



An Introduction to Technology for Junior High Aged Girls
Activities & Games



Table of Contents

GGT Timeline for the Day (sample)	page 1
GGT Registration Form	page 2
Student Pre-Survey	page 3
Power Your Village lab description/instructions	page 4
Raspberry Pi lab description/instructions	page 6
Parent Evaluation	page 9
Student Evaluation	page 11

GIRLS GO TECH - Sample Timeline

- 8:00** Syre Hall to unload car, meet Trish
- 8:00** Start coffee, set up condiments in 107-108
(Two cups of coffee to 40 cups of water)
- 8:10** Lori Get sandwich boards and put in front of Syre Hall, plus sidewalks
- 8:15** Prepare Registration Table:
Registration Sheet, balloons, T-shirts, PHOTO RELEASE, goodie bags
- 8:45** Begin Check-in
- 9:00** Greet guests and hand out pre-test in Syre Hall 107-108
- 9:15** Introductions and Welcome
- 9:30** Workshop 1 Rasp Pi & Alternative energy
- 9:45** Begin set-up for lunch
- 10:15** Put out Scavenger Hunt clues on campus
- 11:00** Go get pizza
- 11:05** Scavenger Hunt Rules to Group Syre Hall 107 - 108
Lunch as soon as Scavenger Hunt ends - around noon
Continue Lunch while Wendy Lawrence speaks
- 12:30** Workshop 2 Rasp Pi & Alt energy
- 12:35** Clean up lunch spread and put out cookies for 2pm session.
Keep milk in cooler until then.
- 1:00** Retrieve Scavenger Hunt clues across campus
- 1:00** Set-up video for Sims Man in 107-108
Split Sessions:
- 2:05** Parents go to Dave Knapp session in Syre Hall 105
- 2:00** Students go to Syre Hall 107 for Sims Man Video
+ Post Evaluations + Cookies & milk
- 2:50** Conclusion as everyone rejoins in Syre Hall 107-108
Parents may also have milk & cookies
- 3:00** Clean-up with staff / helpers

During workshops:

Take lots of photographs

[School Name]



GIRLS GO TECH WORKSHOP

- Join us [day, date] for a fun-filled day of technology!
- Raspberry Pi computers, energy sources and a campus scavenger hunt.
- Meet [name / title]!
- You will also learn what [school name] offers in programs directing you toward a future career in technology.

Where? _____

When? _____

Time: _____

Who? Junior High Girls PLUS a Parent or Guardian

Cost: \$10 (includes 2 lunches and a t-shirt)

Questions? [contact]

Return this form with payment to: [name, address]



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Student Name:

Age:

T-shirt size (adult sizes) S M L XL

Your School:

Parent/Guardian's Name:

Email:

Phone #

Mailing Address

(include city & zip code)

Special Dietary Needs? Please list, if any:

A \$10 registration check is enclosed. Make checks payable to [name]

Activity 1 – Power Your Village

In this activity, you will do the work of a battery. That is, you will power a circuit using a hand-held generator.

Step 1:

Arrange a simple circuit using the generator and a bulb in its socket as shown in *figure 1*. Gently crank the handle to make the bulb light up. Take care not to crank the generator too quickly and don't give it any sudden jerks or bursts of motion.

- When the bulb is lit, how can you make it brighter?



Figure 1

Step 2:

While cranking the generator and lighting the bulb, have your partner unscrew the bulb from the socket as shown in *figure 2*.

- What happens to the cranking effort when the bulb is unscrewed from its socket?

When the bulb is removed from the socket, the resulting circuit is called an **open circuit** and the electrical resistance in this kind of circuit is [**high**] [**low**]. Circle one based on your cranking effort.

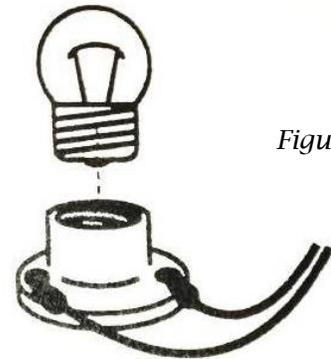


Figure 2

Step 3:

Remove the generator leads from the bulb terminals and connect them to each other as shown in *figure 3*.

- What happens to the cranking effort when the generator leads are connected to each other?

