

# Thinking about LOGO 30 Years Later: Self-reflection, Participatory Design, and Parenting

[Greg Walsh](#) Jun 27, 2017

*This year, the computer language [LOGO](#) turns 50 and is being celebrated at the [2017 Interaction Design and Children Conference](#) in Palo Alto, California. The computer language had a deep impact on me and I'm sharing how in this story.*

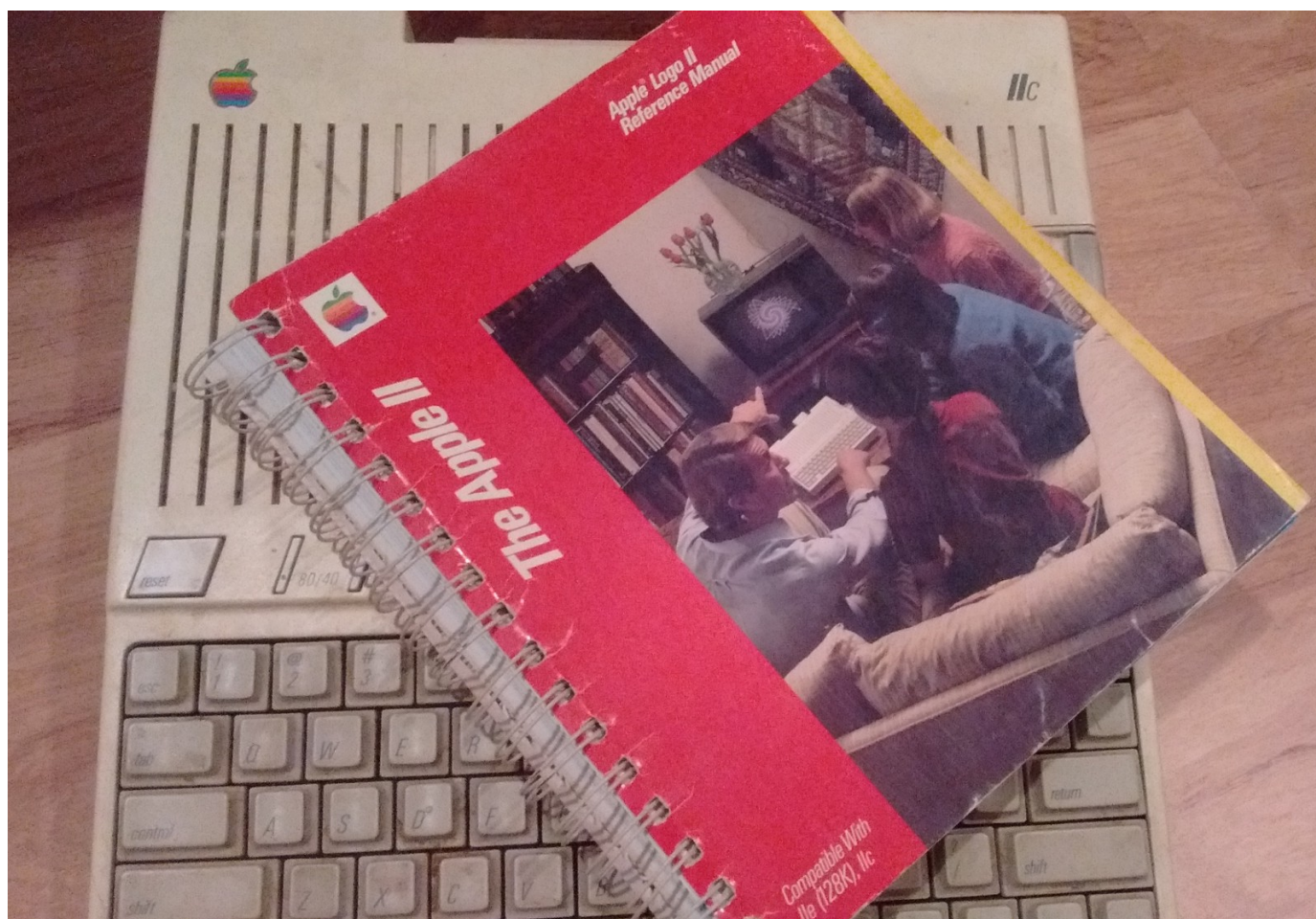
I was exposed to computers at a very young age. My recollection is that I was chosen to use the library's one Apple II computer at age 7. I don't remember what I did on it, but, I do know that sometime between then and age 9, I was shown Apple LOGO and given rudimentary lessons in programming. My school had a poster with a round robot and I learned that some children were able to program a robot in the same way that I was learning to control an on-screen ``Turtle''. I'm not sure how far I progressed by the Spring of 1984, but it included drawing shapes and printing text.

