# Breaking Open Our Education

Ayah Bdeir
@littleBits
@ayahbdeir

littleBits

710059
COPYRIGHT:048873
PIM-TBIO-Z
JAPAN 716102
M5L8255AP-5
D8237AC-5
JAPAN 726103
M5L8253P-5
ERSO/
1986 V
6962
MADE IN TAIWAN R.O.C.

# Z80 processor

- Obscure
- Complex
- Boring
- All-or nothing

→Closed

→Linear

# Z80 processor

- Obscure
- Complex
- Boring
- All-or nothing

→Closed

→Linear

Open?

Modular?

# Science/Technology Education

| **Field-driven** | **Tool-driven** |
| --- | --- |
| Math | Excel |
| Physics | Word |
| Chemistry | “IT” |
| Biology | iPad |
| … | … |

# Science/Technology Education

**Field-driven**

Math

Physics

Chemistry

Biology

…

**Tool-driven**

Excel

Word

“IT”

iPad

…

“Out of touch”

Linear/Closed

Compartmentalized

Quickly Obsolete

Non-transferrable

Consumer-focused

# Science/Technology Education

**Fie**

Ma

Phy

Che

Bio

…

“

L

Compartmentalized

**Fundamentals-driven**

Programming (OOP)

Problem-solving

Design thinking

Motion/Gravity/Cause-Effect

…

Consumer-focused

# Science/Technology Education

**Open** **Modular**

**Field-driv**

Math

Physics

Chemistry

Biology

…

Word

“IT”

iPad

…

“Out of touch”

