Digital Inclusion, Computational Thinking & the Urgent Need to Reconsider Digital Literacy

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Warmup

1. How are digital technologies like Chromebooks transforming education?

2. How would the classroom change if every student in your school had a laptop & the digital literacy skills to effectively use them?

3. If you magically had 5 more hours a week & a personal tech coach, how might you use digital technology to address a pressing educational challenge?

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It is not the answer that enlightens, but the question.
Eugène Ionesco

https://www.youtube.com/watch?v=qaOvHKG0Tio

What's your takeaway from this video? What do you see? What does it make you think about?
I see people doing hard, wonderful things; I see technology being given the credit.

Todd Lash, upper right, was librarian at Kenwood elementary in Champaign 2 years ago and became a champion for computational thinking for all learners
He has worked tirelessly with school administrators, unit IT, teachers, and students, providing vision, professional development, program development for teachers, and creative instruction to students.
GSLIS students provided considerable support this past year to Todd and to teachers. This past year, Todd took on the role of instructional coach and Miriam Larson became the school library media specialist, doubling the support.
Minsoo Park is the technology specialist assigned to the school.
Kenwood serves 80% free and reduced lunch. They recently changed their vision to be "Technology and Literacy for the Community"
Computational thinking for all learners, then, is about reaching those most often left behind in all forms of education, and especially technology education
GSLIS engagement has been especially focused on issues of literacy and inclusion, including efforts to bridge the divide between home and school

Now capped at 20 or so kids before or after school, using a sign up.

Collaborative Discussion Framework

- Developed at Kenwood Elementary School, Champaign, by Todd Lash and Minsoo Park.
- 5 Steps
  1. What are you trying to do?
  2. What have you tried already?
  3. What else do you think you can try?
  4. What would happen if?
  5. Celebrate and share!

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Story of 4th and 5th graders from Kenwood presenting at statewide conference and using collaborative discussion framework with older students at conference

# The Urbana Free Library Teen Open Lab

Amber Cox (formerly Castens) and Joel Spencer – GSLIS grads now adult librarians at The Urbana Free Library in charge teen programming
Joel and I did some dusty work together while he was at GSLIS as we refurbished a building and built a computer lab for a popular social entrepreneur in East St. Louis
This led to a 2 semester project to redesign the 2nd floor computer lab, the furniture of which he and I then built in my woodshop
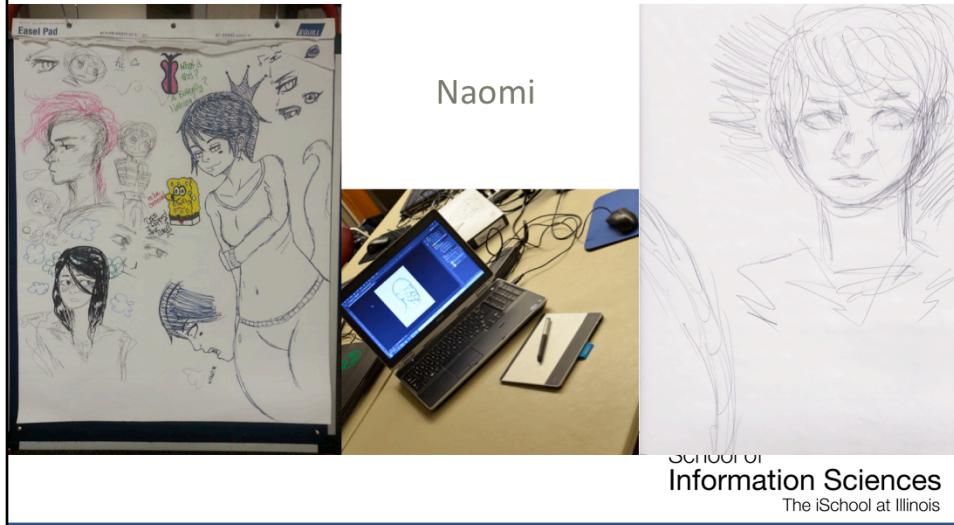While many goals of Amber and Joel for increased collaborative spaces while decreasing chaos were met, improved intergenerational relations were note.
Amber and Joel identified the auditorium as underutilized space, especially afterschool.
 A grant I had received through the Illinois DCEO and their EDD program funded a mobile computer cart and some digital media equipment, and a research assistant
The Champaign Urbana Fab Lab and Makerspace Urbana brought in additional resources
Teens led in key components of the design and program direction, and continue to have considerable freedom in how the space is setup on any given day.