In the Summer of 1984, my family moved in with my grandmother. My grandfather had passed away and my grandmother did not drive. It was a tough move because I started at a new school in the Fall with no friends or familiarity. The biggest change I can remember is that the students in my current grade, fourth grade, had never had any computer classes before and they were just learning LOGO. I was entering with three years of computer experience and this really angered my teacher. She was just learning how to use the computer herself and was not happy with an outspoken and vivacious boy who wanted to learn more. In what I would later learn was her style, she banned me from using the computer until my parents bought me my own for

our home.

My parents were, not surprisingly, angry at the situation. But surprisingly, they bought a new Apple IIc for our home and a number of software packages. According to Wikipedia, that Apple IIc cost around \$1300 USD in 1984, or, around \$3000 USD in 2017 adjusted for inflation. The software they purchased, Apple LOGO II, cost around \$100 USD at the time. That purchase brought what I later learned to be constructionism to my everyday life and steered me on a path to where I am today.

This article in my reflection on how LOGO, and by extension Seymour Papert, transformed what I learned, how I learned, what I do for a living, and how I support my children's education.



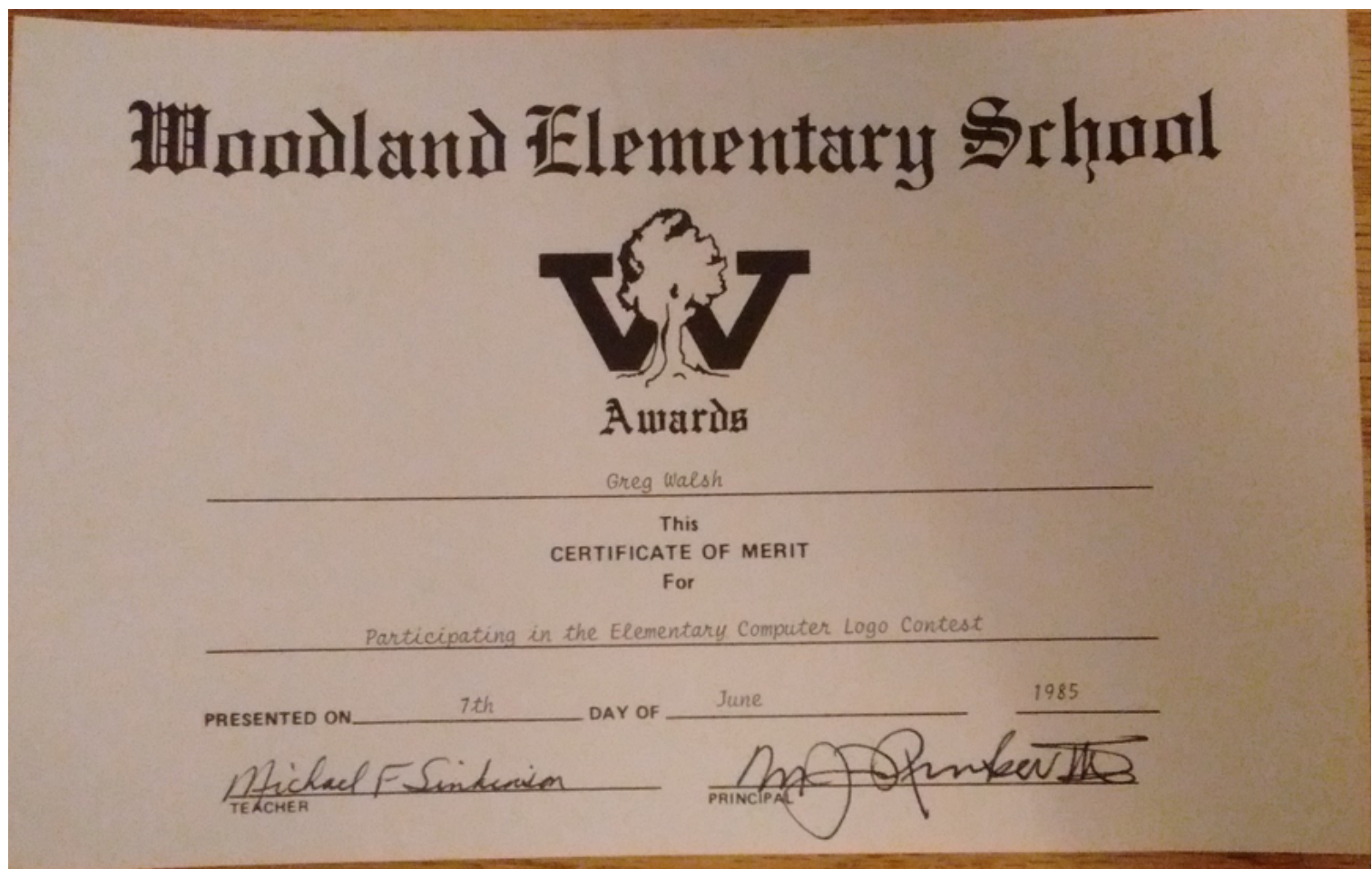
*My still functioning Apple IIc and Logo Reference Manual.*

