# OLPC for Middle School After-School Programs

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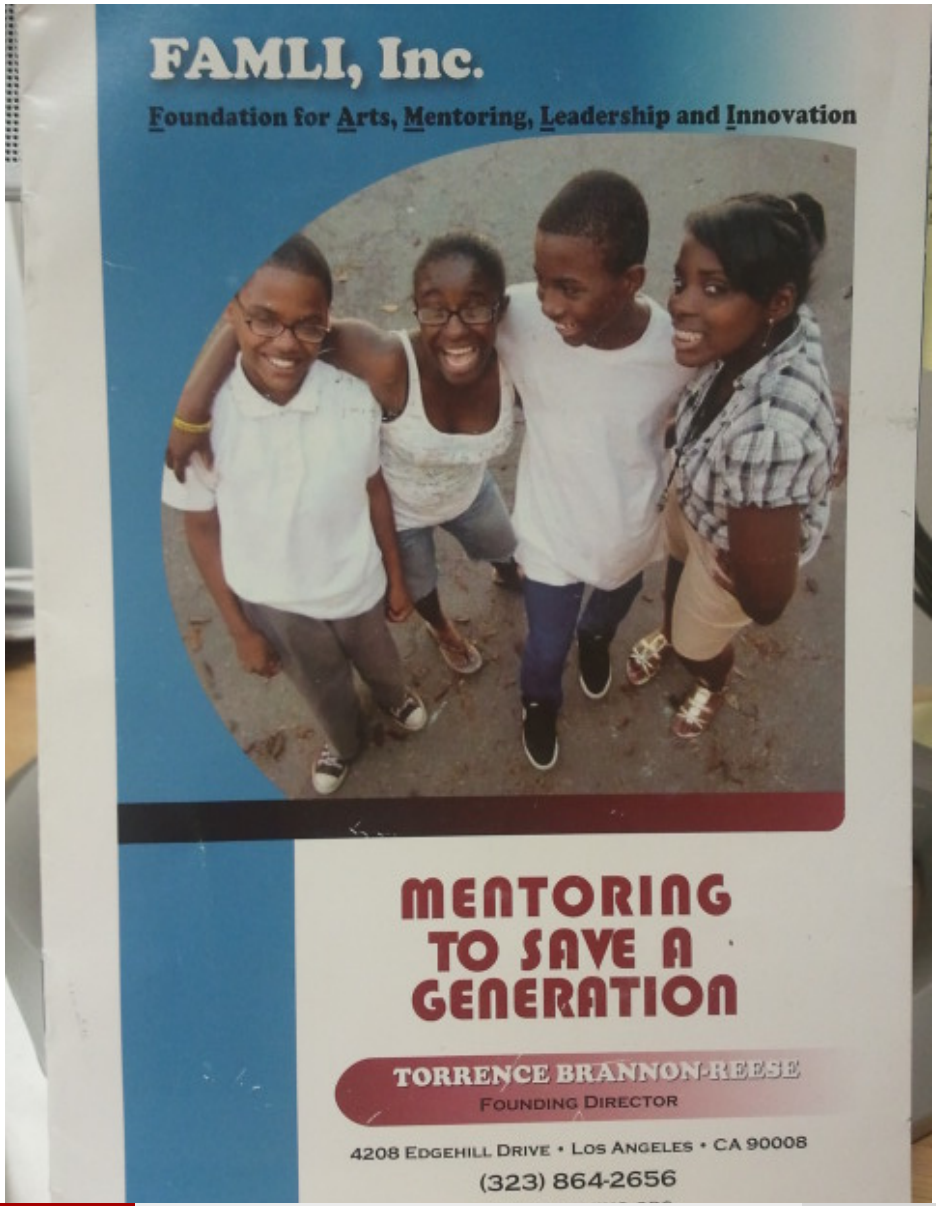
# Outline


1. Introduction
2. First Steps
3. Projects
4. Conclusion

# FAMLI Program

- Foundation for Arts, Mentoring, Leadership, and Innovation
  - Offers after school and weekend activities
  - Serves L.A. area middle schools and high schools
  - High schoolers serve as mentors
  - Founded by Torre Reese
  - Activities include writing, dance, hiking, music, sports, games, library, cooking, etc.
  - ... And computer classes
- Formerly located at Audubon Middle school in Leimert Park but moved to Children's Institute Inc. (CII) near Echo Park.
- OLPC project at FAMLI initiated by Caryl Bigenho
  - Goal: to use OLPC XO computer to teach the kids computer skills and have fun
  - Volunteers include Raj Baberwal, Steven Pease, and myself

# FAMLI Program



# FAMLI Program

# OLPC

- One Laptop Per Child (laptop.org).
- Mission: to empower the worlds poorest children through education.
  - Providing each child with a rugged, low-cost, low-power, connected laptop.
  - Hardware, content and software for collaborative, joyful, and self-empowered learning.
  - Children are engaged in their own education, and learn, share, and create together.
- See the OLPC booth for more info!