Layout of the space
Jeff Ginger, Joel Spencer, Amber Castens
02.2014
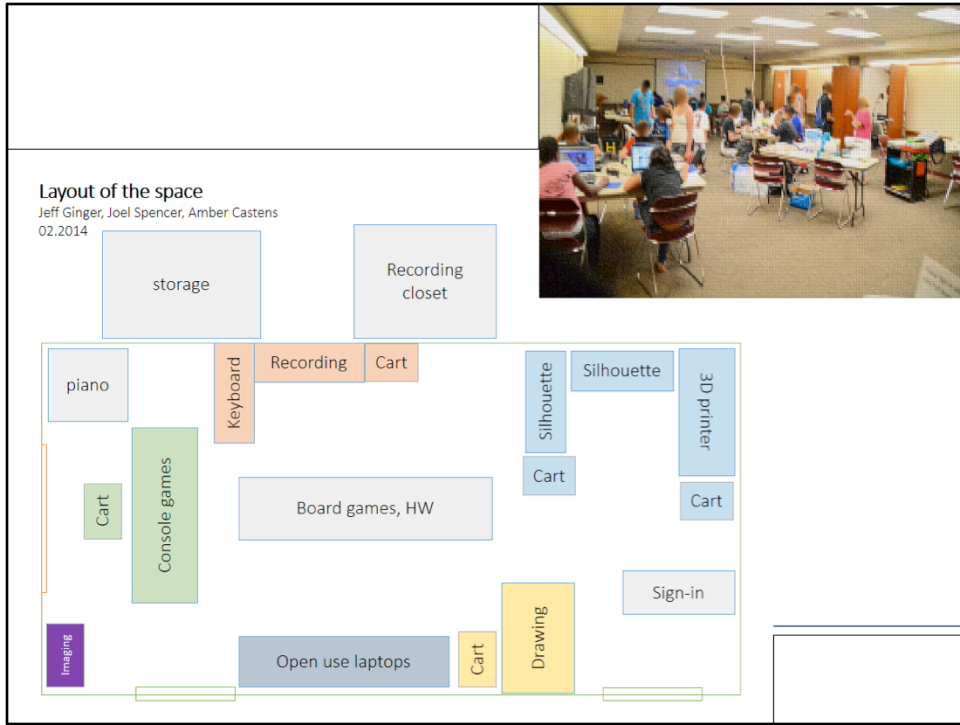
The max number of teens who have been in this space at once is 50. Average about 15-20.

Naomi

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Naomi wanted graphics tablets to support drawing software
She learned to use it, then taught librarians, staff, volunteers, and other teens
When she aged out, she wanted a way to continue to participate and Amber and Joel
suggested she serve as a volunteer and teacher
Naomi responded that she had nothing to teach. They assured her she had already
been such a strong teacher
A project that mattered, being an ally, reshaping the way this teen thought about
herself

The Call

We must rapidly begin the shift from a "thing-oriented" society to a "person-oriented" society. When machines and computers, profit motives and property rights are considered more important than people, the giant triplets of racism, materialism, and militarism are incapable of being conquered.

Rev. Dr. Martin Luther King, Jr. (1967)
"Beyond Vietnam"

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At a time when we face some of the greatest inequalities in our nation's history, this is an amazing prescient warning from Dr. King.

Today, we might further note that machines and computers are also given the credit over people.