LOGO became something that I did almost daily. I was very content spending

time programming on the computer. The part I liked best was not really having a goal and instead writing programs just to see what would happen. It was much like having my own world that I could control. Later in life, I would read Papert's [Mindstorms](#) and see that he called LOGO a microworld. Indeed, it was a microworld for me to be in with little fear of making a mistake. I could make as many mistakes as I wanted and retry until the outcome was what I wanted. I wrote programs with graphics, animation, math, and words. Some things I built made no sense to anyone else such as a RADAR screen I wrote for use with my action figures.

I did not excel at sports, and LOGO gave me something to do in which I was better than other kids. Even in 4th grade, I had dreamed of swimming competitively as part of a swim club or joining the elite “travel” team in my town. None of that was possible, but, I did compete in LOGO programming that year. Even though the event happened more than 30 years ago of this writing, I remember that competition very vividly. My computer program was something of a visual cacophony that utilized every color trick in LOGO. The background changed colors rapidly, the LOGO Turtle drew lines around the screen like a windshield wipers on a car. I had written my own functions to make it work and saved it on my floppy disk.





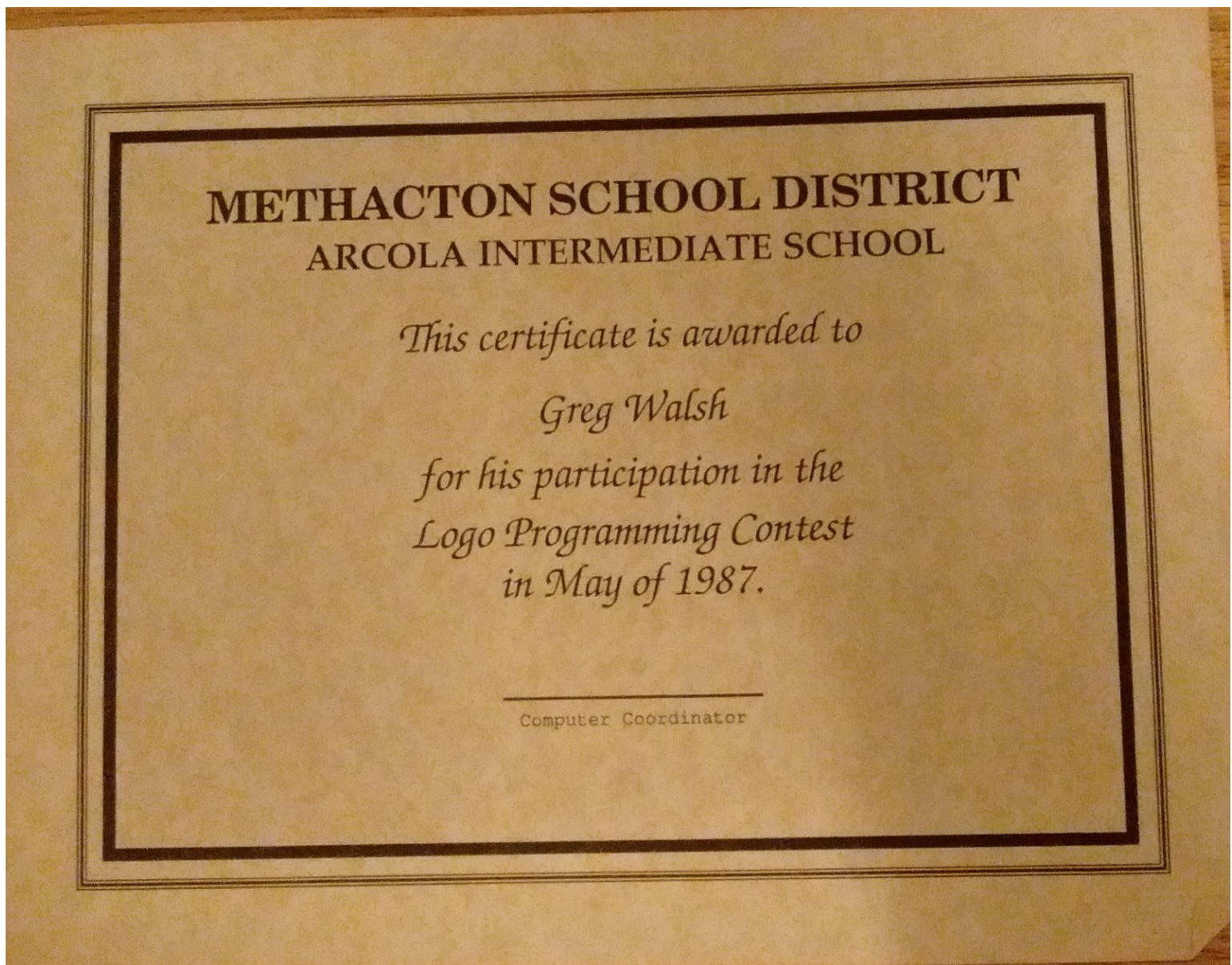
*The Certificate of Merit for Participating in the Elementary Computer Logo Content. June 7th, 1985.*

