Teacher Implementation Guide: Crash Science in the Classroom + PocketLab

Welcome to your Crash Science and PocketLab toolkit! This guide is designed to help you seamlessly implement engaging, real-world STEM lessons that combine physics, engineering, biomechanics, and crash safety into your classroom practice.

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1. Getting Started: Setup and Access

Before teaching the lessons, complete the following setup:

- Create your Crash Science account: https://classroom.iihs.org
- Create your PocketLab Notebook account: https://app.thepocketlab.com/auth/sign-in
- Gather PocketLab G-Force Cars and Voyager Sensors
- Review lesson chart for standards alignment and links to all of the available lessons. State specific standards are available using the tabs on the Google sheet.

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2. Classroom Activities:

The lessons are hands-on, inquiry-based, and designed for both middle and high school levels. All of the lessons can be adapted to lower grades but keep in mind some of the “crash” concepts might be disturbing to certain students.

There are a mix of sensor lessons and lessons that do not require a PocketLab sensor. There are 22 lessons currently available. Below are our top recommended lessons to use but feel free to mix and match from the rest of the list to fill out your needs to get the concepts covered for your students.

- Project Pedestrian
- Crash Cushion Design and Investigation
- Egg Crash
- Preventing Concussions and Head Injuries
- Momentum Bashing
- Twirling Penny
- Think Fast, Act Fast

Data Collection & Analysis

Encourage students to:

- Before diving into the core lessons, use some of the introduction lessons to have your students get acquainted and comfortable with the Notebook web app and the PocketLab sensors.
- Have your students record sensor data with variables to discover and explore the concepts during the lessons without telling them the expected outcomes.
- Make predictions, test variables, and draw conclusions. Work in lab groups and use ideas and input from all members of the lab group.
- Compare team results and analyze safety designs. Some of the lessons can be made into classroom challenges with competitions for the best designs.
- Encourage further exploration and student led investigations beyond the written lesson content.

Instructional Strategies

- Use Inquiry-Based Learning
- Show real-world crash footage and other videos from the websites for context. The crash science virtual field trip from 2024 is also available to stream now. Plus sign up for the Dec/2025 virtual field trip for the LIVE experience.
- Connect lessons to other subjects. Tie in biology, writing, health, math, and drivers education.
- Explore the large lesson library to find other lessons you can use to supplement your existing lesson plans using PocketLab sensor.

Recommended Plan

Depending on your pre-existing scope and sequence for the covered topics, using the standards alignment chart, add in these lessons to supplement and bolster your existing curriculum and lesson content. Try to cover enough content before your winter break so that you can participate in the LIVE virtual field trip with your students and the rest of the school.

Many teachers gave us feedback that performing the “Crash Cushion Design Challenge” immediately after their students watched the virtual crash test field trip, allowed for increased engagement and student understanding.

Track Progress and Celebrate Wins

- Collect student lab work, comments, feedback, criticisms, etc as data regarding the effectiveness of this program.
- Share classroom/auditorium photos/videos (with permission) of your students performing the hands-on activities with your district administrators.
- District administrators will collect all of this and send feedback to the IIHS & PocketLab teams to help improve the program in the future.

Final Tips

- No prior experience needed—learn together! You and your students can experience these hands-on activities for the first time as a team. Have your students lead the discoveries.
- Collaborate with your teaching peers and district coaches/specialists. Make the experience collaborative and fun.
- Need help? Check out our PocketLab Knowledge Base https://support.thepocketlab.com/knowledge and Training videos https://www.thepocketlab.com/training.
- Or contact us at contact@thepocketlab.com for prompt assistance.

Helpful Links

- Crash Science in the Classroom Website: https://classroom.iihs.org
- Notebook Lesson Library: https://app.thepocketlab.com
- Sign up for the December 2025 Crash Test Virtual Field Trip: https://www.thepocketlab.com/events/crash-test-virtual-fieldtrip-2025
- Access the replay of the 2024 Crash Test Virtual Field Trip: https://www.thepocketlab.com/video/iihs-virtual-field-trip-car-crash