

Brooks Digital Literacy and Computer Science Pilot Update

Presented to School Committee, 5/9/2019



Digital Literacy and Computer Science Timeline

Prior to 2014

- Standards focused on applications, basic computer use, and online safety.

2014-2016

- Hour of Code district-wide
- Development of new MA standards

2016-2017

- Rewrote Lincoln Learning Expectations
- PD for Instructional Tech. Specialists

- Pilot lessons
- HMS Makerspace launched

2017-2018

- Implemented at least 1 computational thinking unit per grade at K-5 district-wide and at 6-8 at HMS

2018-2019

- Kindergarten coding pilot
- Brooks 6-8 pilot
- Continued curriculum expansion district-wide

Why Digital Literacy and Computer Science

- Increasing importance of digital literacy, digital citizenship, and online safety
- Emergence of computer science as an essential 21st century skill
- Student and parent interest
- Equity
- Less focus on specific applications and more focus on transferable skills

Four Strands

1. Computing and Society
2. Digital Tools and Collaboration
3. Computing Systems
4. Computational Thinking

Organized K-2, 3-5, 6-8

Brooks 6-8 Pilot

Pilot Question

Should Digital Literacy and Computational Thinking be a course for all students at grades 6-8 in Lincoln?

Pilot Details

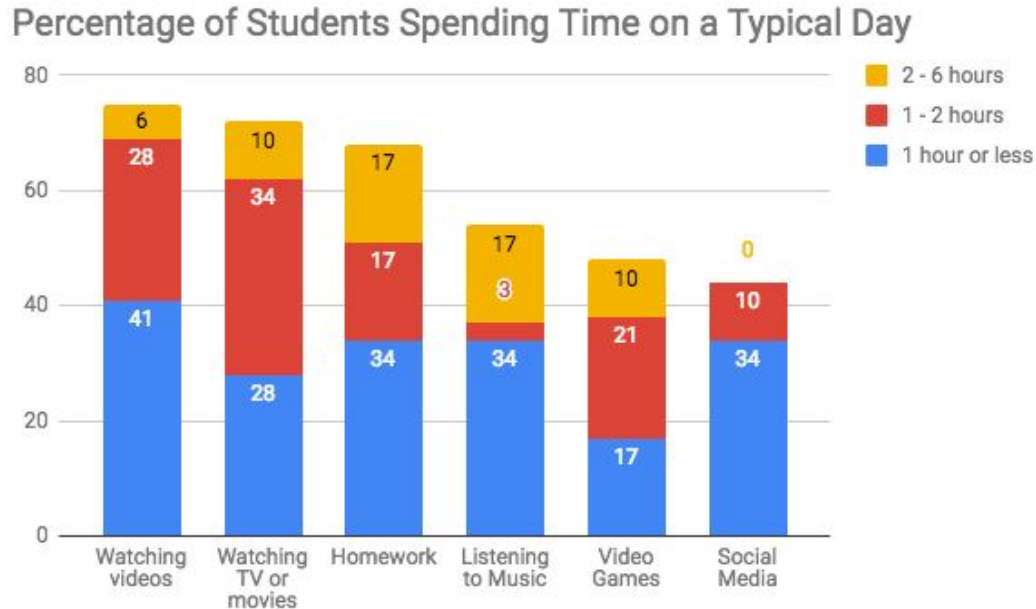
- 7th grade
- All students participating
- Held during supplemental Writing course
- Led by Instructional Technology Specialist Cindy Matthes
- 8 class meetings
- 4 days of digital literacy
- 4 days of computational thinking
- Pre- and post-assessments conducted
- First cohort complete; Second in process

Pilot Outcomes - Digital Literacy

Digital Literacy

- In pre-assessments students self-reported both high levels of online technology use and a high level of the understanding of privacy and safety risks (with a significant level of variability between students)
- The course created opportunities for rich student reflection and discussion of strategies for ensuring online safety and being a good digital citizen.

Time Spent on a Typical Day: Lincoln 7th Grade 2018



Devices we have access to at home:

Device	% of Students who have access
TV	93
Tablet	79
Smartphone	79
Video Game Player	79
Portable Video Game Player (DS, etc.)	59
iPod or other MP3 Player	55
DVR	45
e-Reader	45
Desktop	34
Laptop	10

How often do we use technology for...

Daily and A few times a week

Homework - 86%

Listen to music - 69%

Write something - 68%

Use Social Media - 52%

Video Games - 38%

Watch DVD, TV, Movies - 38%

Never

Computer Programming - 59%

Digital Music or Art - 52%

Video Chatting - 48%

Social Media - 41%

Video Games - 24%

Watch DVD, TV, Movies - 21%

My digital life is like...

- A cliff because I can drop or I can fly.
- Tributaries on a river because many platforms lead onto the river that connects me to other people.
- A pond - it ripples and is usually calm but usually never connects.
- A cigaret because it is rewarding but then you want more.

If you could give one piece of advice to younger kids about using the Internet or their cell phones what would it be?

Half of responses were warnings about spending too much time online, screen addiction, and procrastination.

- Control how much you use it. For instance set times in which you can use them, and set boundaries yourself don't just rely on your parents to.
- Make sure that you do not spend too much time on your phone because if you do, you may not have enough time to do your homework.
- Excessive use of technology does nothing but waste your time.

1 third of responses were tips about how to stay safe

Pilot Outcomes - Computational Thinking

Computational Thinking

- High variability in students' prior experience
- Significant growth shown on post-assessment

Computational Thinking Pre/Post Assessments

Topic	Pre - Assessment	Post - Assessment	Improvement
Problem Decomposition	77%	86%	+9%
Loops/Iteration	78%	93%	+16%
Algorithms	42%	75%	+33%
Events	60%	82%	+22%

Pilot Conclusions

- Middle School students need high quality digital citizenship and online safety instruction to match their level of use.
- High variability in computational thinking and computer science experience makes a strong equity case for computational thinking instruction for all students.

Next Steps

- Working through the scheduling process to identify opportunities for a Digital Literacy and Computational Thinking course for all students 6-8.
- Instructional Technology team needs to study the impact of increased direct instruction on technology integration supports and adapt as necessary.
- Professional development for instructional technology specialists.