When the generator leads are connected directly to each other, the resulting circuit is a **short circuit** and the electrical resistance in this kind of circuit is [**very high**] [**very low**]. Circle one based on your cranking effort.

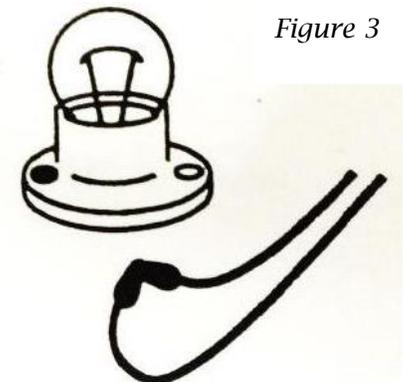


Figure 3

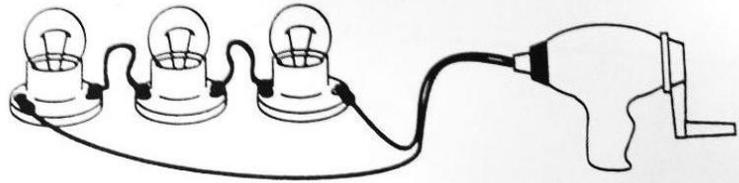
Step 4:

Connect three bulbs in series as shown in *figure 4*. Gently crank the handle to make the bulbs light up. Get a sense of how much effort is needed to power the circuit.

While cranking the generator and lighting the bulbs, have your partner unscrew one of the bulbs from the socket.

- ❑ What happened to the other bulbs when you unscrewed one bulb? Why do you think this happened?

Figure 4



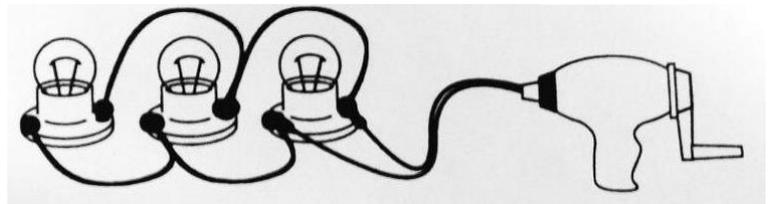
Step 5:

Connect three bulbs in **parallel** as shown in *figure 5*. Gently crank the handle to make the bulbs light up. Get a sense of how much effort is needed to power the circuit.

While cranking the generator and lighting the bulbs, have your partner unscrew one of the bulbs from the socket.

- ❑ What happened to the other bulbs when you unscrewed one bulb? Why do you think this happened?

Figure 5



Summing Up:

- ❑ Which circuit is harder to power, the series circuit or the parallel circuit? Why do you think this is?
- ❑ If you had a choice to wire the lights in your bedroom, which circuit would you choose? Why?

Raspberry Pi

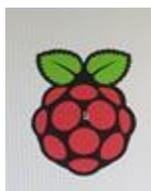
Used in this lab:

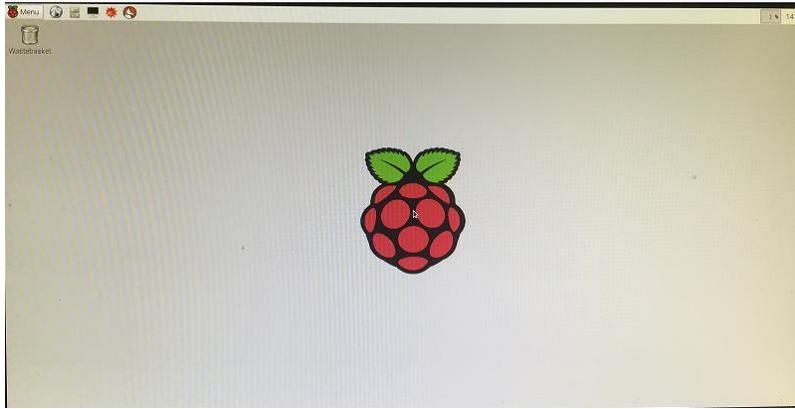
- **Raspberry Pi**
 - A credit card-sized computer.
- **SD Card**
 - 8GB class 4 SD card, preinstalled with NOOBS. If the card does not have NOOBS preinstalled you can download it from <http://www.raspberrypi.org/downloads/>
- **Display and connectivity cables**
 - Any HDMI/DVI monitor or TV should work with a Pi. For the easiest connection, use one with an HDMI input. If the monitor does not have an HDMI connection an adapter will be necessary. (Example: HDMI to VGA adapter.)
 - HDMI cable to connect to a HDMI ready monitor or TV.
 - Use a standard Ethernet cable for internet access. Optional: You can purchase and use a usb adapter.
- **Keyboard and mouse**
 - Any standard USB keyboard and mouse will work with a Raspberry Pi.
- **Raspberry Pi Case**
- **Power supply**
 - Use a 5V micro USB power supply to power a Raspberry Pi



