OLPC for Middle School After-School Programs

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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
OLPC

- One Laptop Per Child (laptop.org).
- Mission: to empower the world’s 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/Equipment 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.
FAMILY 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 FAMILY, 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.
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
Taking Wildlife Photos
Taking Wildlife Photos
Taking Wildlife Photos
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.
Projects

Computer Repair

- Start with my old desktop that I don’t care too much about.
Computer Repair

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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.
Computer Repair

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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
3D and Binary: Photos
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 intuitively 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.
- Attendance/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?”
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  - Steven Pease and Raj Baberwal
- **Lyx open source \LaTeX editor**
Conclusion

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