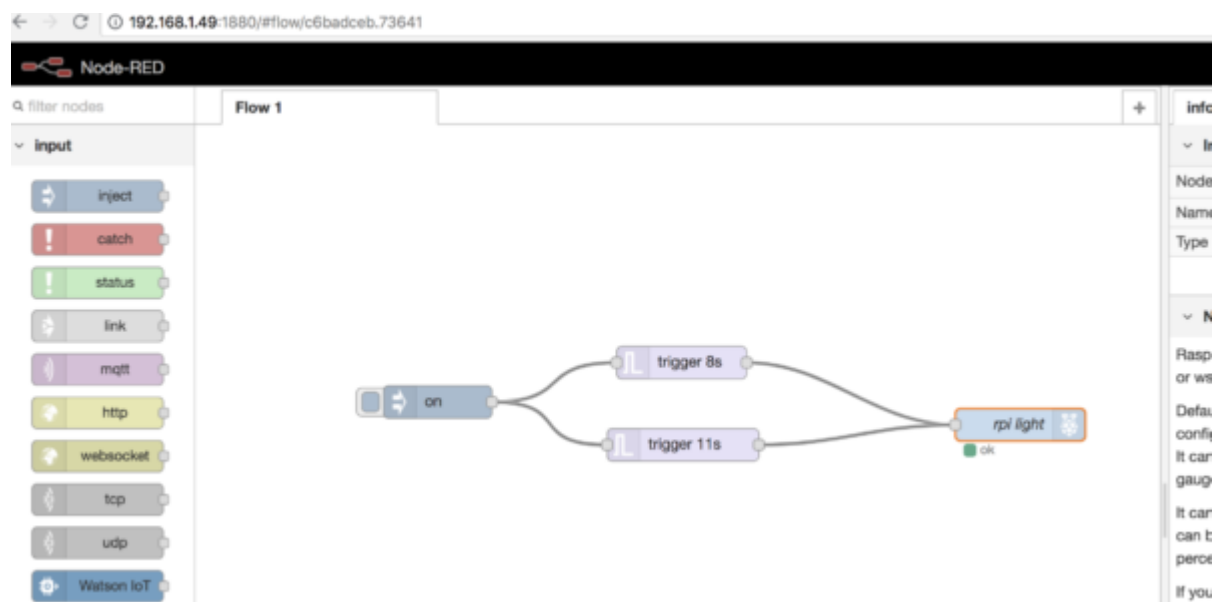# Setting up Node Red for a Selfie Station

Here is the Node Red setup for a Selfie Station where a button is pushed, a LED light ring turns on, a photo is taken, which is then emailed to a dedicated email. Its very similar to this project that was done by teams of students at UH Hilo.

Step 1. Set up the light ring so that it turns on and off after a message is sent:

In this case — we wanted the light ring to turn on with the color red, and then turn to a different color white and then turn off. To achieve this we used a trigger node. The first one was set to 8 seconds.

Edit trigger node

Delete | Cancel | **Done**

⌄ node properties

Send | ▾ ᵃz red

then | wait for ⬍

| 8 | Seconds ⬍

☐ extend delay if new message arrives

then send | ▾ ᵃz white

Reset the trigger if: • msg.reset is set

• msg.payload equals | off

Handling | all messages ⬍

🏷 Name | Name

The second trigger node was almost identical, except that the "send" command was white, and the "then send" command was black.

