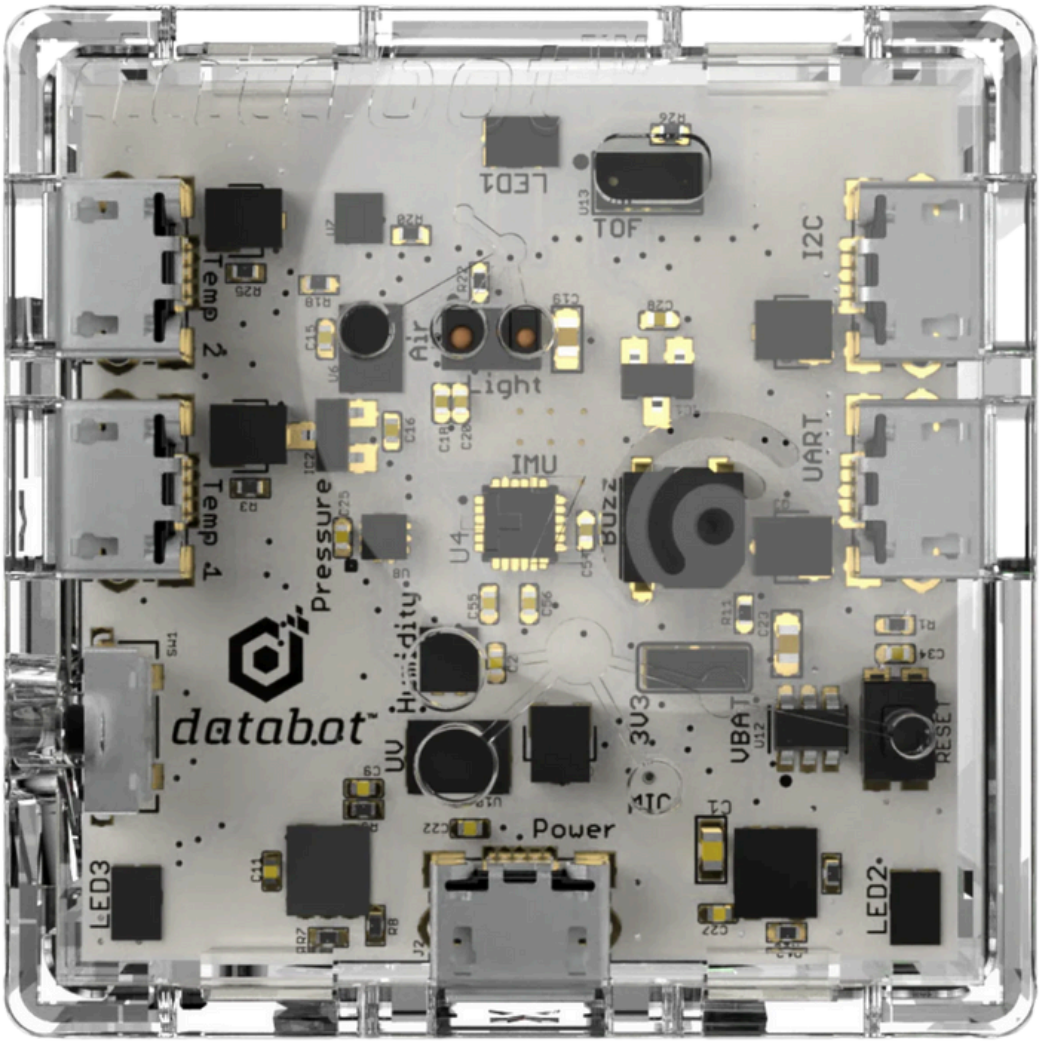
Databot



Mid-Valley
STEM-CTE HUB

www.midvalleystem.org
midvalleystemctehub@linnbenton.edu
Linn-Benton Community College
Albany Campus - CC-212

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Databot

The databot™ STEAM Kit is a compact, sensor-packed tool that empowers students to explore real-time data through hands-on science and engineering. With 15+ built-in sensors—including temperature, motion, light, and air quality—students can investigate real-world phenomena across physics, biology, and environmental science. Paired with the Vizeey™ app, databot™ supports inquiry-based learning, data literacy, and cross-curricular STEM engagement in an interactive, mobile format.

Grade Level

5th - 12th

Group Size

2 -3 students per databot

Time Duration

30 - 90 minutes

Content of Kits

Components

- 12 databot sets:
  - databot sensor
  - probe
  - usb cable
  - wrist strap
  - hardshell case

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Usage

Getting Started

1. **Unbox and Identify Components**
   Familiarize yourself and your students with the databot™, included sensors, charging cable, and any accessories (like the external temperature probe).

