Designing a K-5 Computer Science Curriculum
http://home.lps.org/computerscience

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Lincoln Public Schools – Lincoln, NE
Lincoln Public Schools

41,000 students
39 elementary schools (K-5)
12 middle schools (6-8)
6 high schools (9-12)
Career Academy & Focus Programs
K-12 Computer Science Framework
https://k12cs.org/
1,000,000 more jobs than students by 2020

$500 billion opportunity

1.4 million computing jobs

400,000 computer science students


Computer science is a top paying college degree and computer programming jobs are growing at 2X the national average.
Let's teach kids to code
“Young people today have lots of experience interacting with new technologies, but a lot less so of creating or expressing themselves with new technologies. It's almost as if they can read but not write.”

…Mitch Resnick
Computer Science and Technology emerged as the top priority in the community’s strategic planning process.
Lincoln Public Schools

Board of Education Resolution...

By 2016, LPS will have a comprehensive, K-12 computer science curriculum that promotes critical thinking and problem solving.
High variability across schools for “Technology” access & instruction

Specials rotations and blended positions

1:1 Chromebooks
Shifting Instructional Tech
"They find a sheltered, safe spot in which to pupate, or transform into an adult. In all caterpillars, this happens inside a protective shell known as a chrysalis."

...photo and quote from How Stuff Works
Objectives for Project Chrysalis…

Objective 1: Review and refresh K-5 LPS technology objectives.

A. Review ISTE and CSTA standards – blend with our current LPS objectives as appropriate
B. Identify essential learnings – define “must do” and “may do” depending on reality of rotation models
C. Revise rubrics and assessments
Objectives for Project Chrysalis…

Objective 2: Begin unit/lesson development aligned with the LPS Instructional Framework. Identify and/or create computer science resources, software, lessons, and assessments in the following areas…

A. Computer Science
B. Keyboarding
C. Digital Literacy
D. Digital Citizenship
E. Digital Media (NDE Media Arts Standards)
Objectives for Project Chrysalis…

Objective 3: Develop and execute a plan for professional development for district elementary computer sciences specialists for the 15-16 school year to implement changes.
"You can't wait until you have all the answers to all the questions to be able to get started.”...Apple
Simplify
Focus
Focus
Bravery Challenge
Creative learning methodology

- Play
- Projects
- Peer
- Passion

http://learn.media.mit.edu/lcl/
Creativity
Collaboration
Communication
Persistence
Problem Solving

In Partnership with Code.org®
2014-15

Curriculum Review Team

Susan Prabulos - Meadow Lane
Jason Rushing - Humann
Amy Allerheiligen - Calvert
Viviana Morales - Prescott & Sheridan
Trish Murphy - Randolph
Jason Wilmot - Campbell
Melody Kenney - LPS Library
Dr. Kent Steen - LPS Curriculum
Dr. Rob McEntarffer - LPS Assessment
Kristi Diehl - LPS Assessment
Dr. Chuck Friesen - retired LPS Technology Director
Dr. LeenKiat Soh - UNL Computer Science
2014-15

Standards Revision
Learning Progressions
Proficiency Level Descriptors/Rubrics

K-5 CS LibGuide Version 1.0
(with future expansions and patches)
Refresh and Rebrand
Computer Science

Computational Thinking

Creative Computing/Media Arts

Digital Literacy
2015-16 - pilot year - 25 schools

Code.org Courses 1-4
Ongoing pilots of CS resources and robotics

Grades 6-12 course development and state standards work
LPS starts students young on coding

Computer science becoming a priority for educators.

By MARGARET NEST
Lincoln Journal Star

The weekend is buzzing with kids at the Kansas City Museum — the creation of magical robots — and a program teaching robotics to young children.

The event, which started a few years ago, has been a hit with parents and teachers alike. But now, a new program is emerging: a robotics program for Lincoln Public Schools.

The program, called "Lincoln Public Schools Robotics," is being offered to students in grades K-12. The goal of the program is to introduce students to the fundamentals of robotics, from building and programming to troubleshooting.

The program is being led by a team of educators and volunteers, including Lincoln Public Schools officials, who have been working with local businesses and organizations to bring the program to life.

"Lincoln Public Schools has been hearing from parents and students about their interest in robotics," said Lincoln Public Schools superintendent, Dr. Tricia Rigby. "We are excited to offer this program to our students and are grateful for the support of our community partners in making it possible."
Revision to Elementary Report Card “Computer Science”
CS instruction in all 39 LPS elementary schools!

Middle School Computer Science
Pilots at three middle schools

Completion of Nebraska high school CS standards and programs of study
Lincoln was ranked as high as #4 in the world last year for overall Hour of Code participation!

Roper and Campbell each have won $10,000 from Code.org

Humann won a web chat with the CEO of YouTube
2017-18
Middle School - 4 of 12 (all in 18-19)
  Computer Science Discoveries

High School - 6 of 6
  Creative Coding Through Games and Apps
  Intro to Programming
  Advanced Programming
  AP Computer Science Principles
  The Career Academy
K-12 Computer Science Framework
https://k12cs.org/
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Gender breakdown of students in LPS Computer Science courses...
The CSforAll Consortium is a network of computer science (CS) education providers, schools/districts, funders, and researchers working to support the mission of expanding access to CS for all students.

http://www.csforall.org