# XO

- XO is the computer produced by OLPC
- We used XO-1.5.
- Features/Specs: 1 GHz C7 processor, 1 GB RAM, 4 GB flash hard drive, sunlight readable, rotatable screen, long distance mesh network, camera, rubberized keyboard, long battery life...
- We had both working XO's and some broken ones for fixing activities.
- Demos at OLPC booth.

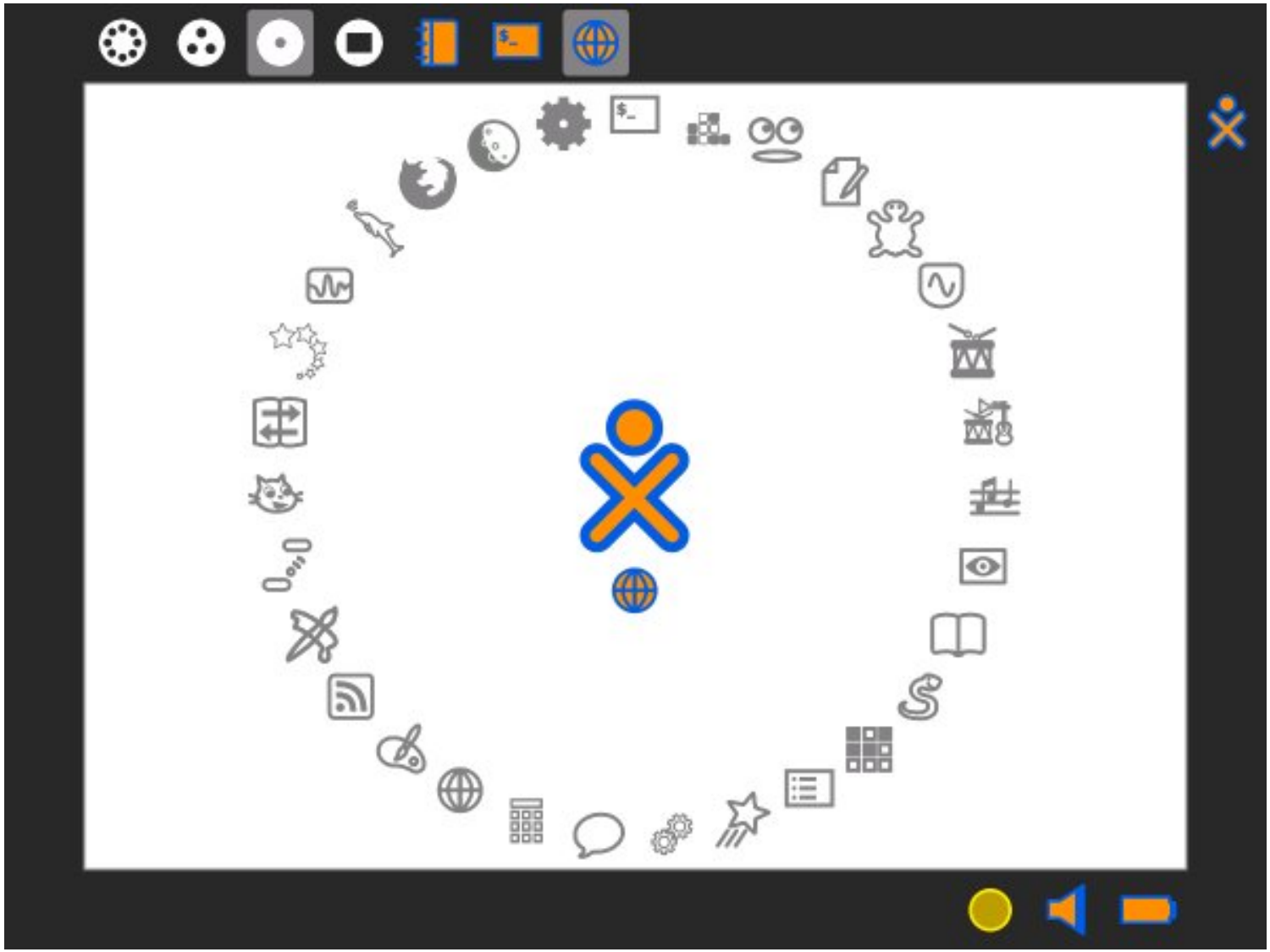
# Other Computers/Equiptment used

- Various broken laptops, including XO's and computers from the kids' families.
- Multimeter and screwdriver set.
- My old homemade computer for taking apart.
- Musical instruments (old facility).
- Fancy, big-screen imacs (new facility).
- 3D glasses.