Step 2. Connect the camera node with a delay: In this case we chose 9 seconds because it was in the middle of the time when the light ring is white. When the signal is sent — the light rings should go off and then the camera light should come on.
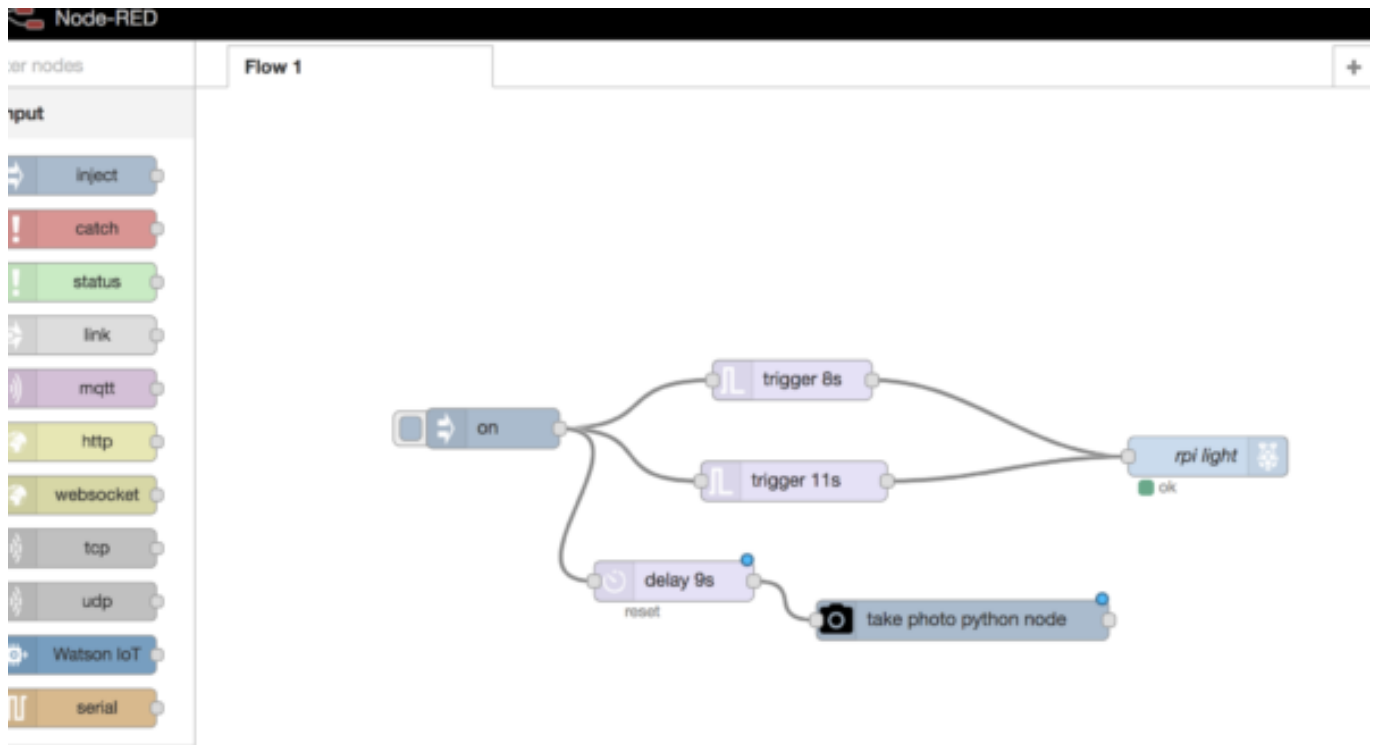
You will want double click on the camera node and change the file mode from generate to buffermode. You can also change the properties of the photo here.

Edit camerapi-takephoto node

Delete   Cancel   Done

∨ **node properties**

🖼 File Mode   Buffermode   ⬍

📷   320x240   ⬍

📷 Rotation   0   ⬍

↻ Flip Picture   No   ⬍   No   ⬍

📷 Brightness   50

📷 Contrast   0

📷 Sharpness   0

📷 Image Effect   none   ⬍

🏷 Name   Take photo node

Step 3. Check that you ended up getting your photo by looking in the pictures photo on your pi. Grab the send email node from the sidebar.
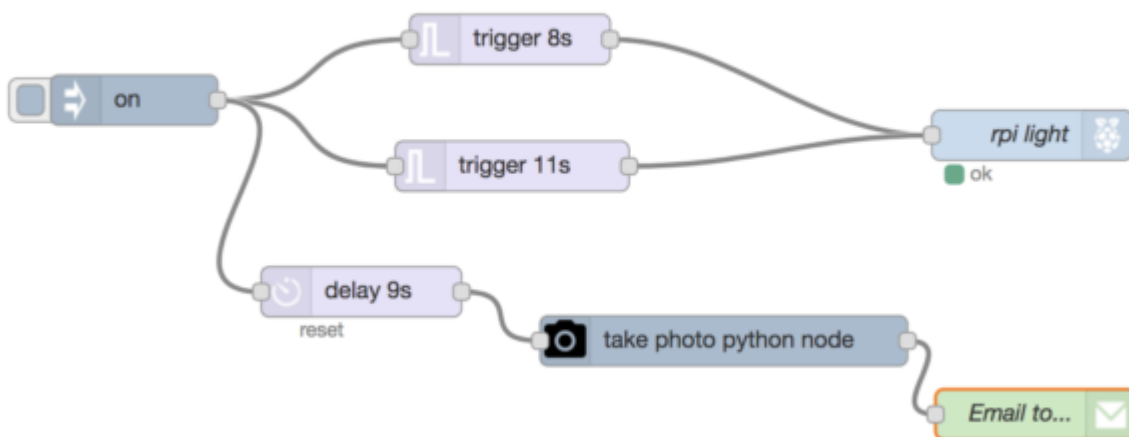
∨ **social**