This speech, given at the Riverside Church in New York City in 1967. It was given against the advice of many of King's closest advisors. They were concerned, with merit, that bringing together the civil rights, poverty, and peace movements would loose the support of some major donors, influential liberals, and many white supporters. King would not be dissuaded, as he saw all things interconnected. The structures in place were already appropriating the civil rights gains. Over the coming months, tensions would grow and military would be used against the citizens of the U.S. in urban areas. The director of the FBI at the time, J Edgar Hoover, would use every trick possible to assure King's influence and reputation were increasingly tarnished and questioned, even as he worked to call for non-violent movements for change with an increasingly quieted voice.

Giving credit to machines and computers is not new, though, as evidenced in this 1987 quote from Seymour Papert.

Papert likened this Technocentric Thinking to a child's Egocentric Thinking

I appreciate Seymour Papert's analogy from his 1987 paper "Computer Criticism vs. Technocentric Thinking". Perhaps, then, the problem isn't in the technology "living up to expectations", but the skill of the craftsperson who is wielding it?

Perhaps we **need better trained teachers** in schools so that they can teach the next generation how to build better houses.

Perhaps we **need better trained academicians** to build better saws and hammers while also teaching better teachers.

Perhaps the **community needs to be liberated from all of these others constraining influences** so that they can work directly with the tools to discover and create a better society.

Technology only
magnifies
human intent and capacity.
It can't substitute for them.

Kentaro Toyama, 2015
Geek Heresy

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Technology can magnify people's efforts to participate in society, democracy, and the economy
Technology can also magnify historical, systematic, and structural barriers

Digital Inclusion

- Digital Inclusion is the activities necessary to ensure that all **individuals and communities**, including the most disadvantaged, have access to and use of Information and Communication Technologies (ICTs). Digital Inclusion must evolve as technology advances and recognizes that access to and use of ICTs are an essential element for **participation in our society, democracy and economy.**

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Digital Equity

- Digital Equity is the ultimate outcome of full digital inclusion, with focused action and investments to **eliminate historic, systemic and structural barriers** that perpetuate disadvantaged individuals and communities. Digital equity recognizes our moral obligation to **harness ICTs** to address the needs of disadvantaged individuals, as well as community or neighborhoods, community-based organizations and small businesses.
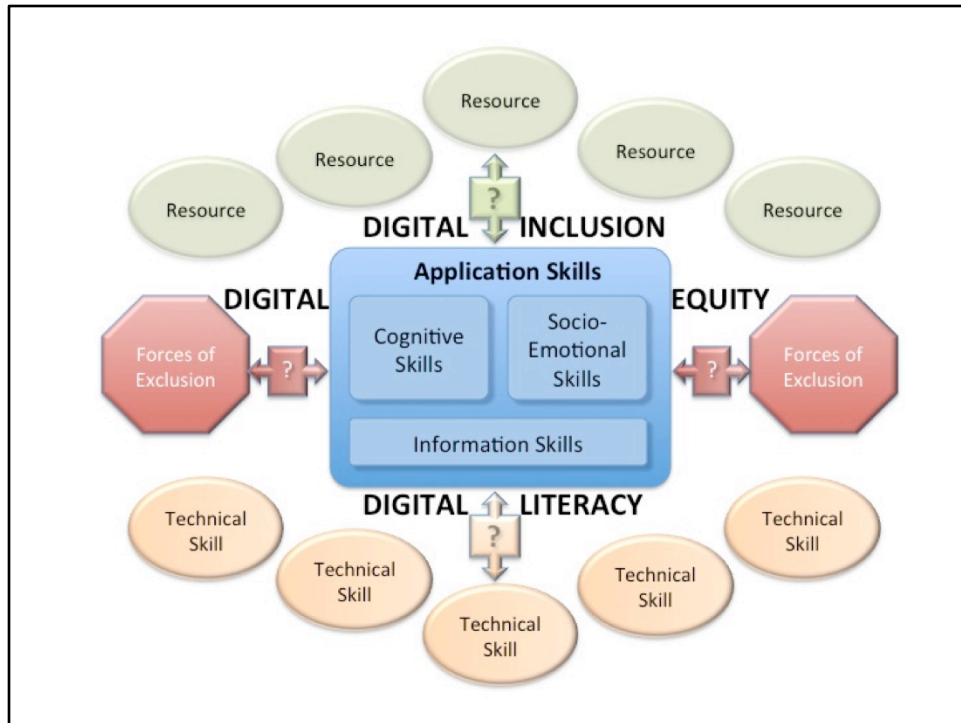
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Reshma Saujani: Teach girls bravery, not perfection (excerpt)