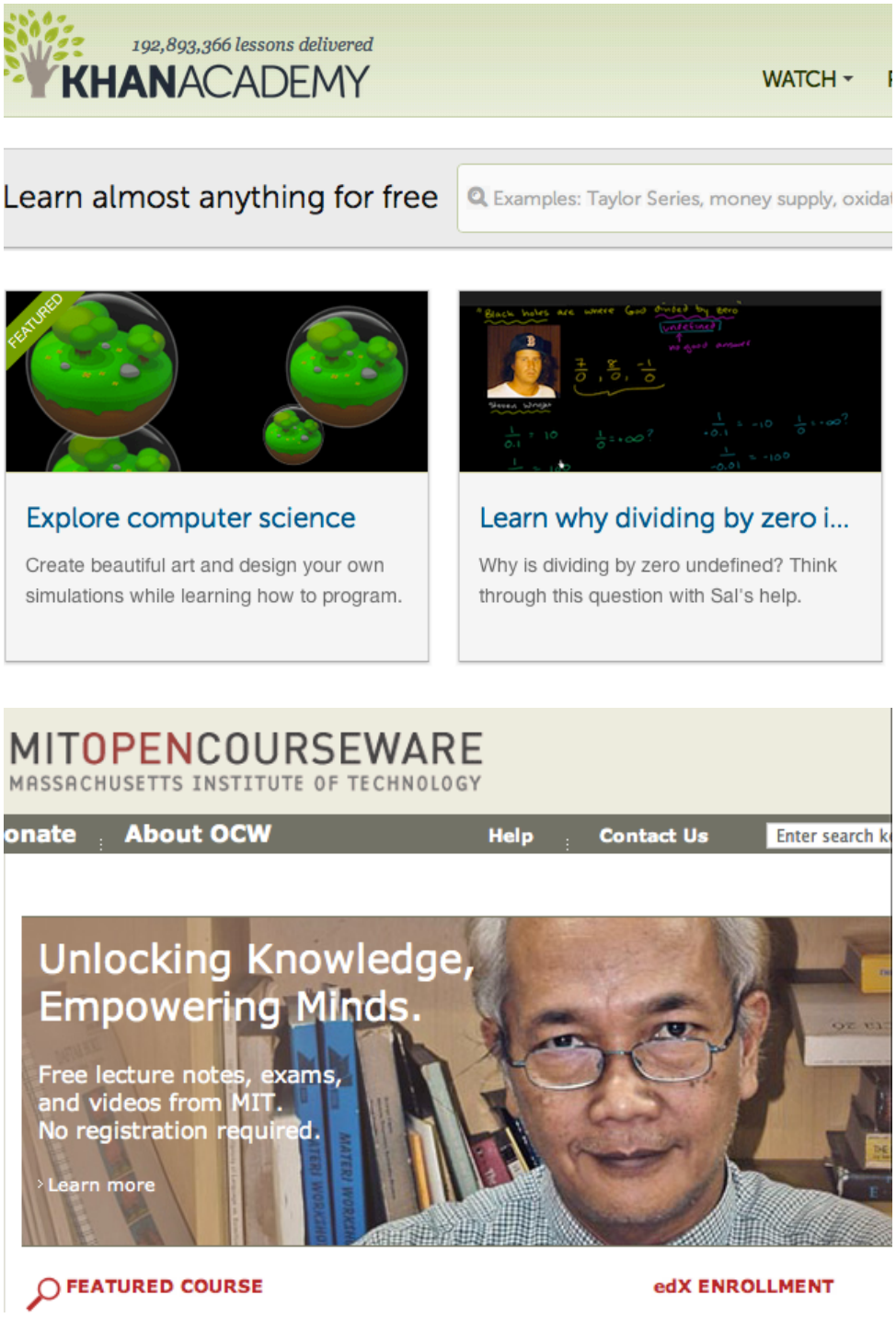
Linear

Compartmentalized

Quickly Obsolete

Non-transferrable

Consumer-focused



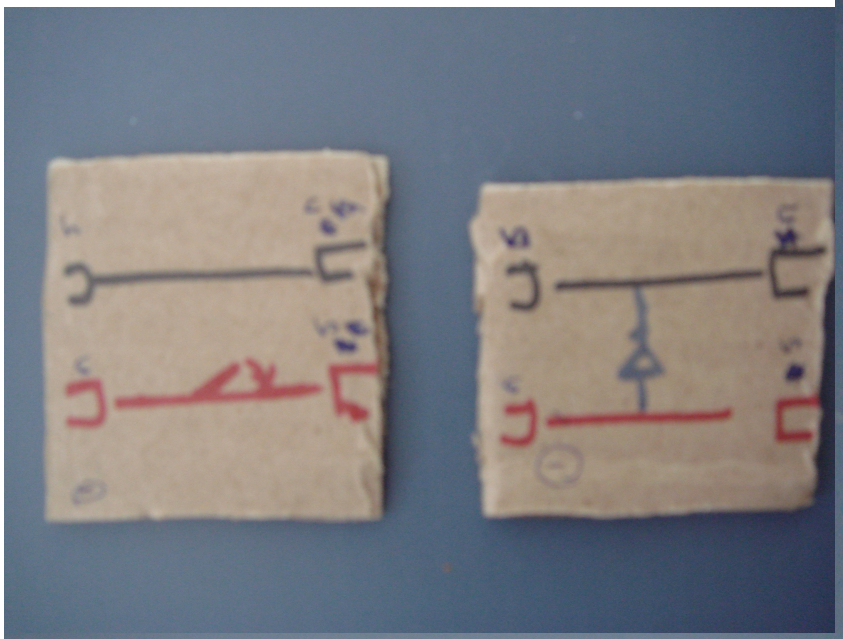