✉ email

🐦 twitter

email ✉

🐦 twitter

email
e-mail

Sends the `msg.payload` as an email, with a subject of `msg.topic`.

Move the email node after the photo node.

You will want to have a special gmail that you have set up to receive emails from node red. We set up one that was named especially for the project. Once you are logged in to the account you will need to follow the [link](#) for getting emails from "less secure sources." The screen you will get to after being logged into the gmail account looks like this: You will want to toggle the button to allow less secure apps.
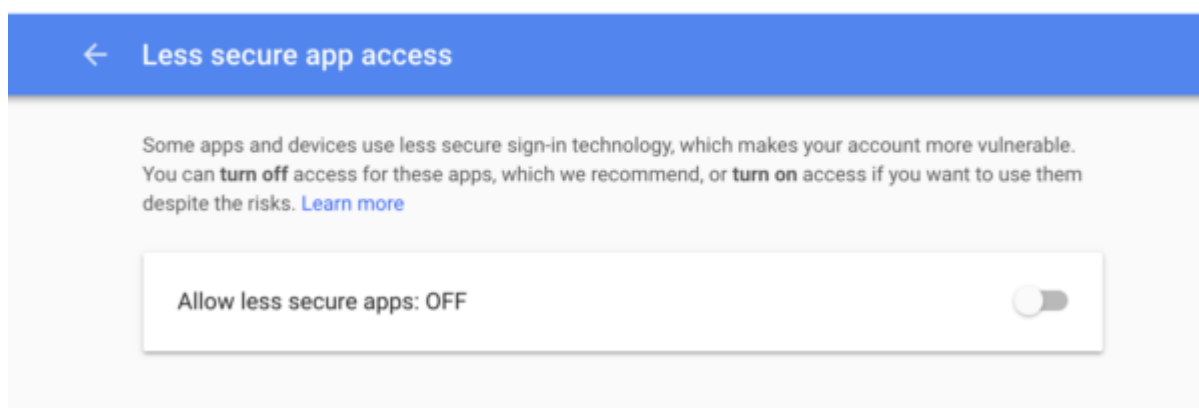
Open the properties tab for the email node – enter the new email you just created and made less secure into the who "To" field. Enter the email that you want the data to be sent from into the "Userid" field.   This does not need to be a "less secure" email. It could even be an email with the specific name of the pi where it will be placed.