2. **Charge Devices Before Use**
   Fully charge each databot™ before class to ensure uninterrupted data collection during activities.

3. **Download the Vizeey™ App**
   Install the free Vizeey™ app on classroom devices (Chromebooks, tablets, or smartphones) for sensor connection, live data streaming, and experiment templates.

4. **Start with a Simple Experiment**
   Choose an introductory activity like measuring temperature or light levels to demonstrate real-time data collection and visualization.

5. **Model Bluetooth Pairing**
   Show students how to connect their databot™ via Bluetooth, and assign devices or color-code them to simplify group management.

Storage

- **Use Protective Case -** Store each databot™ unit in its original padded case to prevent damage during transport or storage.
- **Charge Before Storing Long-Term -** If you won't be using the kits for a while, store the databot™ units with a partial charge (around 50%) to preserve battery health.

Troubleshooting

- **Device Not Connecting via Bluetooth -** Ensure Bluetooth is enabled on your device, the databot™ is powered on, and only one device is trying to pair at a time. Restart both if needed.
- **Sensor Data Not Displaying -** Confirm that you've selected the correct sensor in the Vizeey™ app. Try refreshing the connection or restarting the app.
- **Inconsistent or Unstable Readings -** Check that the environment is appropriate for the sensor (e.g., avoid direct sunlight on temperature probes or movement during air quality tests). Recalibrate if needed.
- **App Freezing or Lagging -** Close other apps running in the background and restart the Vizeey™ app. Ensure your device software is up to date.

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Activity Guide

Beginner

Temperature Trek
Students carry the databot™ around different locations (e.g., classroom, hallway, windowsill, outdoors) and record temperature data at each. They graph results to compare how location and sunlight affect temperature. This introduces sensor use, basic data collection, and analysis.

Intermediate

Light & Color Explorer
Students use the ambient light and color sensors to test how materials (e.g., colored paper, fabrics, filters) reflect or absorb light. They record values and discuss how light interacts with materials—connecting science concepts with real-world applications like solar panel efficiency or camouflage.

Advanced

Air Quality Investigation
Using databot's CO_2 and VOC sensors, students collect air quality data in various school spaces. They graph trends, identify patterns, and research potential health effects of poor air quality. This activity promotes real-world relevance, critical thinking, and data interpretation.

Extension Activities:

Motion & Acceleration Analysis
Students attach databot™ to objects (e.g., toy cars, bikes, backpacks) and analyze how acceleration and rotation vary in different movement patterns. They calculate average speed, create motion profiles, and present findings using graphs and visuals. This deepens understanding of force, velocity, and Newton's laws.

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Learning Extensions

STEAM Connections: Science - Math

Learning Objectives:

- Collect, interpret, and visualize real-time data from a variety of environmental and motion sensors.
- Develop data literacy skills by identifying trends, drawing conclusions, and communicating results.
- Understand how sensor data connects to scientific concepts such as temperature, light, motion, and air quality.
- Apply engineering & scientific inquiry skills to solve real-world problems through experimentation.
- Strengthen digital fluency by using sensor-based technology and data analysis tools.

Career Connections:

- **Data Analyst** – Uses tools and sensors to gather and interpret data across various industries.
- **Environmental Scientist** – Monitors air quality, climate patterns, and environmental health using sensor-based tools.
- **Biomedical Technician** – Applies sensor technology in healthcare to collect and analyze physiological data.
- **Mechanical or Aerospace Engineer** – Uses motion and force data in the design of vehicles and robotics.
- **STEM Educator or Researcher** – Integrates data-gathering tools to explore scientific questions and teach data literacy.

Essential Employability Skills:

- Critical Thinking
- Problem-Solving
- Collaboration
- Communication
- Digital & Technical Literacy

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Resources and Accessibility

Safety Guidelines

- **Handle with Care** – Avoid dropping the databot™ or exposing it to liquids, dust, or extreme temperatures to protect its internal sensors.
- **Charge Safely** – Only use the included or approved USB cables for charging, and never charge near water or food.
- **Avoid Sensor Contamination** – Don't touch or blow directly onto sensors like CO_2 or VOC to prevent inaccurate readings or damage.

Accessibility

- **Offer Pre-Assembled Data Sets** – For students with motor challenges, provide ready-made datasets from databot™ to allow participation in analysis and discussion.
- **Enable Flexible Group Roles** – Allow students to take roles based on strengths (e.g., device handler, recorder, analyst, presenter).
- **Provide Verbal Instructions and Captioning** – Pair on-screen directions with verbal explanation or closed captions to support auditory and language processing needs.
- **Incorporate Assistive Technology** – Use voice commands, screen readers, or accessible apps to support students with learning or physical disabilities.

Library Catalog

Library Resources

Feedback

QR to feedback survey