Over 3400 videos
Over 175million videos

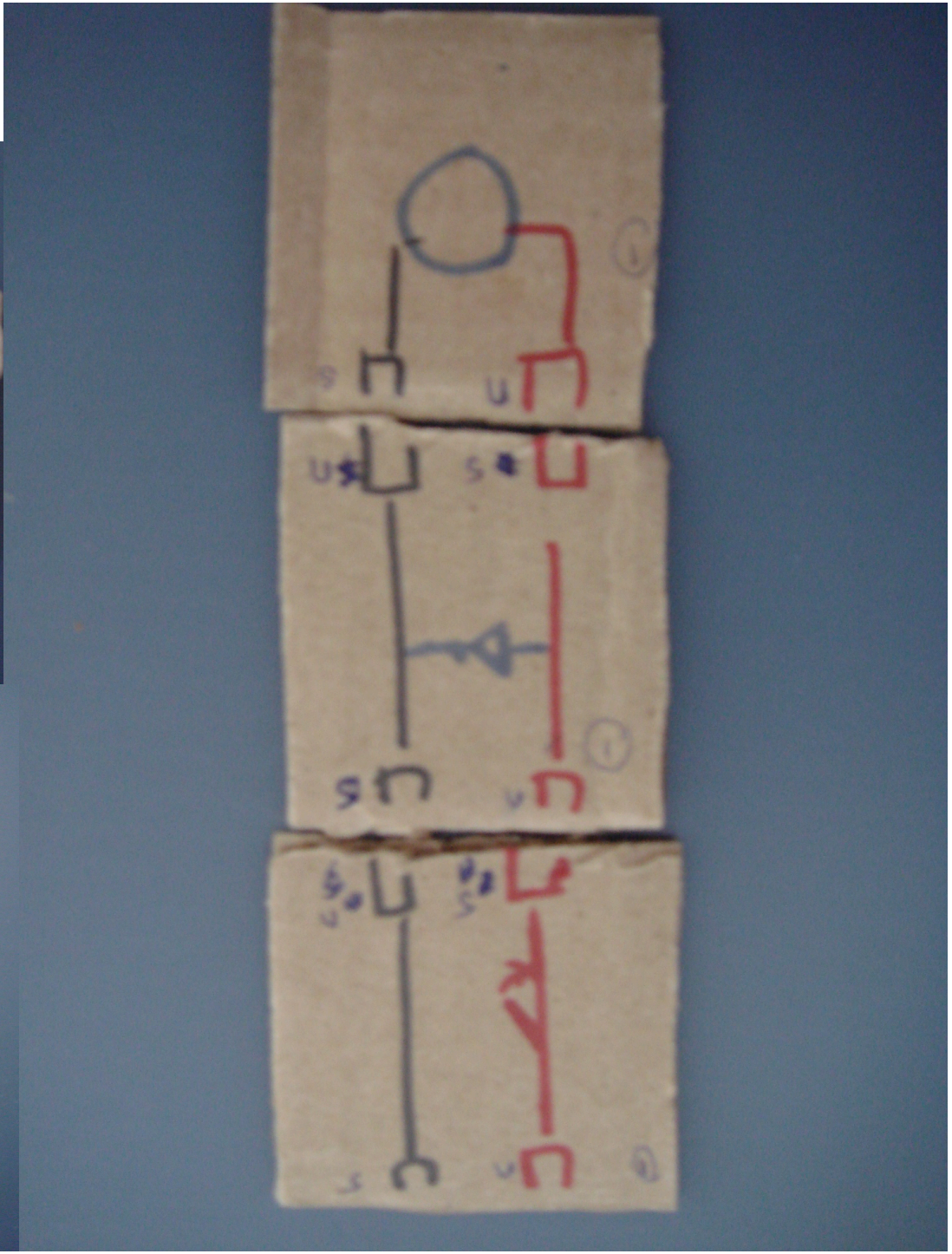
MIT
Yale
the University of Michigan
and the University of California Berkeley