Test it out and check your email to see that it worked.
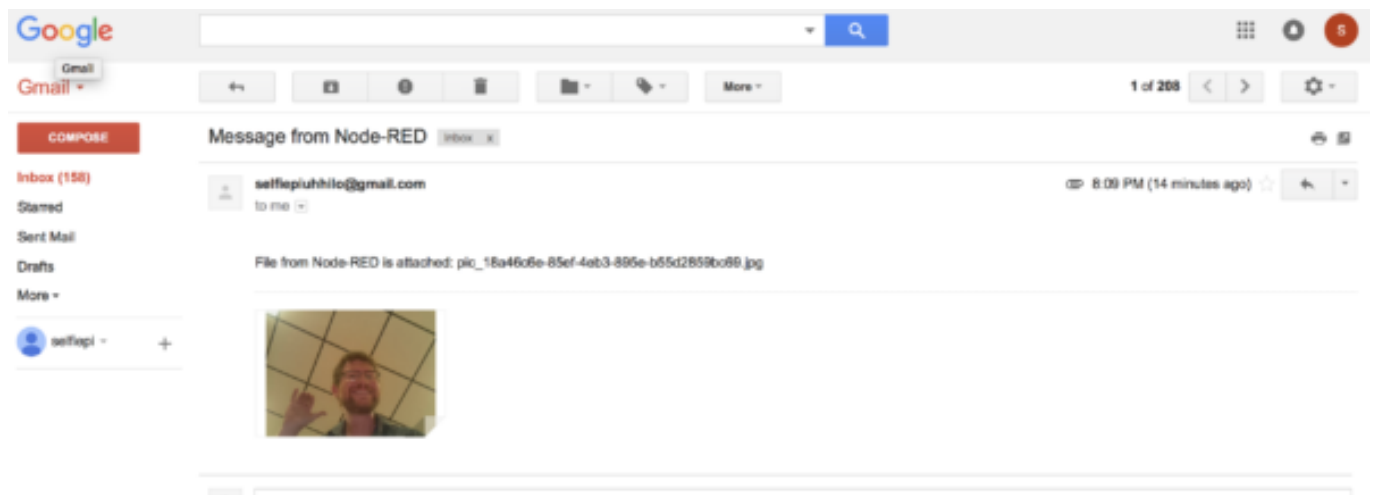
Step 4: Switch the input to a button (or any other trigger device). We used a button and connected one side to 5v power, and the other side to GPIO12. Set the resistor to "pulldown" and check the box for read initial state of pin on deploy.
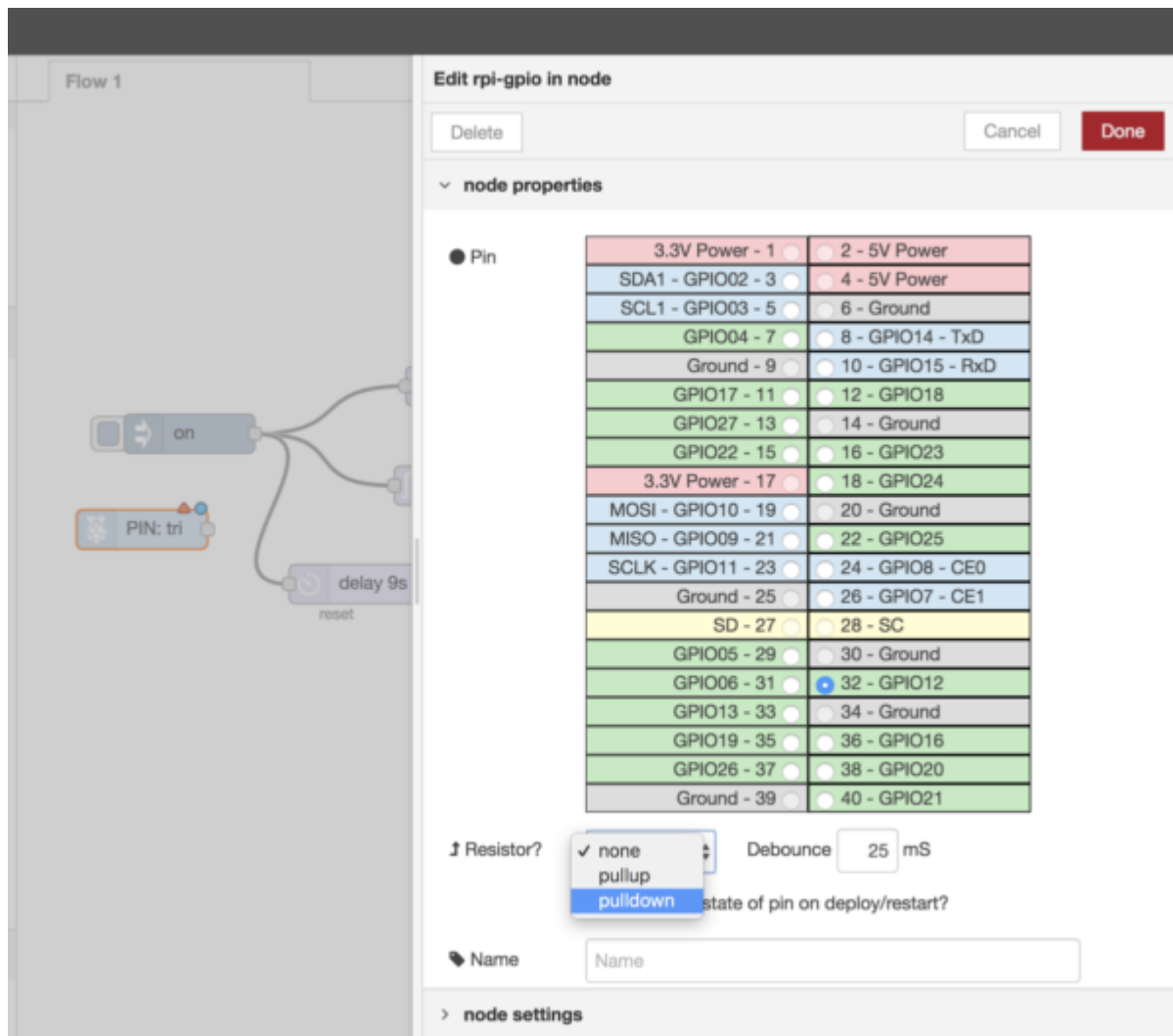