http://www.ted.com/talks/reshma_saujani_teach_girls_bravery_not_perfection

Also http://www.npr.org/programs/ted-radio-hour/483080945/nudge?showDate=2016-06-24

Digital inclusion requires:
1. Affordable, robust broadband internet service
2. Internet-enabled devices that meet the needs of the user
3. Access to digital literacy training
4. Quality technical support
5. Applications and online content designed to enable and encourage self-sufficiency, participation and collaboration

This is in addition to other geographic, social, educational, financial, material, time, and other resources

Historical, systemic, and structural barriers that serve as forces of exclusion are complex, intersectional, and often hidden. All of us experience such forces to some degree, although some experience them in insurmountable ways.

Take a couple minutes to consider in small groups what are the various forces of exclusion YOU have seen or personally experienced

Let's look a bit more at the digital literacy component.

Digital [Computational Thinking] Literacy

Application skills – the ability to select, modify, and effectively use technologies to make the hard work of our professional, personal, and civic interests and responsibilities more effective.

Socio-emotional skills – the ability to communicate and collaborate with others, along with the personal confidence, persistence, and tolerance, in order to tackle complex, ambiguous, and open-ended problems;

Cognitive skills – the ability to logically analyze and organize problems in ways that allow use of available tools and resources to help solve them, as well as the ability to generalize new processes to other problems; and

Information skills – the ability to seek, evaluate, interpret and apply relevant and trustworthy information across multiple media.

Technical skills – the ability to appropriately select and effectively use a range of technologies to amplify our efforts.

Socio-emotional and cognitive skills combined have been incorporated into the concept of **computational thinking**

Information skills allow us to harness resources and to acquire skills to apply computational thinking to application at hand.

Tech skills are then in-fill, not the leader or sole aspect of digital literacy
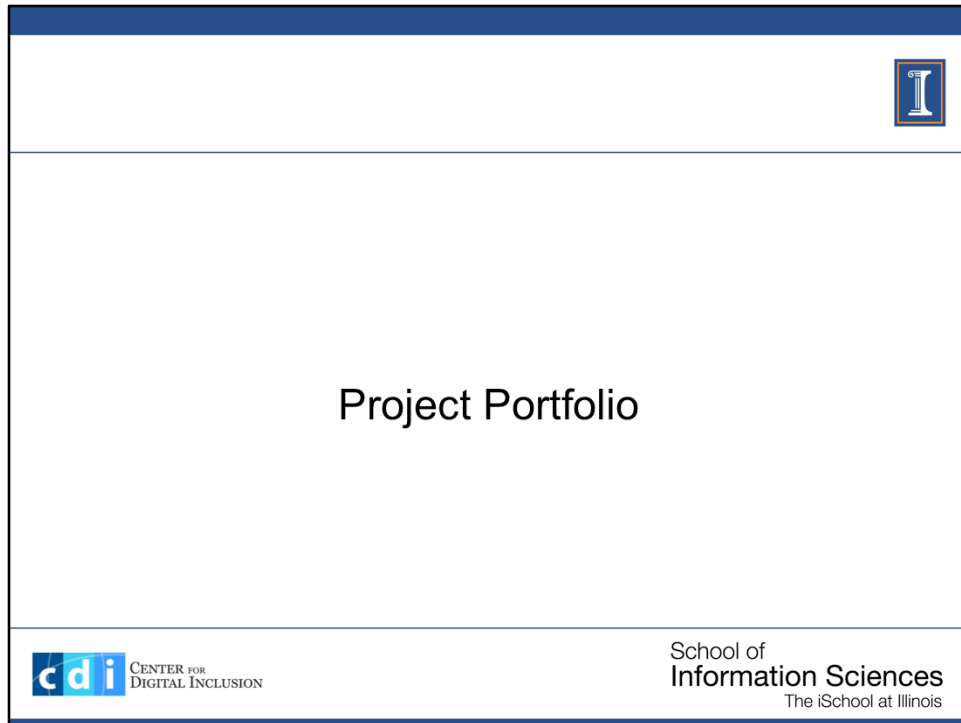
Project Portfolio