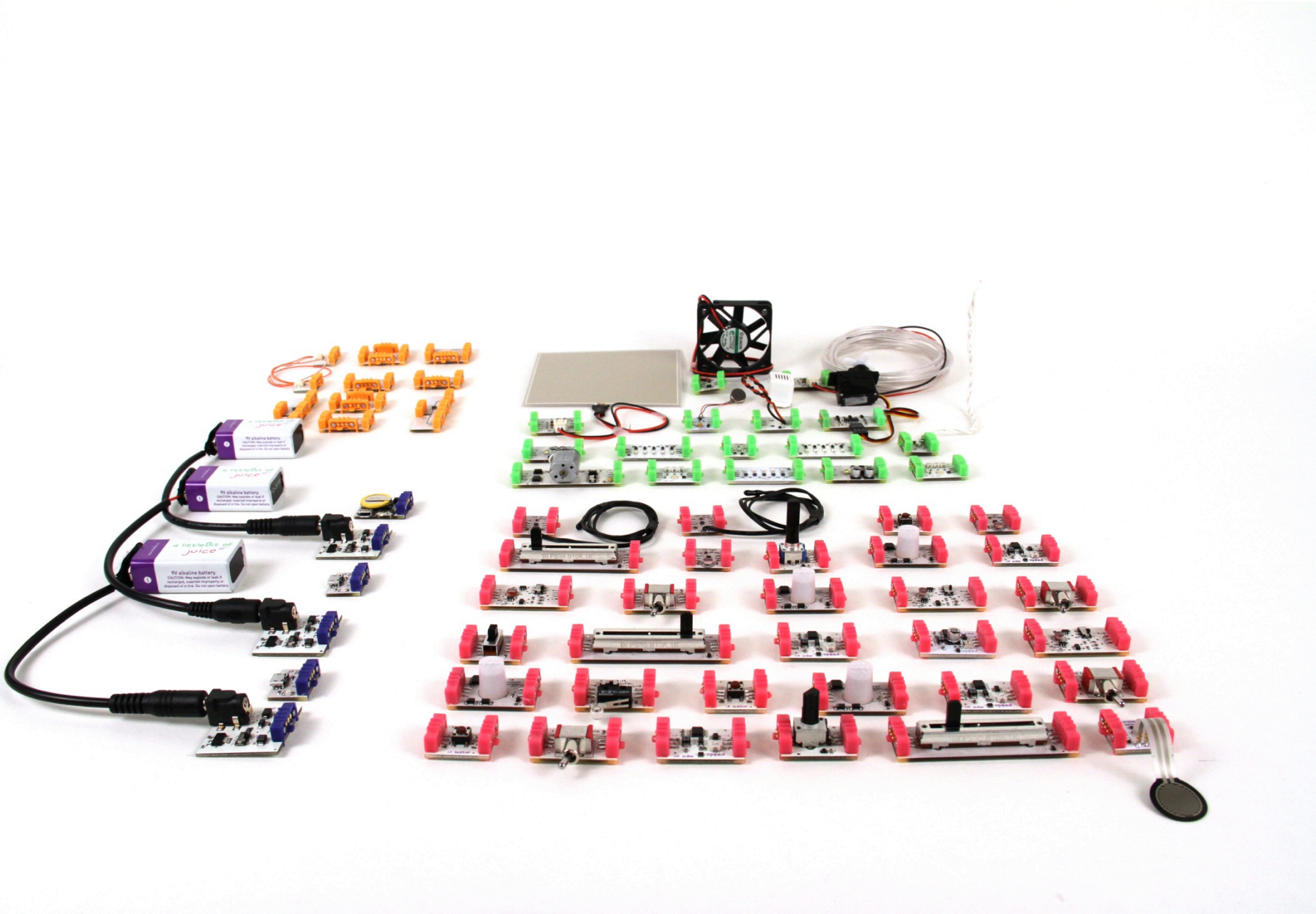
# Hardware?