When its working a push of the button should change the "0" to a "1" right below the pin node. When the button is released it should change back. Connect up the nodes and push a button to take a photo and send it!
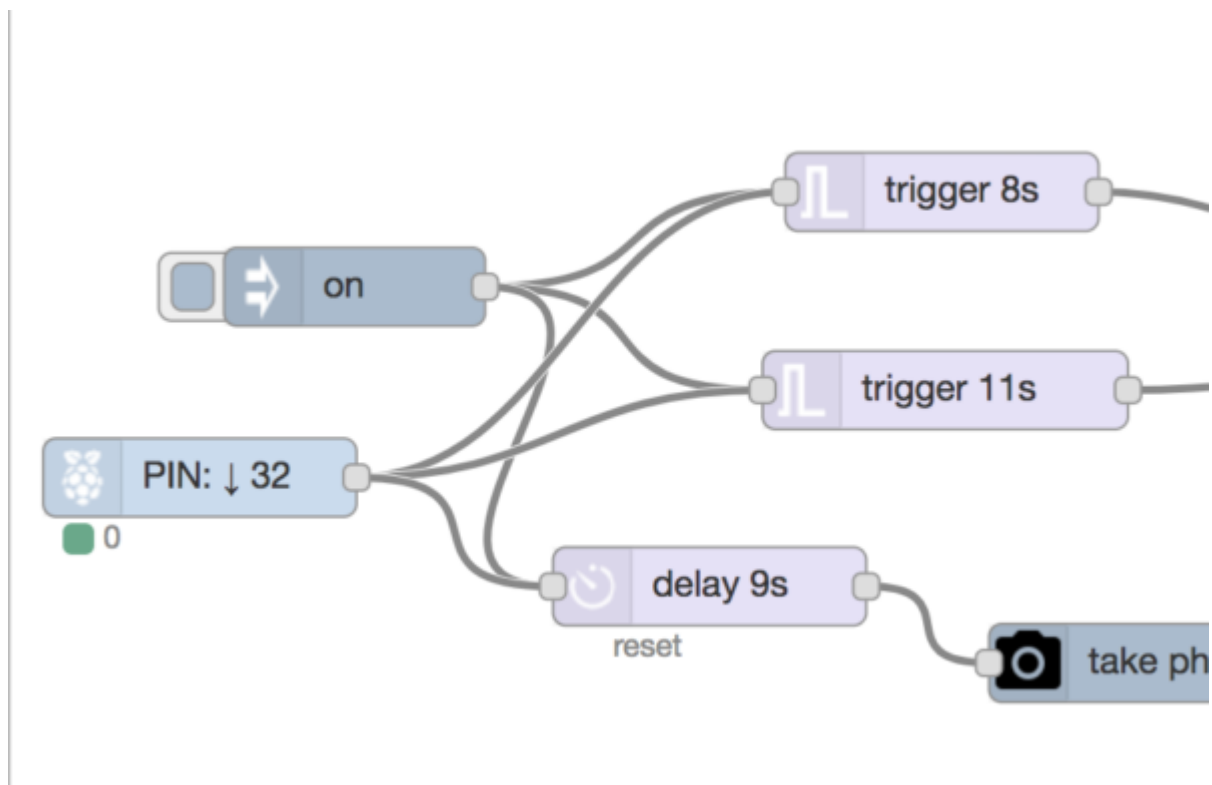
The button can be swapped out for a different type of sensor such as the PIR or sonic motion sensor, just be careful that the sensitivity isn't set too high, or else you could find yourself with a lot of emails!