# FAMLI Youth

- Very bright kids.
- But they are middle schoolers who just got out of class.
  - Short attention span, lots of energy.
- Typically, they are not very familiar with computers.
  - except cell phones.
- Variety in parental participation.
  - For some, the parents are active in FAMLI, but others may have a single, working parent or foster parents.

# XO Start Screen: Sugar Desktop



# How do you use it?

Adults vs. Kids

- Adults...
  - Generally have some goal
  - Figure out what application they need
  - Try to find the right icon to click
  - Google how to do it if all else fails
- Kids...
  - Don't have a particular goal, besides to be entertained
  - Click different icons until they find something fun
  - Gravitate to applications that they are interested in
  - Ask someone if all else fails

# What programs (activities) to use?

- The kids gravitated to certain programs:
  - Media recording (pictures, video, audio)
  - Music production (tam-tam)
  - Drawing
  - Browser for facebook

# Role of Instruction

- XO is designed to be intuitive and learnable through a playful curiosity.
- Then what is the role of the instructor?

# Role of Instruction

- Although designed to be intuitive, this is not always the case:
  - Kids sometimes need help for particular goals.
  - Some applications need more explanation (e.g., SynthLab needs some DSP knowledge).
- Sometimes kids need to be steered away from sites like facebook by giving them projects that are more fun.
- Enforce turn-taking while sharing.

# Overview

- I see the role of an instructor in such an after-school program as someone to create fun projects that will lead the students to use computers in ways that they might not have done otherwise.
- The instructor should have fun too, especially if they are volunteering.

# TamTam and SynthLab

- TamTam is the Sequencer and SynthLab is a synthesizer.
- Sequencers are big in popular music nowadays, e.g. making beats.
  - It was also helpful to compare "notes" with acoustic instruments.
- Speakers of the XO are not very powerful.
  - Careful using headphones–one student blew his out.
- SynthLab is more abstract.
  - One can explain it using speech production.

# Taking Wildlife Photos

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# Wildlife Photos Summary

- Rugged XOs were ideal for taking outside.
- Taking pictures was difficult without the viewfinder.
- Kids liked taking pictures of landscapes, leaves, and bugs.

# *Computer Repair*

- Start with my old desktop that I don't care too much about.

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# *Computer Repair*

- Then take apart working XOs.

# *Computer Repair*

- Then work on broken laptops, including XOs and laptops brought from homes.

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# Computer Repair Summary

- Lots of excitement, but need to regulate turn-taking when working on single computer.
- People bringing in computers from home shows a community need.
  - Linux/FOSS and scratching an itch.
- I feel like this was the most successful project
  - People called this class "computer repair class", even though we did other activities.
- Lots of teachable aspects: electricity, hardware, architecture, trouble-shooting, organizing workspace and keeping track of stuff, etc.
- Can fit a whole project into one class.

# 3D and Binary: Motivation

- I had just taken a computer vision class.
- It seemed like kids knew that computers understood 0s and 1s, but not now these connect to what they know first-hand about computers.
  - Explaining the numerical encoding of colors seemed to make more sense than other things, e.g. ASCII.
  - Most kids have mixed paints.
- Most kids have seen 3D movies or used nintendo 3DS.
- 3D anaglyph nicely illustrates the numerical representation of colors:
  - white(i.e. 255,255,255) - red(255,0,0) = cyan(0,255,255)
  - white(or #FFFFFF) - cyan(#00FFFF) = red(#FF0000)
  - Also illustrates converting binary to decimal to hexadecimal.

# 3D and Binary: Methodology

- Discussing 3D technology in general.
  - Red/Cyan anaglyph in particular.
- Taking stereo 3D pictures using 2 XOs.
- Show RGB color pickers and discuss color mixtures as triplets of numbers.
  - colored lights vs. colored pigments.
- Do counting exercises in decimal, binary, and hexadecimal, 0-32.
- Testing that they can specify red, green, blue, black, and white.
- Simple red-cyan drawings in illustrator program.
- Watching anaglyph movies on Youtube with 3D glasses.