- Common Platform
- Accessible
- Non-denominational

# hardware

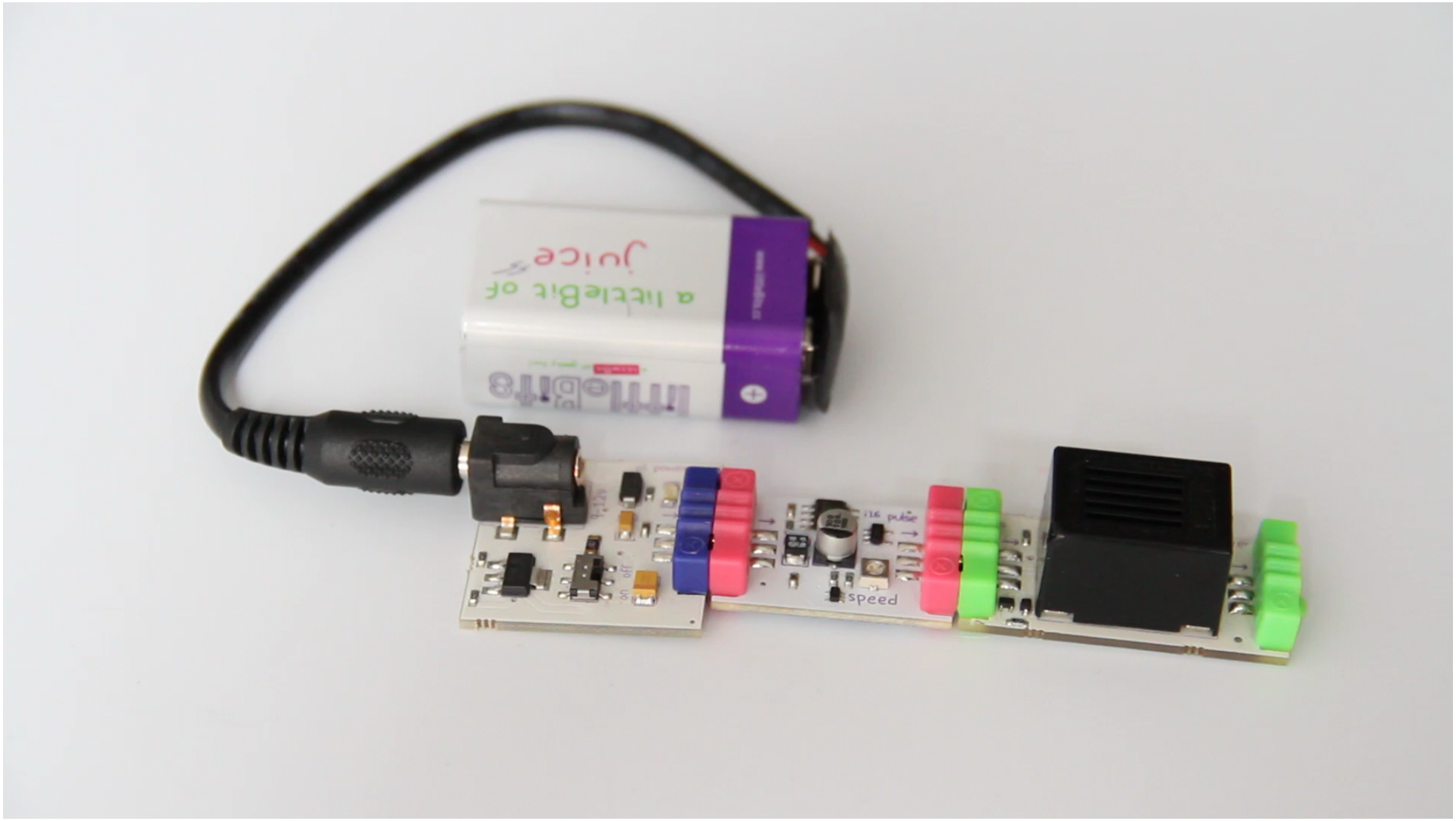




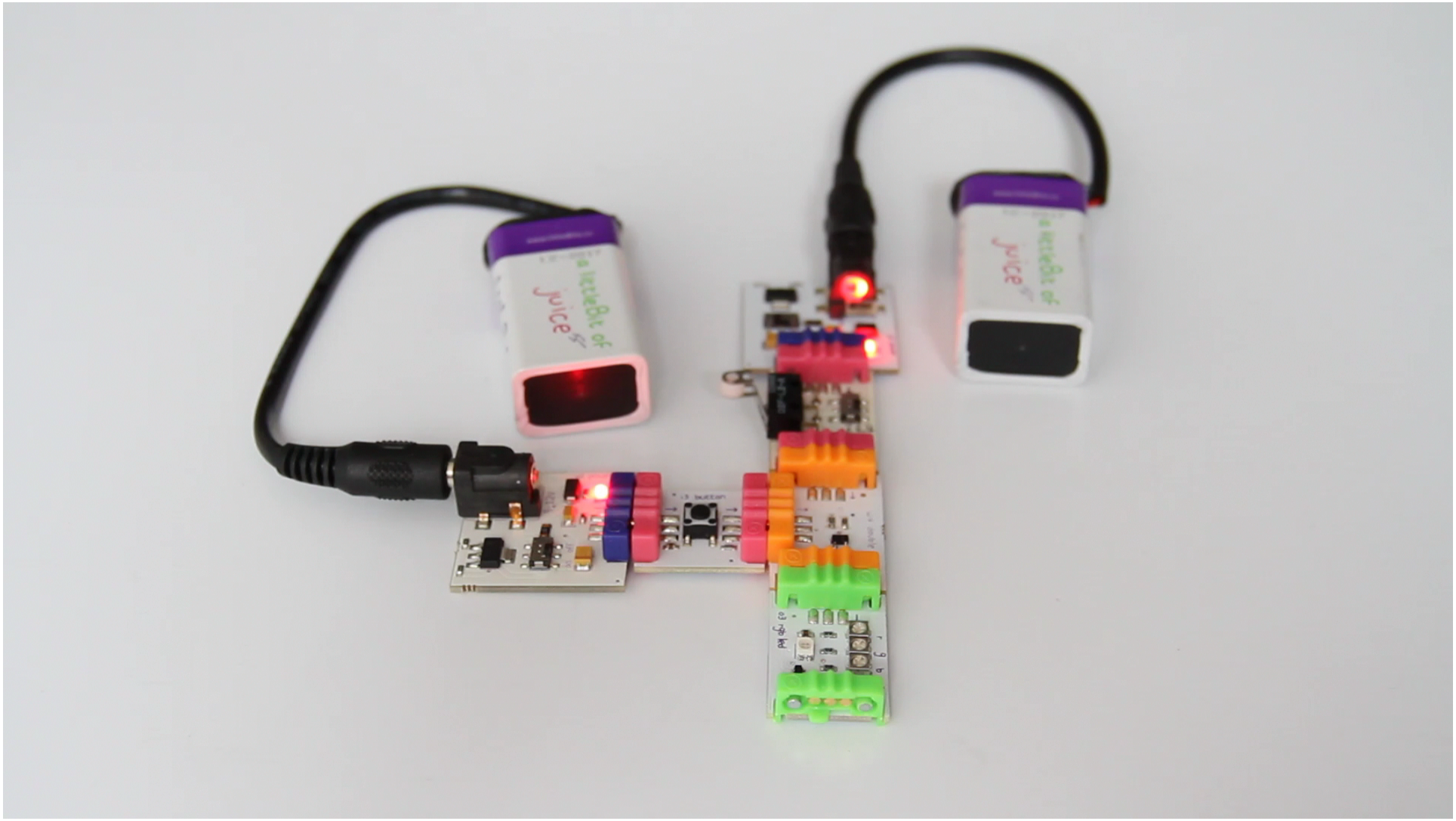


littleBits is an opensource library of electronic modules that snap together with tiny magnets for prototyping and play.