If you actually want to set this pi up somewhere (like we did in this project) you will want to configure it to auto start Node Red when the pi is powered on. As long as the pi is in an environment where it has permission to log into the wifi, it should work.

Selfie station example project

Here is an example of an applied design thinking project done with a class of 17 students at the University of Hawaii Hilo Upward Bound T3 alliance program during the summer of 2018. Node Red and physical Raspberry Pi setup instructions can be found [on this post](#).
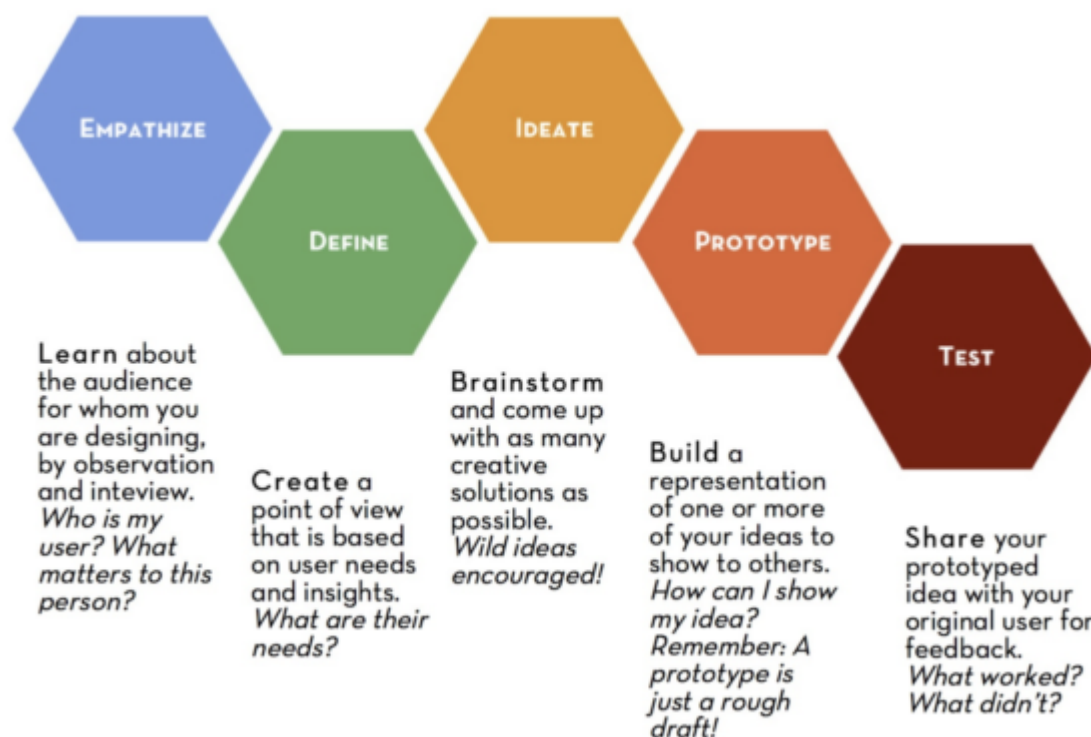
Students had mastered the skills associated with basic physical computing and Node Red. They were capable of setting up a button, an LED Ring, using a sonic sensor, a PIR sensor, and a small camera. They had been able to combine all these components using Node Red and were capable of generating emails that sent a photo.

I asked around for a person or group at the university that might be interested in a device that could take photos and have them emailed instantly.   Eventually I found the perfect potential client in Shara Mahoe, the director of new student

services.   She was planning a scavenger hunt for the new student orientation day later in the summer when 600 freshmen appear and nervously try to find their way around the large UH Hilo campus. She listened to my description of what the students in our T3alliance program were able to do and how design thinking process worked.   Once she understood what was involved, she signed up to be a client.