Cannot learn socio-emotional, cognitive, and information skills through lecture but only through practice

Many, including ISTE, the International Society for Technology Education, note the value of assessment based on a project portfolio

THIS project portfolio to develop socio-emotional, cognitive, and information skills is a primary value of Makerspaces in schools, not the technical skills developed

> *The central problem of an education based on experience is to select the kind of present experiences that live fruitfully and creatively in subsequent experiences.*
>
> John Dewey, 1938
> *Experience and Education*

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In recruiting trainers for maker programming, I am far less concerned with technical skills than I am with a trainers ability
- To create excellent experiences for learning
- To advance students cognitive, socio-emotional, and information skills in order to learn and apply technical skills to experience
- To critically reflect on forces of exclusion hindering digital equity

Not Yet
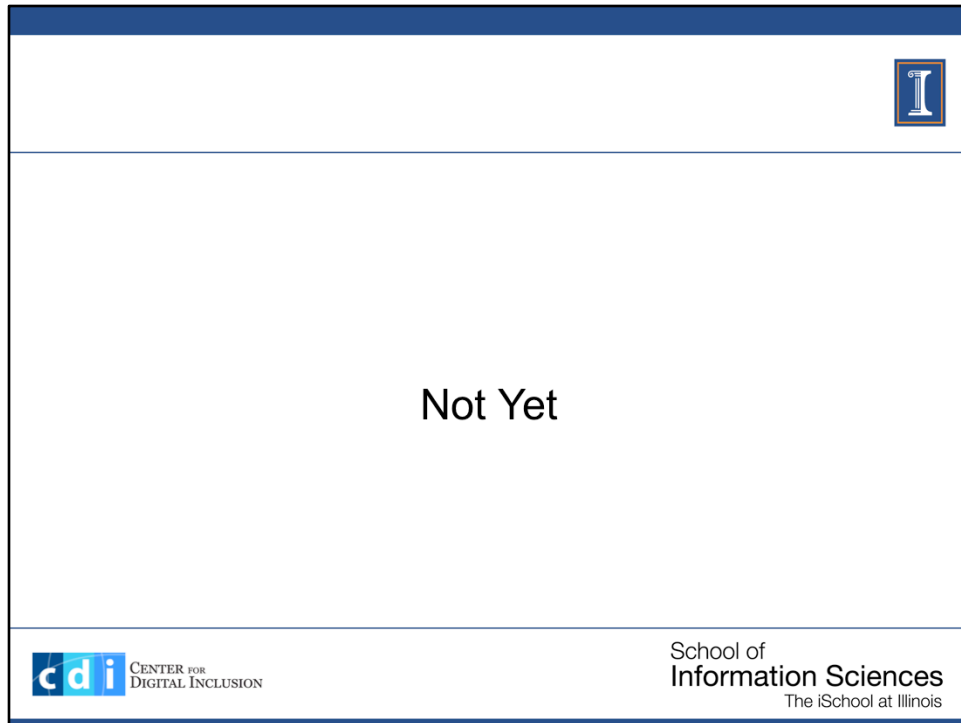
Carol Dweck, the psychologist mentioned by Reshma Saujani in her TED Talk
- Own TED Talk which I highly recommend at http://www.ted.com/talks/ carol_dweck_the_power_of_believing_that_you_can_improve
- Growth Mindset
- Do not compliment who you are (e.g., you're so bright, you're so pretty) but effort you are putting in
- Not Yet feedback