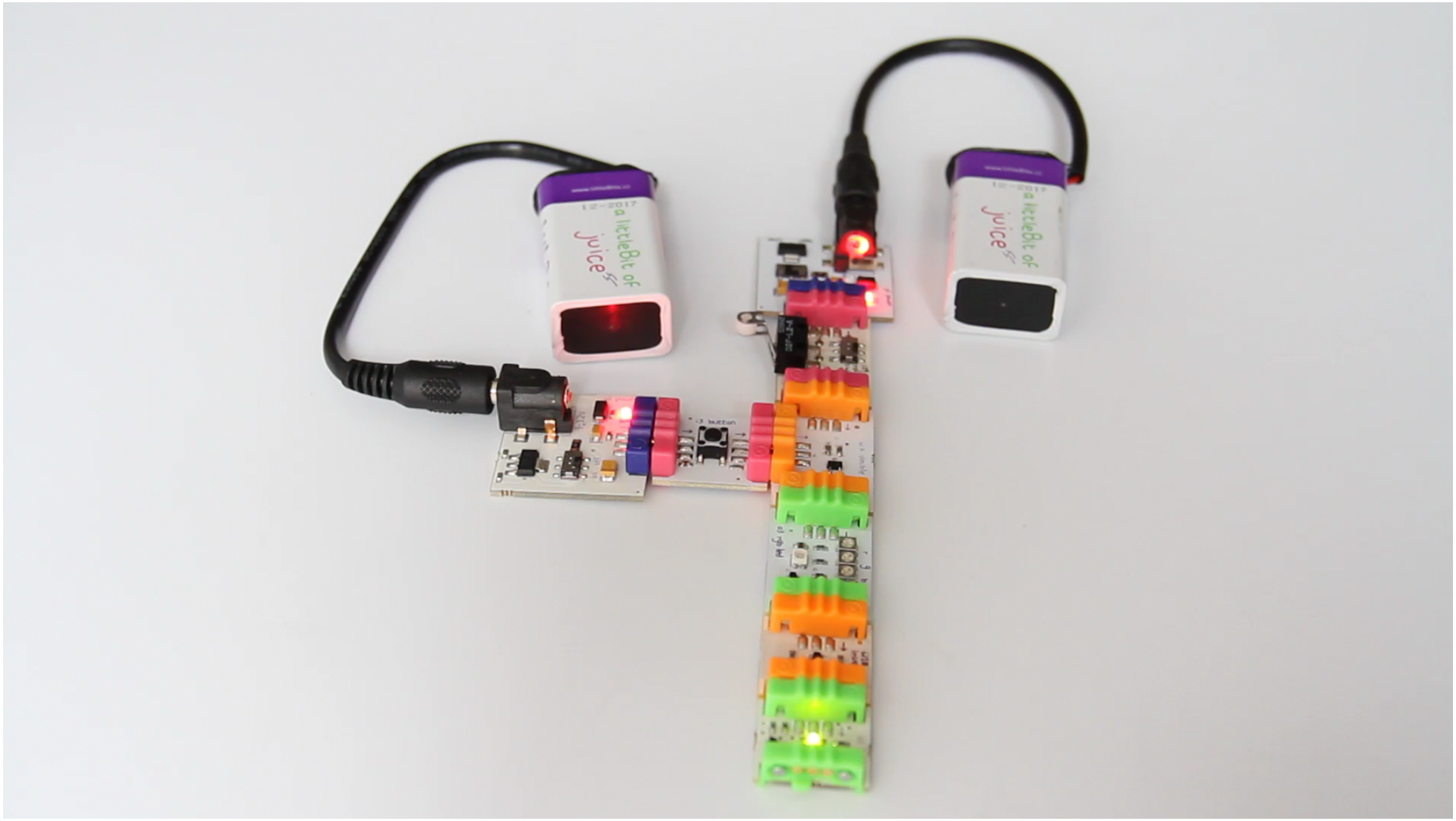
# Pulse

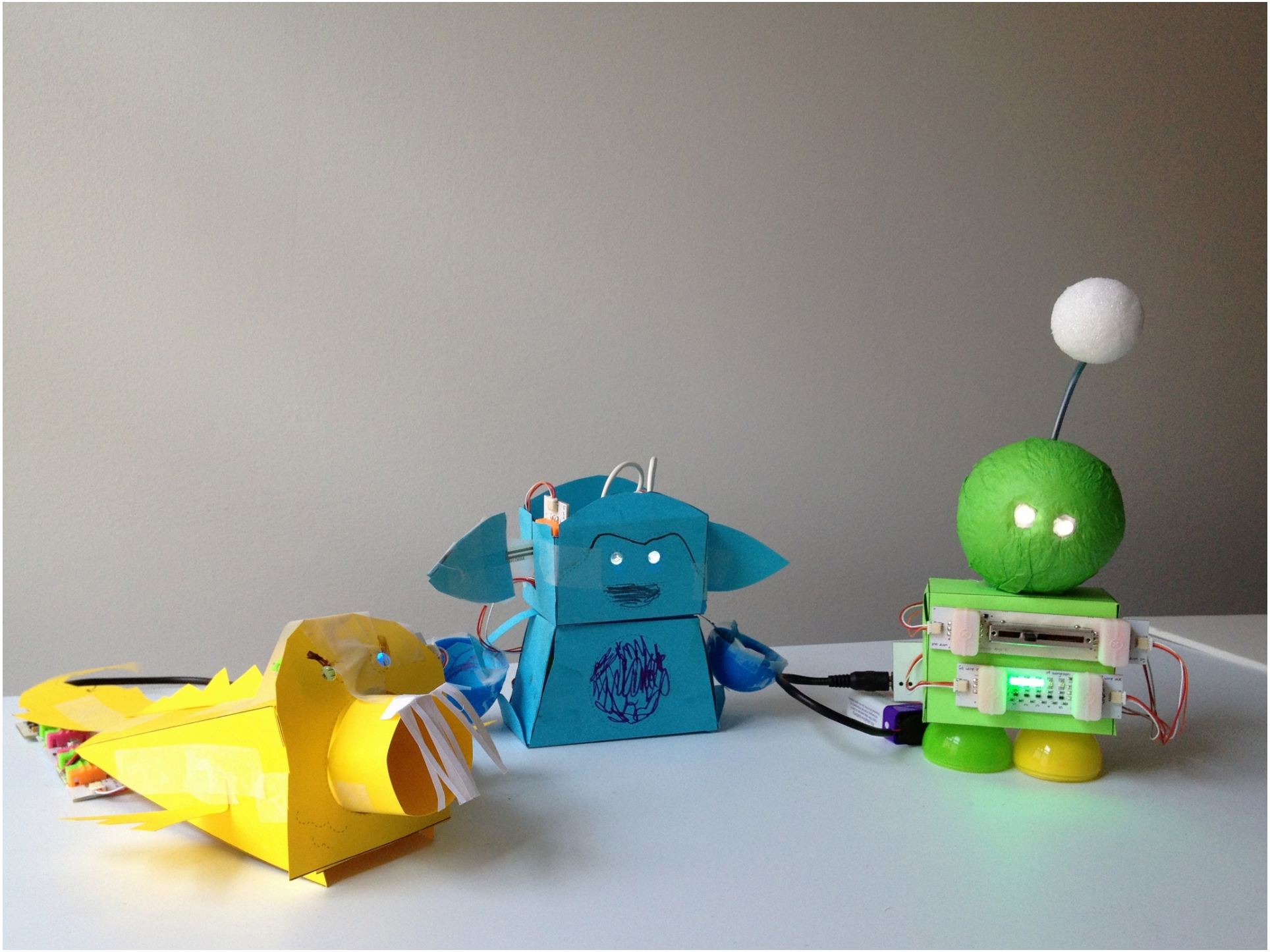


# AND gate



# Inverter





## ttlebitsProjects

ee what the littleBits crew is coming up ith.

## featuredProjects

The project hall of fame, curated by the littleBits team.

## communityProjects

See what other bitSters are making.

### ttlePiggy Bank — More info

reatedBy **littleBits**

nteractive piggy bank that LIGHTS up when o...

bitsUsed

### Dice randomizer — More info

createdBy **federicolatini**

Using just Power + Wire + Button + Vibration ...

**4** bitsUsed

### Quake Machine — More info

createdBy **littleBits**

This project will help you learn the basics o...