The day came to present my program to the judge and I remember being so nervous! I had to stay after school that day and run my program. I loaded the program, ran it, and **nothing happened**. There were no flashing colors and no drawing Turtle. There was only blackness on the screen and a blank expression on the judge's face. Because this was a different computer (and possibly a different version of LOGO), the functions I had written had not been loaded at the beginning and my program skipped them. I was awarded a Certificate of Merit for my contribution even if I had achieved nothing but embarrassing failure.

One of my favorite ideas of Papert is *constructionism*. In his essay on [\*Situating Constructionism\*](#), he playfully reveals that ideas are understood by being constructed. This idea of constructionism is how I've come to look back at that computer contest experience. I did lose that day, but, the act of getting to that moment in time "built" so much experience that I've carried with me in life. Until that time I had never submitted my works to be judged, nor



moved a program from one computer to another. The former was scary and the latter showed my inexperience in computer programming. But, my failure as a computer programmer led to my success as a person. The ideas of sharing my ideas with those I perceived as more powerful, facing something intimidating, and trying again after failing became just as much of my being as my knowledge of variables and repeat loops.



*The participation award for the LOGO Programming Contest. May, 1987.*

After those experiences, I went on to view everything as something that needed to be built. Bloom's taxonomy and Papert's constructionism collided when I decided to learn more about my neighborhood by making maps in LOGO and Apple BASIC. My middle-school project on Beowulf turned into a comic book and a high-school project on the Illiad was made with computer

art. Because of my early work with LOGO, the computer had become an everyday tool that I was able to utilize for any subject. It was not special unto itself, but special because it enabled me to create on a digital level.

## **Kidsteam**

Many things happened between high school and my next experience with Papert's work. In 2008, I went back to school to study Human-Computer Interaction convinced that the future of learning for urban youth, particularly boys, was dependent on games. Allison Druin, a student of Papert's, volunteered to be my advisor. Allison's work with Participatory Design led to the creation of Kidsteam, an intergenerational design team where children and adults work together on the creation of new children's technologies. I became a member of that team and was involved in hundreds of design sessions. From the first time I built a three-dimensional, futuristic, communication device out of cardboard with a group of children, I was hooked on the method.

There was something so familiar about co-designing with kids. I remember trying ideas and then redoing the ideas with the group until it was what we wanted. Some ideas worked well while others fell flat on their face. When Allison and I first met, I had told her about my childhood fondness for LOGO and she told me of her work at the MIT Media Lab and working with Papert. Over time, I came to the conclusion that Kidsteam was essentially a living, breathing, instantiation of LOGO. The adults of the group were helping the children of the group bring their ideas into reality, or at least a simulated reality. Much like the Turtle that rendered virtual shapes through a programming dialog, the Kidsteam participants rendered low-fidelity prototypes through discussion and experimentation.

