Lab Camera is a science exploration application with seven tools that enable students to carry out experiments using the laptop's or tablet's built-in camera. It's a cost-effective way to enhance a STEM curriculum and promote scientific inquiry.

**Time-Lapse Camera**
Helps students to see quickly what normally happens slowly in nature. The time-lapse camera tool captures photos at specified intervals. It then stitches the photos into a short video. Can be used to observe a plant blooming over 24 hours, ice melting, eggs hatching, or cloud formations.

**Kinematics**
Students can study the motion of bodies by tracking an object's horizontal and vertical movement characteristics. The kinematics tool can capture up to three objects at the same time. The tool graphs horizontal and vertical movement characteristics: displacement, velocity, and acceleration.
**Microscope**
Microscope tool uses the laptop or tablet’s camera to perform the basic functions of a traditional microscope. Traditional microscopes are expensive, immobile, and typically need to be shared. This built-in microscope functionality saves time and space in the classroom, plus the student has the tool at their fingertips.

**Pathfinder**
Enables students to detect patterns of movement and frequency of motion. The motion data is visualized in the form of a density map using color saturation to show levels of activity. For example, Pathfinder can identify the behavior of termites as they follow an invisible pheromone trail. While unnoticeable to the naked eye, the pattern becomes obvious after just a few minutes of recording video. Other examples: observing traffic patterns, ants in an ant farm, or pollywogs in a pond.

**Motion Cam**
Motion Cam records when it detects movement, allowing students to capture rare situations in nature. It works like a motion-sensor camera, recording when it detects movement in front of the camera. For example, a student can aim the camera at a bird feeder and it will only activate when a bird comes to the feeder. Other examples: a bee pollinating a flower, a fly landing on a spider’s web, or the nighttime feeding habits of a classroom pet.

**Universal Logger**
Universal Logger lets students digitize analog science equipment. It uses object recognition to convert the readout of an analog measurement device to digital data that can be graphed in real time. It can digitize any instrument that has a digital, radial-dial, or fluid-based display.

**Graph Challenge**
Graph Challenge uses object recognition to calculate the amount of movement of an object related to a predefined curve. Students move the object to match the curve as close as possible. Graph Challenge helps students to understand the coordinate system and the concept of diagram analysis in a playful way.
**Value for School Administrators**
- Enhances project-based learning, an ideal complement to STEM curriculum
- Reduces the need for expensive lab equipment
- Tools work across several science disciplines, such as biology, life science, chemistry, and physics

**Value for Educators**
- Enhances project-based learning in science disciplines
- Develops higher-order skills such as investigation, drawing conclusions, collaboration, analysis, problem solving, deductive reasoning
- With seven tools built into one application, educators can save time managing and distributing probes and peripherals during valuable class time

**Value for Students**
- Engagement; fosters deep understanding of scientific principles and phenomena with modern digital tools
- Anytime anywhere access to science tools built into the students’ device

### Curriculum Integration Usage Examples

<table>
<thead>
<tr>
<th>Subject</th>
<th>K-5</th>
<th>6-8</th>
<th>9-12</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Language Arts</strong></td>
<td></td>
<td>Students track plant growth using the Motion Camera tool. They observe and record plant growth overnight and log their scientific observations.</td>
<td>Students track the motion of a pendulum using the Kinematics tool. In their lab report, they describe the ball’s motion as it relates to the force of their push on the ball.</td>
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<tr>
<td><strong>Math</strong></td>
<td></td>
<td>Students use the Microscope tool to measure and describe the size of items that cannot be measured by a ruler.</td>
<td>Students use the Kinematics tool to represent and analyze the relationship between motion and velocity.</td>
</tr>
<tr>
<td><strong>Science</strong></td>
<td></td>
<td>Using the Time Lapse tool, students record cloud movement in their study of weather patterns.</td>
<td>Students use the Kinematics tool to investigate roller-coaster design and learn about velocity and acceleration.</td>
</tr>
</tbody>
</table>

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