

Faces & Places: All Access Pass to Technology

By Mary Masla and Bethany Ard

When you think of the words “gamer” or “computer science,” what sorts of images pop into your head? Chances are it is one of a few stereotypes, possibly someone who is out of touch and socially awkward, living in their own bespectacled, often alternate, reality. With the influx of new and creative ways of engaging youth in computer science, this image of the computer scientist or gamer, is poised to change, and recently, we spent time with two different summer programs invested in doing just that.

This month, OregonASK AmeriCorps VISTA Bethany Ard, and Field Correspondent Mary Masla, spent time in two different programs focused on gaming and computer science. On the fourth weekend in July, Portlanders ages 9-17 spent two days creating characters, commanding “turtles,” and building worlds and challenges full of sea creature-robots. Two hours south, down the I-5 corridor, middle school students spent two weeks coding their initials into magnets, programming fellow ‘robots’ to stack cups, dissecting electric tea lights and orchestrating music with the click of a button.

In this day and age, technology is everywhere – at work, at home, at play - we depend on technology. Technology increasingly permeates every aspect of society, and provides the foundation for most modern innovation. Girls, women and under-represented populations, are avid users of technology, but these groups are significantly underrepresented in its creation. According to the National Center for Women & Information Technology (NCWIT), women hold a mere 18% of all undergraduate computer and information science degrees, despite the fact that women hold 40% of undergraduate physical sciences degrees. There are not only consequences for those populations being excluded, but for the innovation of the field and its users as a whole. Barriers to participation and engagement may include a lack of access, a lack of relevant curriculum and instructional approaches, or inaccurate perceptions about computing careers and environments. This month, OregonASK got to hang out with innovative individuals working to break down these barriers.

Kiki Prottzman of THINKERSMiTH, and Jeffrey Sens and Will Lewis of PDX Game Education and Pixel Arts are working hard to make computer science accessible for all. Lead by student interest, student choice and student creativity, these two organizations are cultivating young computer scientists, game designers, and STEM professionals by starting at the beginning, with approachable, easy to understand concepts that inspire growth and discovery.

The first thing you’ll notice when you meet Kiki Prottzman, University of Oregon Computer Science Professor and founder of THINKERSMiTH, is her hair. It is bright pink, with hues of purple, and it exudes her fun, creative and energetic personality. Kiki’s passion for changing the world of computer science takes shape through

THINKERSMiTH, her non-profit education organization. THINKERSMiTH, which will be highlighted during Computer Science Education Week in December as a leading example of a K-12 curriculum model, demystifies complex concepts to create a safe and encouraging environment for exploring the world of computer science and technology. Bethany got to see this in action in Eugene, where over a two week period, she watched 30 middle school boys and girls, grasp and utilize key computer science concepts like functions, algorithms and circuits. Kiki has designed the experience to start with the basics, build confidence, develop problem solving skills, and teach kids perseverance. Starting with the ABC's, youth learned and deciphered code in order to write their initials on a magnet. They moved on to simple programming the next day, with six different arrows, a picture, a stack of cups, and a robot (fellow classmate who has not seen the picture). The activity was designed to help them take a concept (the picture) and program their robot to recreate the concept using very specific directions. When the instructions became complicated, functions are introduced, as a means of reducing the time and space needed for directions. By the end of week 1, students were dissecting electric tea lights in order to create their own battery powered light bulb circuit. The inspiration and drive was visible as students twisted, clipped and taped all that they could from battery to light bulb and back again. During the second week, students were challenged to solve problems without knowing the objective, to build electronic scenes from scratch, and to design their own electronic world. Each of the activities during the first week introduces a skill that is used in computer programming. After just 8 hours of camp, students had been introduced to the exciting world of computer science and design – an experience meant to spark an interest or fuel a passion for unknown possibilities.

While THINKERSMiTH was working on demystifying computer science in Eugene, a group of 25 volunteers lead by Jeffrey Sens and Will Lewis, worked to breakdown barriers by exploring the components of video gaming, providing multiple pathways to engagement for youth in Portland. Thirty-eight 9-17 year olds gathered for a weekend of game creation. Unlike some more traditional gaming experiences, which tend to be focused solely on interfacing with the computer, Game Camp dissected the elements of game creation into three main foci: programming, arts & animation, and game design. The Pixel Arts motto is "Play, Make, Design", and this feeling rang true throughout the building as students delved deep into designing board games, controlling a "turtle" with computer programming and creating silhouettes of characters based on a few key words. What kind of creature would you create with the prompt of "vampire, muscley, mysterious and boss?" That description took these artists in several different directions, and required innovative thinking and creativity. These concepts, creativity and innovation are key to creating new technology. Apple certainly didn't create the iPhone by thinking inside the box. By challenging students to be creative, to start with a few tools and make something, Pixel Arts and Game Education PDX are empowering youth and engaging them through a multi-faceted approach. By allowing students to enter into the gaming world through arts, board games and programming, Pixel Arts and Game Education PDX are capturing many audiences at once – encouraging youth that may not traditionally have been interested in gaming or programming to become interested.

As we go forward as a society, our relationship with and reliance upon technology will likely only become stronger. It is critical that the technologies we use are representative, and utilize the ingenuity, of our world's diverse population. By breaking down the barriers of access, whether it is demystifying complex computer science concepts, or creating multiple entryways for kids to enter the world of computer science, these innovative individuals, and the organizations they represent, are working to ensure the next generation of children, no matter their gender or where they come from, see an opportunity for themselves to be part of the creative, ingenious world of computer science.