Over four years of working with Allison's method of participatory design, Cooperative Inquiry, I learned a number of things about children and how they put the world together. I had forgotten that children like to collaborate (I



was a miserable grown up at this point) and children can just start being silly for no other reason than to be silly. Of course, there were positive effects on children who participated in the group beyond having fun. My colleague Mona Leigh Guha [researched the impact](#) of Kidsteam on child participants by talking to their parents. She found parents thought favorably of the team, and, among other positives, felt that their children learned much about the domains they were working with and were more confident with adults. These were the same kinds of benefits that I originally found while using LOGO as a child.

My own dissertation work focused on trying to connect more people to co-design by supporting collaboration across large distances. It wasn't until I graduated and started my own Kidsteam in Baltimore, Maryland that I realized how important the concept of a microworld could be in relation to co-design. As [I've written before](#), I began to utilize the video game Minecraft in my co-design group. The reason we started using it was because our participants had been obsessed with the game. I had never played it and when I did, I was immediately brought back to my experiences with LOGO. Minecraft was essentially a microworld with a game mode. Players could build and rebuild while learning what worked and didn't work for the problems they were trying to solve. As a child, I may have been trying to draw a circle or make a word substitution game while the kids in my modern group were building castles and forts with triggers that activated doors or elevators.

The culture of Minecraft is such that you are encouraged to participate in a collaborative world and build the best things that you can. You get better the more you build and you learn how the virtual world works. Many of the concepts that I learned in LOGO are being learned by children all over the world who are playing Minecraft. The difference between LOGO and Minecraft is there is an air of competition to the latter and destroying your competition is rewarded. There must be some irony in constructionism through destruction!

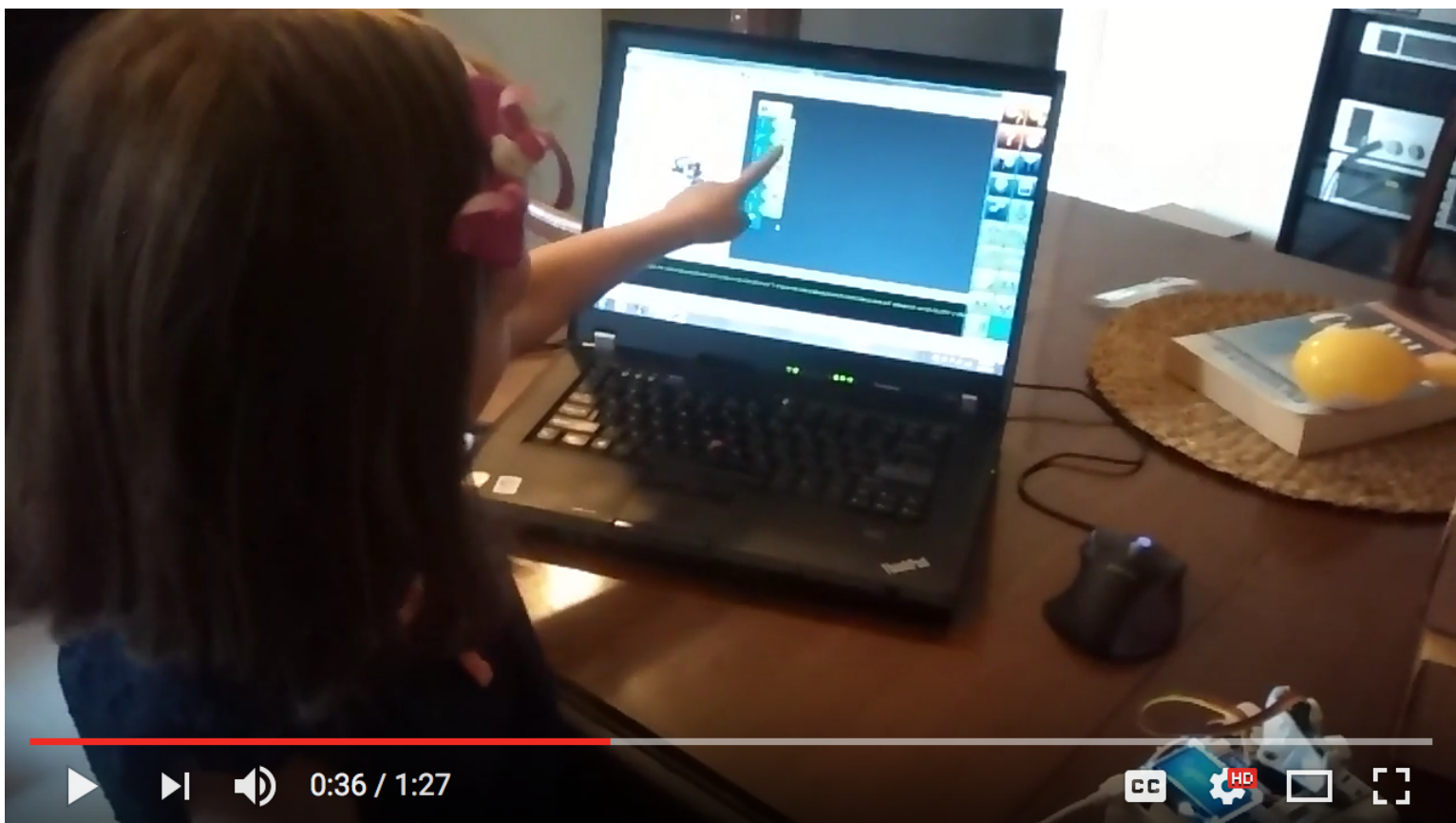
My team at the University of Baltimore tried to leverage all of the best parts of co-design with the best parts of Minecraft to create an online design space for children. My goal was to make something that was as engaging as a game but supported collaborative and cooperative design. The idea has been to create a world that is as engaging for today's kids as LOGO was for me. Also, I hope that it is as rewarding as it was for me by helping me construct domain knowledge and knowledge of myself. My goal is for future versions of the online design tool to empower children the way Papert's creation empowered me.