Helpful but not necessary:

- **Internet connection**
 - To update or download software to the Raspberry Pi, connect your Raspberry Pi to the internet either via an ethernet cable or a wifi adapter.
- **Headphones**
 - Headphones or earphones with a 3.5mm jack.





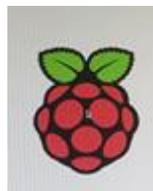
Setting up a Raspberry Pi

Review the list of equipment to make sure that you have all of the items before you begin. Then follow these instructions:

1. Insert the SD card into the SD card slot on the Raspberry Pi, the card will only fit one way, do not force.
2. Plug in the USB keyboard and Mouse into the USB slots on the Raspberry Pi.
3. Connect the HDMI cable from the Raspberry Pi to the monitor.
4. Turn on the monitor.
5. If you are going to connect the Raspberry Pi to the internet, plug in an ethernet cable into the ethernet port next to the USB ports, otherwise skip this step.
6. Plug in the micro usb power supply. This will turn on and boot your Raspberry Pi.
7. If this is the first time your Raspberry Pi and NOOBS SD card have been used, then you will have to select an operating system and configure it.

Installing Raspbian using NOOBS

1. After booting, a window will appear that will list different operating systems that you can install using NOOBS. For this lab we are using **Raspbian** - click the box next to Raspbian and click on **Install**.
2. The operating system will run through its installation process. (This can take several minutes.)
3. When the install is complete. The Raspberry Pi configuration menu (raspi-config) will load. Set the time and date. Exit by using Tab on the keyboard and move to Finish.



Logging into your Raspberry Pi

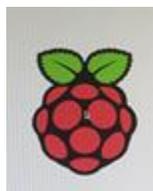
1. Once your Raspberry Pi has completed the boot process, a login prompt will appear. The default login for Raspbian is username **pi** with the password **raspberry**. Be aware that you will not see any writing appear when you type the password. This is a security feature in Linux.
2. After you have successfully logged in, you will see the command line prompt **pi@raspberrypi~\$**
3. To load the graphical user interface, type **startx** and press **Enter** on your keyboard.

Definitions

1. Raspberry Pi - A credit-card sized single-board computer. The Raspberry Pi plugs into a monitor or TV and uses a standard keyboard and mouse. The Raspberry Pi was developed by the Raspberry Pi Foundation.
2. NOOBS - New Out Of Box Software: NOOBS is a utility designed to make installing operating systems on the Raspberry Pi simpler for a new user.
3. HDMI cable - High-Definition Multimedia Interface - a cable used as an audio and video interface.
4. SD Card - A Secure Digital (SD) card is a memory card used in portable devices such as digital cameras, phones, tablets, and the Raspberry Pi.
5. Graphical User Interface (GUI) - A graphical user interface allows a user to interact with an electronic device using graphical indicators like icons, windows, or symbols.

Additional Resources

1. Raspberry Pi Foundation - www.raspberrypi.org
2. Free resources from the Raspberry Pi Foundation - www.raspberrypi.org/resources
3. Github Raspberry Pi Learning Resources - github.com/raspberrypilearning
4. Instructables Pi Projects - www.instructables.com/id/Raspberry-Pi-Projects



Girls Go Tech – Parent Evaluation

[date]