# 3D and Binary: Photos

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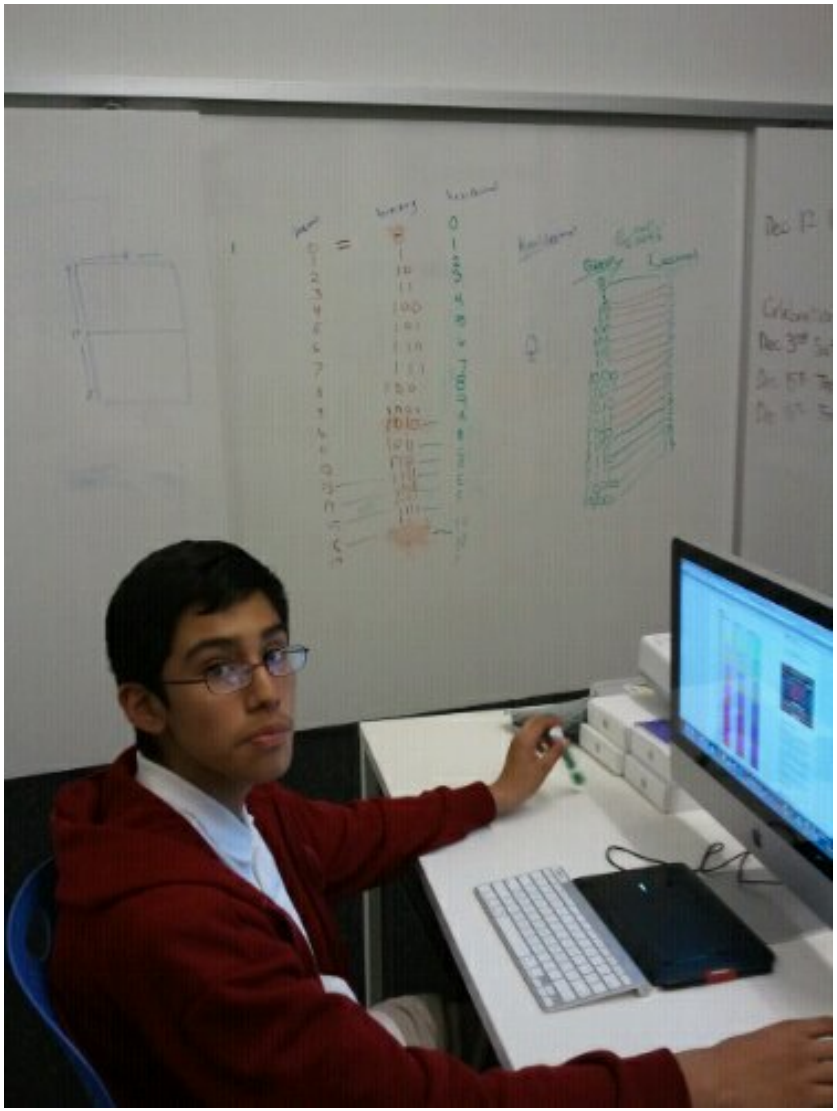

# 3D and Binary: Summary

- Transparency was difficult to do using the XO drawing and photo editing programs.
- Also, precision editing was difficult with the XO touchpad.
- The new facility's computer lab was useful.
- The kids probably didn't internalize the whole notion of different base number systems, but I think they intutively understood how 1s and 0s could end up as something more familiar to them.
- Didn't fit into one class period.

# Issues

- Internet connectivity.
- Kids using facebook instead of paying attention.
- Attendence/turnover.
- Bringing the XOs home.
  - Now I think this would be a good idea, but at first we didn't allow it.
- New location: fancy iMacs vs. XOs.
  - iMacs were a mixed blessing.

# Take Home Messages

- In after-school programs it's important that both kids and volunteer have fun.
- Try to incorporate teachable aspects surreptitiously.
- This is a single point of experimental data, so don't draw too strong of a conclusion.

# Funny Stuff

- The only student who had heard of Linux at first heard of it on a Dave Chappelle skit.
- "How do you install the internet on this?"

# Acknowledgements


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  - Torre Brannon-Reese, founder and organizer
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  - Caryl Bigenho
- Volunteers
  - Steven Pease and Raj Baberwal
- Lyx open source LaTeXeditor

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