



Educational Outreach: Encouraging the study of SCADA and CPS while Improving Cognitive and Socio-emotional Functioning

Kena Hazelwood-Carter, UC Berkeley

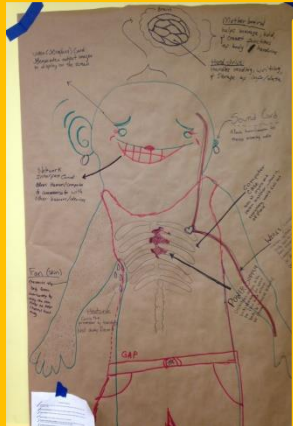
January 25, 2017



CYBEAR: Berkeley GenCyber Camp 2016



CYBEAR: Berkeley GenCyber Camp 2016



ADWARE & SPYWARE

COOL WEBSEARCH

Info: of dangerous browser changing adware.

Adware: Software that displays featured ads and can report user's browsing activities to the advertiser.

Spyware: Software that performs certain behavior without user's consent.

Epidemiology

- Origin: Russian company (established 2001) started as a dangerous browser hijacker used to promote malware, to gain lucrative profits.
- How it spreads: Drive by 2 pack botnets. Can hijack computer browsers to web pages automatically install, coolwebsearch virus, and is present in 200 million computers. Spread: via computer virus up to date, custom hacked websites across usage distribution.
- Cost to society: One of the first browser hijackers -> because one of the most common malware infections.
- Adware communities grew, hoping to remove adware completely since most antivirus and antispyware programs were unable to remove Coolwebsearch.
- The case/impact was to spread a new ransom program (a ransom) and to develop a specific tool, CoolSearch, to remove it.

Fun Facts

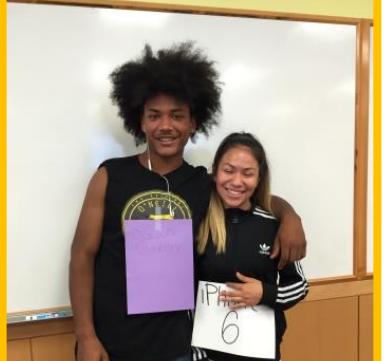
- Since emergence, they have accumulated over 100 million unique IP addresses and 100 million unique domains.

Psychologist

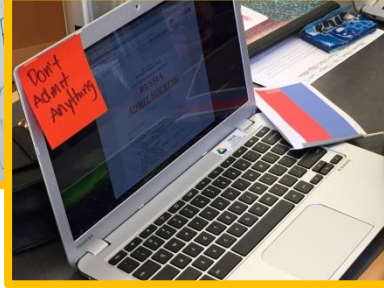
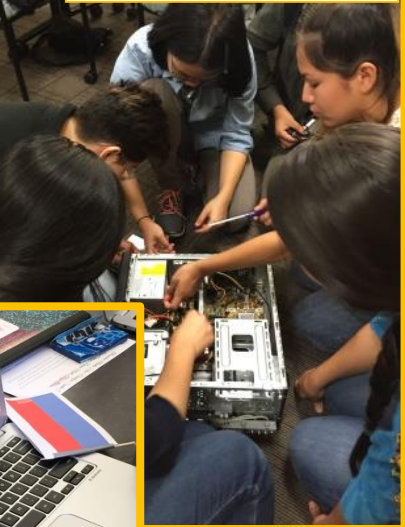
Human nature is flawed and can be influenced by 4000 variables, cultural upbringing, upbringing, experiences, etc. A person can be understood at the individual level by their perceptions and internal cognitive processes. A person's behavior is a result of their cognitive processes. This can be understood at the individual level by their perceptions and internal cognitive processes. This can be understood at the individual level by their perceptions and internal cognitive processes.

Symptoms

- Slower computer performance.
- Browser search page & search engine changed to Coolwebsearch.com.
- Sites on browser addresses.
- Affected Hardware
 - CPU - Slower computer performance due to software making constant demands.
 - RAM - Large RAM not being used.



Sir Chairman
Ban Ki Moon
Elk One
Pillar of Cyber
Wisdom
Virus
Pillars of Cyber
Wisdom
Virus
Pillars of Cyber
Wisdom
Virus



CYBEAR Testimonials



CYBEAR Camp Overview

2015

- * 4 week program, 22 students
- * 50% of the fathers and 36% of the mothers have less than an Associate's Degree
- * 95% of the students are from schools where they do not have a computer science class
- * 55% Female
- * 64% Underrepresented

2016

- * 6 week program, 24 students
- * 50% of the fathers and 42% of the mothers have less than an Associate's Degree
- * Percentage with access to computing classes at their schools: n/a
- * 33% Female
- * 66% Underrepresented

CYBEAR Mentorship



CYBEAR and CPS

Explicit CPS and SCADA units with associated projects

- * LEGO City: Integrated City of Systems and their networking
- * Final Projects: Students re-envision these systems to meet the needs of their own neighborhoods utilizing Google Maps



CYBEAR and Building Smart Cities



CYBEAR Family Night



CYBEAR Weekly Newsletters Home



July 8, 2016

3

CYBEAR Newsletter

Week 3 In Review



DATES TO REMEMBER

July 13	7:45AM-
LONG DAY	4:30PM

Field trip to NASA Ames Research Center

?

PARENT PARTICIPATION

Talk to your child about an individual project that they'd like to do during week 5 and 6 at CYBEAR, and write down three action points necessary to do this project.



CYBEAR campers get "online" using cups and string as a stand-in for communication between computers and servers. Ask your student to describe this game in more detail.

CYBEAR and Social Justice

- * Women's Place in STEM
- * Edward Snowden: What Does it Mean to be a Patriot
 - * Affirmative Action
 - * Religious and Cultural Bias
 - * Black Lives Matter
 - * Homelessness
 - * What Is Ethical Hacking

Intervention: Daily Mindfulness Practice

Increasing Frustration Tolerance and Cognitive Engagement 10 minutes daily

GUIDING QUESTIONS: What is mindfulness? Why practice this? What are possible things you will notice by engaging in these practices? What is it like to be human?

Just Breathe:

- Today we will meet and greet the very thing that keeps us alive, our breath
- What can moderating your breath do?

Breathing Mindfulness:

- Go over sitting postures (hands, eyes, body-comfort)
- 2 minutes breathing with mentor lead
 - Use counting through this time. You can set a # goal like 25 total breaths
- 2 minutes breathing independently
 - Encourage the learners to count breaths, though they are welcome to try what they believe works for them

MINDFUL BUDDY:

- Today learners will choose a mindful buddy. This is someone they will be with each morning for the next 6 weeks. NOTE: Learners should choose buddies of the same gender.
- Lead question to discuss together:
 - What would you like to be more mindful of?
 - What were your rose and thorns from the breathing exercises and why

Preliminary Intervention Findings

- * Across all measures (e.g., Children's Hope Scale, Adolescent Mindfulness Attention Measure, Comfort with Technology Scale) for all demographics, in mean comparison results trended down:
 - * At first there was concern that we had broken the children.
 - * However, results on Draw a Computer Scientist, a qualitative measure, improved corresponding to our findings in our baseline year.
 - * Revisiting the literature we found that studies have shown that increased mindfulness results in an increased comfort acknowledging negative aspects of self.
 - * As such, our findings suggest that our intervention was successful in supporting our students' development both cognitively and socio-emotionally.

Next Steps

- * Plan for summer 2017 (pending GenCyber funding):
 - * Refine CPS-focused curriculum (incorporating lessons learned from 2017)
 - * Continue to test the efficacy of interventions
 - * Include measures with additional sensitivity to better understand our findings