



### GSAP Learning Resources Laboratory Portal

A Set of educational resources to enhance teaching and learning =

Rachel Initiative + Primary & secondary Web Sites & Materials + Additional Related Materials

### GSAP Learning Resources Lab Portal

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**RACHEL**

- Wikipedia for Schools
- Khan Academy
- Health & Medicine
  - Medline Plus Medical Encyclopedia
  - Hesperian Health Guides
  - Healthcare & Medicine Videos
- K-12 Textbooks
- World Literature Books
- OLPC Educational Materials
- UNESCO's International Institute for Capacity Building in Africa
- Math Expression
- Power Typing
- Music Theory
- School WASH Resources
- MIT Scratch

- School WASH Resources
- Rural School Library
- K-3 Reading (PBS Learning Media Resources)
- Primary & Junior High School Education Sites
- Learning Resources IT Lab in a Box instructions
- ....Much more

### Primary Education Sites

### Junior High School Sites

### GSAP Additional Resources

### Tying resources to curriculum



### Science Lab in a Box – The additional items

Items	Cost
Multimeter	\$ 5
LiPo Battery Pack	\$ 38
60x Microscope	\$ 5
Stapler	\$ 3
Components: Capacitors, Thermistors, USB to Alligator Cable, Alligator-terminated cables, Magnets	\$ 15
Supplies: #2 Pencil, Straw, Staples, Tape, Glue, Scrap File Folders, Wire, Foil	\$ 5
<b>Total</b>	<b>\$ 71</b>



### Let's have a closer look at the science possibilities.

- Android accelerometer to study motion
- Collisions
- Final Ant Lab
- Final Fabrics
- Final Grass Comparison
- Final Leaf Experiment
- Final Population Studies 2
- Final Population Studies
- Fingerprint Discovery Final
- Motion Experiment - Building a CD Cart
- Motion Experiment - Using Distance to find Velocity and Acceleration
- chess lab
- Science Lab in a Box Workshop
- Things Big-Small-Hear-Far-Fast-Slow

EPS 105 - Android Physics Workshop

An activity for JHS students learning physics  
**(Things) Big & Small - Hear & Far - Fast & Slow**

Students use to measure things. It's the way they learn about nature and discover to test one idea. Sometimes that experimenters are high education and sometimes they are only people. The workshop will require a range of cost, distance and speed to learn a lot about our world. You'll be in a workshop with some of the best and the best will have about 100 minutes.

Finals:

- Finals: Ant Identification Experiment
- Finals: Water, Air, Chlorophyll, Stomach
- Finals: Paper 100
- Finals: Biology 100 System
- Finals: Physical Science
- Finals: Chess
- Finals: Leaf
- Finals: Population
- Finals: DNA
- Finals: 100

Finals: Motion Experiment (Using Acceleration to find Velocity and Distance)

Finals: Key Words: Distance, Velocity, Acceleration, Motion Paper 100

Finals: Biology Lab System

Finals: Paper

Finals: Chess

Finals: Population

Finals: DNA

Finals: 100

Materials:

- Tablet (iPhone, Kindle or android phone)
- CD for the wheel and axle

### Analysis of fabric weaves



<sup>1</sup> Cripps, David. "NetComposites." Woven Fabrics. Gruit, n.d. Web. 04 Feb. 2015. <http://www.netcomposites.com/guide/woven-fabrics/40>.

<sup>2</sup> Woven Fabrics. N.d. Application of Textiles in Marine Products. 6th ed. Vol. 2. N.p.: Scientific and Academic, 2012. 110-19. Scientific and Academic Publishing. Web. 4 Feb. 2015.



### Homemade Cart

#### Rolling down an inclined table

#### Tablet accelerometer data along direction of motion

Time	a	-a	y	-y
7.044	-0.05	0.05	0	0
7.048	-0.05	0.05	0.0001	1E-07
7.048	-0.05	0.05	0.0002	4E-07
7.049	-0.05	0.05	0.0003	5.2E-07
7.051	-0.06	0.06	0.0006	1.34E-06
7.072	-0.05	0.05	0.0015	2.08E-06
7.117	-0.05	0.05	0.0040	0.000025
7.14	-0.04	0.04	0.0049	0.00024
7.193	-0.04	0.04	0.0066	0.00034
7.185	-0.05	0.05	0.0064	0.000004
7.203	-0.05	0.05	0.0074	0.000176
7.274	-0.05	0.05	0.0139	0.00012
7.290	-0.05	0.05	0.0148	0.000382
7.303	-0.05	0.05	0.0154	0.00044
7.322	-0.05	0.05	0.0179	0.000824
7.38	-0.05	0.05	0.0189	0.000868
7.383	-0.05	0.05	0.0188	0.000859
7.380	-0.04	0.04	0.0188	0.000209

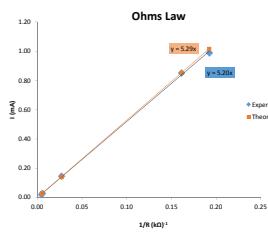
acceleration (average = 0.049 m/s<sup>2</sup>)

$a$

$a/2$

$y = 0.0491x - 0.3455$

$y = 0.0246x^2 - 0.3468x + 1.2207$



### Lab in a Box



Teacher training - the critical piece

Student engagement and learning - the ultimate goal