**5** bitsUsed

### esame Street Party H... — More info

reatedBy **littleBits**

se littleBits to throw a surprise party for ...

**0** bitsUsed

### World Lift — More info

createdBy **Hayes**

A cooperative game that requires 2 people to ...

**8** bitsUsed

### The Beautiful Game — More info

createdBy **Rebecca B**

An electronic foosball game. This project was...

**16** bitsUsed

### ghtWheels — More

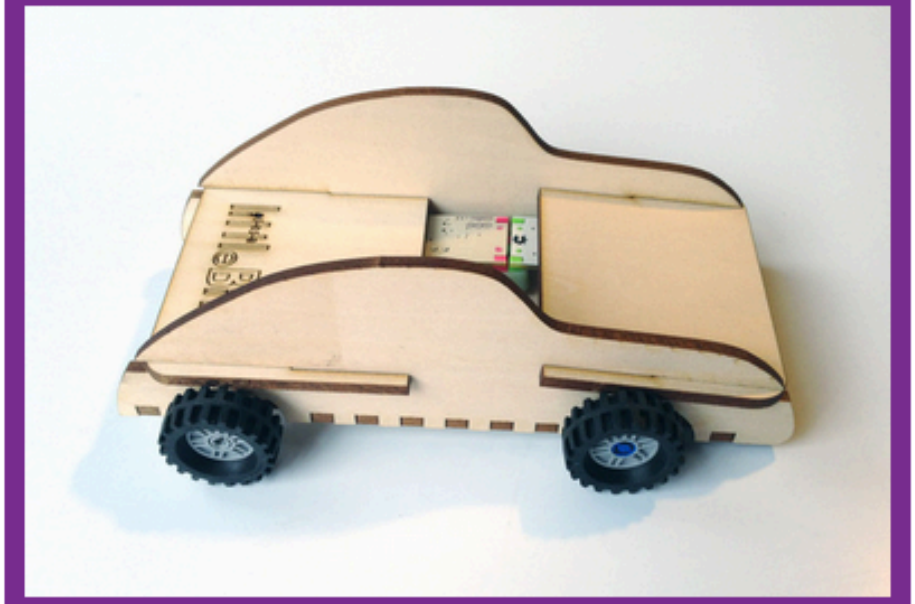
### Magic 8 Ball — More

### Snacky Snacky Hippo — More

# lightWheels Teacher's Guide

Time: 1 hour

Teaches physics concepts of force, speed, and mass. For Ages 8-12.



## Steps

**1 Weigh in**

Take your littleBits car and weigh it on the scale. Note the weight in kilo-grams.