<i>As a result of attending today's event, do you have a better understanding of...</i>	(circle one for each question)		
what courses your child needs to take to get into college?	<i>No</i>	<i>Maybe</i>	<i>Yes</i>
the different types of colleges your child can apply to (community college, 4-year university, public, private)?	<i>No</i>	<i>Maybe</i>	<i>Yes</i>
how your child's grades in middle and high school affect his/her ability to get into college?	<i>No</i>	<i>Maybe</i>	<i>Yes</i>
what your child needs to do to apply to college?	<i>No</i>	<i>Maybe</i>	<i>Yes</i>
the types of funding that are available to your child to help pay for college (student loans, grants, scholarships)?	<i>No</i>	<i>Maybe</i>	<i>Yes</i>
how to apply for FAFSA (Free Application for Federal Student Aid)?	<i>No</i>	<i>Maybe</i>	<i>Yes</i>
how to apply for scholarships?	<i>No</i>	<i>Maybe</i>	<i>Yes</i>
how information is protected when applying for financial aid?	<i>No</i>	<i>Maybe</i>	<i>Yes</i>
how college may help prepare your child for a good job?	<i>No</i>	<i>Maybe</i>	<i>Yes</i>
how college may enhance your child's personal growth?	<i>No</i>	<i>Maybe</i>	<i>Yes</i>
how college may help your child contribute to his/her community?	<i>No</i>	<i>Maybe</i>	<i>Yes</i>
<i>As a result of attending today's event, do you feel more capable of accessing resources to help your child apply for college?</i>	<i>No</i>	<i>Maybe</i>	<i>Yes</i>
<i>What was your favorite part about today's workshop? Why?</i>			

<i>Would you be interested in any similar events for your child (or other children) that Whatcom Community College would offer?</i>			
	<i>No</i>	<i>Maybe</i>	<i>Yes</i>
<i>If 'Yes', what programs of study would you be interested in?</i>			
<i>Have you attended any type of college?</i>			
	<i>No</i>	<i>Some</i>	<i>Degree/ Certificate</i>
<i>How did you hear about today's workshop?</i>			
<i>May Whatcom Community College contact you in the future about Technology-related or other education and career paths?</i>			
	<i>No</i>	<i>Yes</i>	
<i>Optional:</i>	Name:		
	Phone:		
	Email:		

Thank you for joining us today!

Girls Go Tech – Student Evaluation

[date]

<i>As a result of attending today's event, do you have a better understanding of...</i>			
	(circle one for each question)		
what courses you need to take to get into college?	<i>No</i>	<i>Maybe</i>	<i>Yes</i>
how your grades in middle and high school affect your ability to get into college?	<i>No</i>	<i>Maybe</i>	<i>Yes</i>
how college may help prepare you for a good job?	<i>No</i>	<i>Maybe</i>	<i>Yes</i>
how college may enhance your personal growth?	<i>No</i>	<i>Maybe</i>	<i>Yes</i>
how college may help you contribute to your community?	<i>No</i>	<i>Maybe</i>	<i>Yes</i>
<i>As a result of attending today's event, do you have a more positive attitude about going to college?</i>			
	<i>No</i>	<i>Maybe</i>	<i>Yes</i>
<i>List three things you learned about TECHNOLOGY from today's workshop:</i>			
1)			
2)			
3)			
<i>Did your level of interest in TECHNOLOGY career choices INCREASE after attending today's workshop?</i>			
	<i>No</i>	<i>Maybe</i>	<i>Yes</i>
<i>Did your level of interest in ATTENDING COLLEGE INCREASE after attending today's workshop?</i>			
	<i>No</i>	<i>Maybe</i>	<i>Yes</i>
<i>What was your favorite part about today's workshop? Why?</i>			

<i>On a scale of 1-10, what do you think of the Whatcom Community College campus?</i>										
Circle one:	1	2	3	4	5	6	7	8	9	10
		dull		so-so		nice		rad		sweet!
<i>Have any of your parents/guardians attended college?</i>										
No <i>I don't know</i> Yes										
<i>Do you have any additional comments about today's workshop? If so, please share:</i>										
<i>How did you hear about today's workshop?</i>										
<i>May Whatcom Community College contact you in the future about your continued interest in Technology-related or other education and career paths?</i>										
No Yes										
<i>If 'Yes', please provide the following information:</i>										
Parent / Guardian (by signing, you authorize Whatcom Community College to contact your student about Technology-related or other education career paths)	Signature:									
	Name (Print):									
Student contact information	Name:									
	Phone:									
	Email:									

Thank you for joining us today!