## **Dinosaur Robot Camp**

I am a father of two young children, one 8 and one 5. As a parent in today's technology-fueled world, it is impossible not to find tech designed for children. In fact, [a study in 2011](#) showed that 90% of children ages 5 to 8 in the US use a computer and [the same study done in 2013](#) showed that a number of children use touch screens before age 2. This saturation of technology has not been overlooked in our house. In fact, my wife and I have worked hard to make technology literacy through play a part of our children's lives.

In the Summer of 2015, I asked my then 6 year old what she wanted to do for the week that I was taking off in order to spend time with her. She responded, "I want to have a Dinosaur Robot Camp." After asking her what that meant, she explained she wanted to build a robot and have it do what she wanted. As any good LOGO-loving, microworld-inspired father would do, I took her to the nearest technology shop and we looked at different kinds of robot kits. We settled on [Sparki by ArcRobotics](#) because it was already built (we only had a week!) and the interface seemed approachable. My daughter had played with Scratch on previous occasions and the Sparki robot supported the drag and drop style of programming made popular by that software.





*A still image from a video showing my daughter's excitement and struggles programming a robot.*

We started by just playing with the robot in a way I had remembered playing with LOGO. The interface was a bit intense for a 6 year old so we tried using [code.org](https://code.org) to help explain programming. Many of the early concepts taught by code.org mirrored the types of lessons I remembered from LOGO, including, moving an on-screen character in different directions and using repeat loops. Once she figured out the basics, she experimented with programming the robot. We decided that it would be best to set up a maze that she could try to tell Sparki how to get through. After a few tries she was successful in having her robot get to the end of the maze.

Over the next 18 months, this robot empowered my daughter in ways I couldn't have imagined. She was no longer passive in what school told her to learn. She has been outspoken about the topics she is learning and how they are learning them. She has personally come to the conclusion that her technology class is silly because they learn Microsoft Powerpoint instead of tools like Scratch or other programming languages. She's constantly building or crafting and constructing her own knowledge. She is a second generation constructionist who is benefiting from Papert's ideas directly and indirectly

through their influence on me.

## **Conclusion**

Seymour Papert's work and ideas have been extremely influential on and to me. The person I am today has been heavily shaped by my early use of technology and being empowered to build my learning in ways I liked as a child and as I see fit as an adult. The LOGO programming language has framed my view of participatory design and given me a blueprint for how my own work can and should effect children. Finally, Papert's work set in motion how I teach my children to learn and express their curiosity. To paraphrase Papert, I hope to turn technology into instruments flexible enough so that many children can each create for themselves something like what LOGO was to me (from p. xxi, *Mindstorms*).

*Dr. Greg Walsh is the program director for the University of Baltimore's MS, Interaction Design and Information Architecture program. His main focus co-design and works with children to incorporate more voices in the design process. You can follow him at @gxwalsh or email him at gwalsh@ubalt.edu.*