XO – Learning Activity:

Measurement, manipulation and reflection

Claudia Urrea, PhD. :: OLPC Learning Team :: XO Sensing, Manipulating And Reflecting

Measurement, manipulation and reflection

Children can study different phenomenons by means of design their own instruments (Resnick, Berg et al. 2000) and the data collection. They will have to think what kind of data they need to collect (utilizing sensors) and speculate to obtain significant ways to represent the results.

Measurement, manipulation and reflection

Learning objectives:

Teach the children about sensors and its applicability in their everyday life

Familiarize the children with scientific investigations when they formulate, experiment and think about their topics of interest

Teach the children to use computational tools to help them in their scientific investigations

Motivate children to build their own tools for the manipulation and representation of the data

Measurement, manipulation and reflection

Experiment with sensors:

- Know about the different types of sensors and their uses
- Use the computational tools (Scratch and Measure) to take simple measurements and reflect about the data

Learn about the elements of scientific investigation:

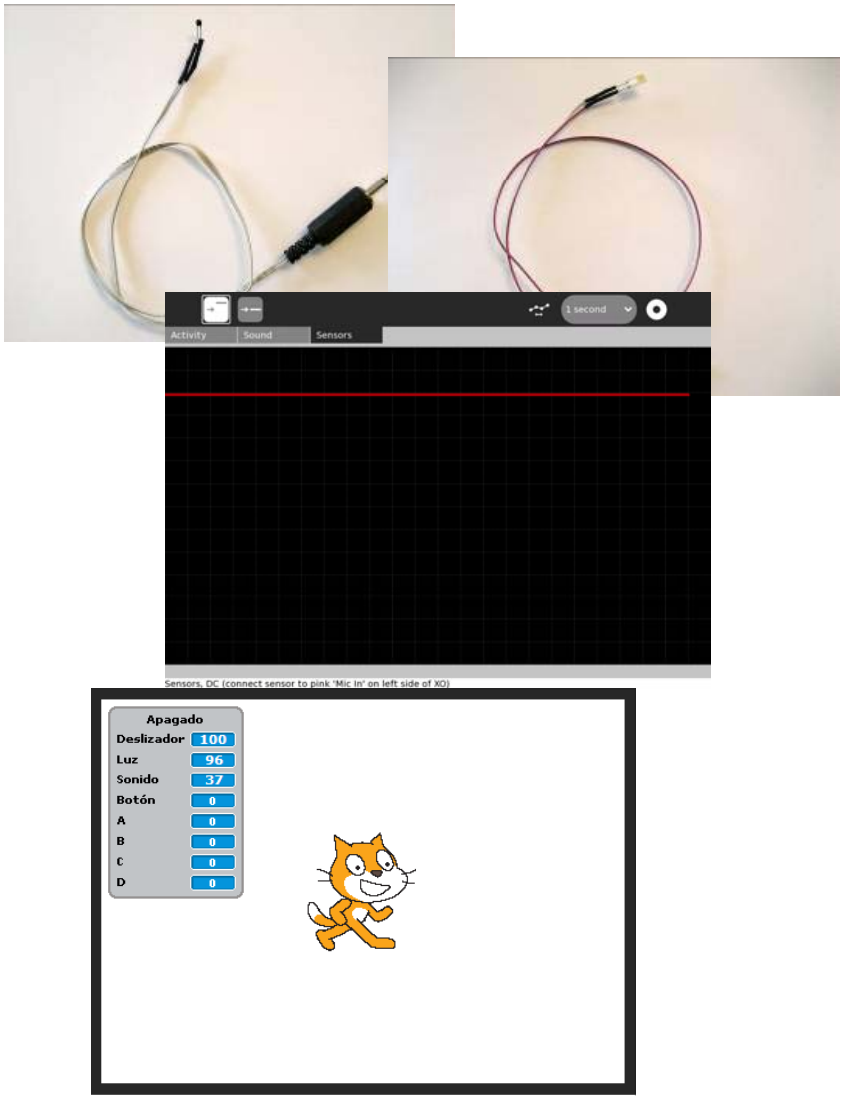
- Problem: What is the phenomenon I want to investigate? And What is my hypotesis?
- Tools: Instruments that support my investigation (sensors, applications)
- Experiment: Define the measurements, and the frequency of the scientific experiment
- Measurement and data collection
- Analysis of collected data with respect to the problem
- Reflection and final conclusion

Measurement, manipulation and reflection

Next steps:

- Find opportunities to develop scientific experiments with national or international pairs
- Make a shower of ideas for projects
- Exchange experiences of the development and results of the investigation, and new ideas for future experiments

Exercise: What is happening with my plant?



Prepare:

- Organize working groups to investigate the conditions in which a plant growths and determine which ones are more benefitial.
- Allow the sudents to experiment with different sensors (microphone port).
- Use tools such as “Measure” or Scratch to see changes and values of the sensors.

Exercise: What is happening with my plant?

Design the experiment:

- Each person of the group must select one of the sensors to be used in the experiment (humidity in the air, temperature, moisture of the soil and light)
- Determine the time of the experiment and the frequency to record the data
- Select the tool to collect the data and take measurements
- Analize the results

Exercise: What is happening with my plant?

Use computational tools:

- Use Scratch for the representation and interpretation of the data.
- You can also use Socialcalc to graphic the sensor's data. With activities like Scratch and Measure, you can record the data in a text file that allows this exchange.
- Reflect and make conclusions about the experiment.

Next steps:

- Exchange experiences with a group of student located in different environmental conditions (internationals or locals)
- Build a program in Scratch to convert the values of the sensor to real temperature values, moisture, etc.
- Make comparisons and determine the conclusions