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Critical Reflection
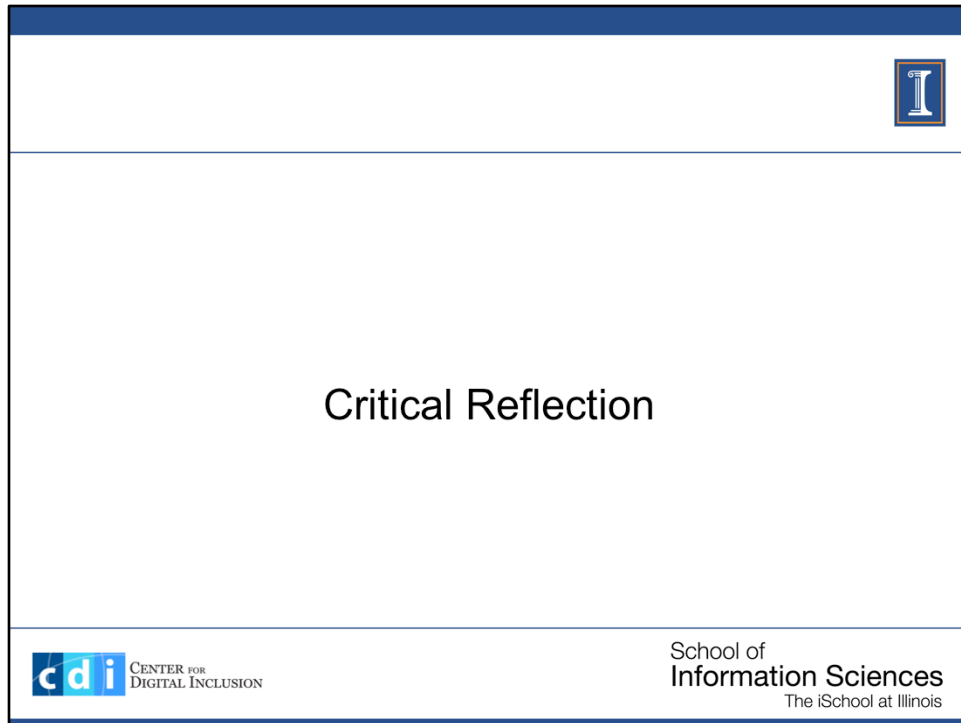
Importance of critical reflection to situate learning within broader digital inclusion & equity goals
- To surface and challenge forces of exclusion
- To foster values development – people- and civic-oriented innovation rather than tech-oriented innovation

Python programming in Minecraft on the Raspberry Pi
- 2nd to 5th graders
- Mix of boys and girls, white and children of color
- When networked together, girls lost interest
- First day created a shared understanding of safe, responsible, respectful environment for the 6-week session to which could refer as part of response to

Story of Kenwood parents
- Technology and literacy for the community – how to facilitate parent collaboration with teachers?
- Draw an innovator/way used something have… icebreaker
- Refurbish, network, troubleshoot – solve tricky Linux problem; didn't want to leave problem unsolved to pickup kids
- Do us a favor and take home the computer to observe impact of tech on child's learning as step in collaboration with teachers

We must rapidly begin the shift from a "thing-oriented" society to a "person-oriented" society. When machines and computers, profit motives and property rights are considered more important than people, the giant triplets of racism, materialism, and militarism are incapable of being conquered.

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Teaching master's students in Library and Information Science tech skills since 1997.
Used this quote for much.
Added service-learning in 2000.
Junghyun An's research findings

Thank You!

I'd love to hear from you:

- mwolske@illinois.edu
- @MartinBWolske
- http://martin.wolske.site

Center and Related Project Sites:

- http://cdi.ischool.illinois.edu
- http://dl4all.illinois.edu
- http://dilp.lis.illinois.edu

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