Shara and a colleague showed up in my classroom the next day and I interviewed her in front of the class. She described her day and what she hoped it would feel like to new students. She listed out 5 locations around the University that could use a selfie station and asked my students if they could find a solution that would work. I had previously broken the students up with an ice breaker activity and they now found themselves choosing one of the sites around campus to design a selfie station. As a team, they discussed what they had heard Shara speak about and filled out the first section of the [guide questions](#) associated with the "empathy" stage of the design thinking process.

We took a quick walking field trip to each location and the students finished the "define" phase, where they articulated exactly what was needed and what the constraints were, and moved into a brainstorming "ideation" phase. Students were tempted to think there was just one type of solution to the selfie station problem, but they sketched out three different ideas. When this was finished they chose a "prototype" design they wanted to build and they wrote out a [mini grant proposal](#).

Re: T,alliance Mini Grant proposal
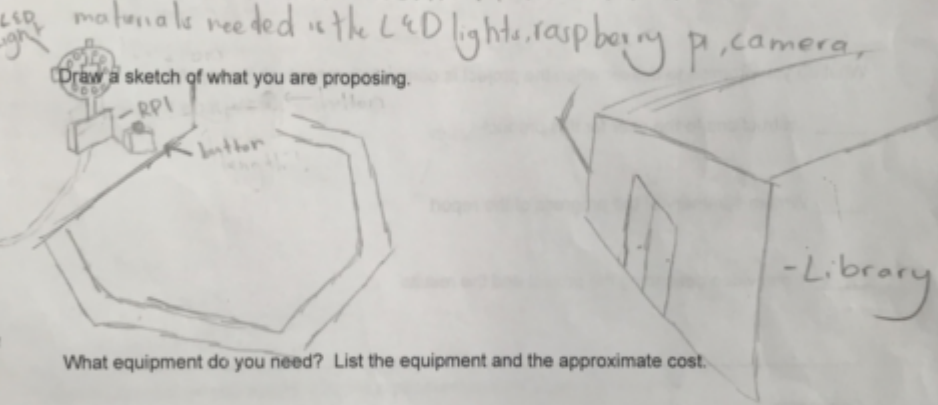To: Upward Bound Director:

Date June 21, 2018

Name of student(s) requesting funding:

Courtni Moku Lili

Description of the **problem** being addressed with this proposal.

The new students wanted a selfie station for the orientation

What is being proposed? What are you requesting money or resources to address?

We want to build a selfie station and the materials needed is the LED lights, raspberry pi, camera,

Draw a sketch of what you are proposing.

RPI

button

-Library

What equipment do you need? List the equipment and the approximate cost.

1	Description	Cost (approx)
2	Rasberry Pi w/ power cord/SD Cord	50.00
3	Double Sided Tape	2.00
4	Camera	6.00
5	LED Ring	5.00
6	Button + Cap	0.18
7	Extension Cord	3.50

Total requested $66.68

When the proposal is complete, we submitted it to the Upward Bound director for approval. We prepared ahead for this type of project with wires, and buttons and extra raspberry pi devices with cameras and power supplies. After the proposal was approved we handed out and checked off the items that had been requested on each proposal. The students got right to work building the prototype selfie stations.

We instructors restrained ourselves from helping too much and let the teams figure out how to build their designs. When students would ask for help, we would respond with a question. Eventually, the students learned to frame their questions in such a way as to be able to google the answer. We helped in the areas where a skill had not been introduced,

such as soldering, or learning to "remote" into the pi. The
teams were responsible for building the prototype, writing the
code that controlled it, and recording and editing a short
video.

Several days later, Shara met with us to see the results. The
students walked around the campus with her demonstrating the
way their selfie stations worked and noting what things could
be improved. One team had an opportunity to radically modify
their design because it didn't take into account the safety
considerations necessary when a crowd of students would moving
past a certain area.

The students were beaming when Shara thanked the group. She
appreciated their efforts and asked them to sign their work so
that new students at the school knew who had built these
stations. Each group modified and perfected the design and
the instructions.

As part of the initial mini grant application, The teams had
been responsible for writing user instructions, making a video
about the project and writing a short report about the
progress of the project.