**View project**

lightWheels

**2 Length**

Note the length of the ramp in meters

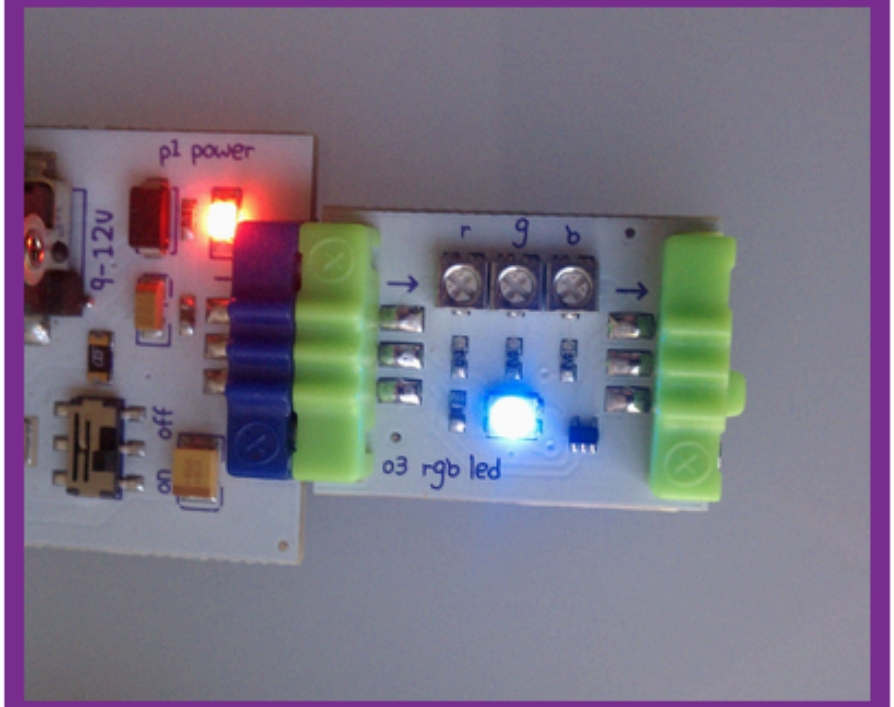
**3 Roll it!**

Place the ramp flat on the floor. Time how long it takes the car to go across the ramp.

# Light Mixing

Time: 1 hour

This lesson plan will give students an opportunity to explore how light mixes together.



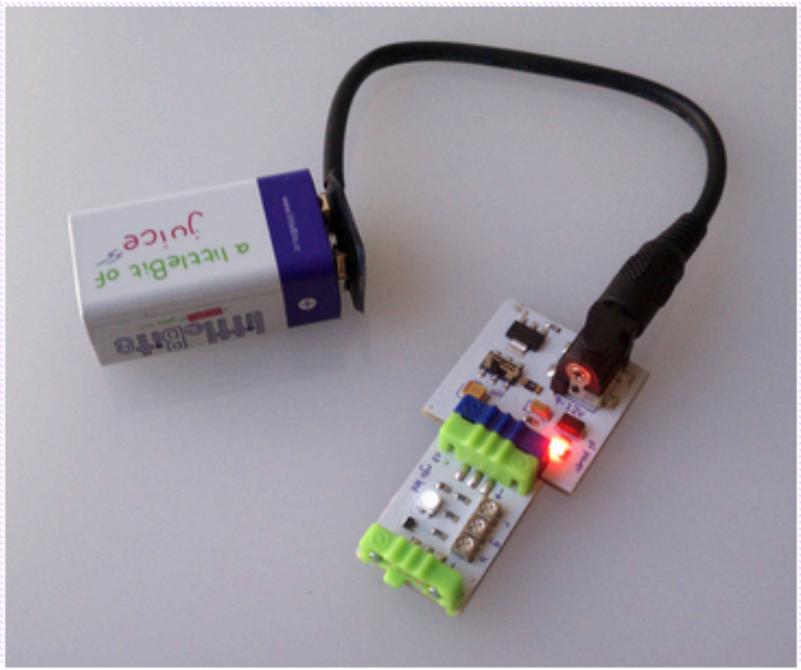

## Steps

### 1 Take out your littleBits

Take out the following parts from your littleBits starter kit: battery, battery connector, blue power bit, green RGB led bit.

### 2 Snap them together!

Put the bits together in the same order as above, so they your completed circuit looks something like the picture



# littleBits.cc/dreamBits

http://littleBits.cc/dreamBits

**Infrared emitter and detector bits. can interface with TV remotes and TVs**

... was dreamed by Mark on April 10, 2012

**RFID littleBit**

... was dreamed by Dave on April 9, 2012

**what about a hydraulic cylinder/motor**

... was dreamed by Your Name on April 9, 2012

**How about a Photovoltaic power bit?**

... was dreamed by Grant-daddy on April 7, 2012

**Photo relay alarm i.e. beam is broken sound alarm. solar powered?**

... was dreamed by Daniel on April 6, 2012

**pulse counter bit**

... was dreamed by Ronald on April 6, 2012

**A wifi-bit that call a URL on activation OR a bit that send a signal to the computer to do what ever**

... was dreamed by Max Ziebell on April 5, 2012

Thank you!

Ayah Bdeir
@ayahbdeir

www.littleBits.cc