

NYS Computer Science and Digital Fluency Standards

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**NADCO Collegial Circle
March 23, 2023**

New York State Computer Science and Digital Fluency Standards: Implementation Timeline

Timeline

Phase I: Awareness-Building	Dec. 2020 – June 2022	Roll-out and building awareness of the new standards and timeline for implementation.
Phase II: Capacity-Building	July 2022 – Aug. 2023	Focus on curriculum development, resource acquisition, professional development
Phase III: Initial Implementation	Sept. 2023 – Aug. 2024	All credit-bearing Computer Science courses will be aligned with NYS CS&DF Standards. Continued capacity building.
Phase IV: Full Implementation	Sept. 2024 – ongoing	CS&DF Learning Standards implemented in all grade bands K-12

Vision for CS & DF Standards

Every student will know how to live productively and safely in a technology-dominated worlds. That includes understanding the essential features of digital technologies, why and how they work, and how to communicate and create using those technologies.

[The Future of Work: Will Our Children Be Prepared?](#)

Computer Science & Digital Fluency Standards: Five Key Concept Areas

Impacts of Computing



Computational Thinking



Networks & System Design



Cybersecurity



Digital Literacy



Computer Science & Digital Fluency Standards: Sub-Concepts

Each concept contains two or more sub-concepts and within the sub-concepts are a number of standards. The standards are grouped into grade-bands: K-1, 2-3, 4-6, 7-8, and 9-12

CONCEPT	SUB-CONCEPTS	STANDARDS
IMPACTS OF COMPUTING	SOCIETY	1, 2
	ETHICS	3, 4, 5
	ACCESSIBILITY	6
	CAREER PATHS	7
COMPUTATIONAL THINKING	MODELING AND SIMULATION	1
	DATA ANALYSIS AND VISUALIZATION	2, 3
	ABSTRACTION AND DECOMPOSITION	4, 5
	ALGORITHMS AND PROGRAMMING	6, 7, 8, 9, 10
NETWORKS AND SYSTEMS DESIGN	HARDWARE AND SOFTWARE	1, 2, 3
	NETWORKS AND THE INTERNET	4, 5
CYBERSECURITY	RISKS	1
	SAFEGUARDS	2, 3, 4
	RESPONSE	5
DIGITAL LITERACY	DIGITAL USE	1, 2, 3, 4, 5
	DIGITAL CITIZENSHIP	6, 7



Elementary Plan: K-5 (6)
Middle School Plan: (6)7-8
High School Plan: 9-12

If departments are covering it already, how do you know if all are doing curriculum with fidelity. Can we say this about standards in all departments?

Placemat Activity

In this activity, you will have the opportunity to deep dive into the standards. Take time to discuss within your groups the standards and the progression from Kindergarten to 12th grade.

- 1. Review each standard and identify key nouns and verbs**
- 2. Rewrite the standards as one sentence that encompasses K-12**
- 3. Discuss and jot down possible pitfalls and prior skills needed**
- 4. Jot down any ideas you have for classroom activities**

Placemat Activity

NYS K-12 Computer Science and Digital Fluency Standards

Impacts of Computing				
Sub-Concept	Standard	Addressed Currently?	If so, where is this standard being addressed?	If not, how can we address it?
Society	K-1.IC.1	•		
	K-1.IC.2	•		
Ethics	K-1.IC.3	•		
	K-1.IC.4	•		
	K-1.IC.5	•		
Accessibility	K-1.IC.6	•		
Career Paths	K-1.IC.7	•		

Placemat Activity

Digital Use	Digital Literacy K-1DL.1 Identify and explore the keys on a keyboard. 2-3.DL.1 Locate and use the main keys on a keyboard to enter text independently. 4-6.DL.1 Type on a keyboard while demonstrating proper keyboarding technique, 7-8.DL.1 Type on a keyboard while demonstrating proper keyboarding technique, with increased speed and accuracy. 9-12.DL.1 Type proficiently on a keyboard.	
	Nouns (speak to content) K-1: keys, keyboard 2-3: main keys, keyboard, text 4-6: keyboard, keyboarding technique 7-8: keyboard, keyboarding technique, speed, accuracy 9-12: keyboard	Verbs (speak to skills) K-1: identify, explore 2-3: locate, use, enter 4-6: type, demonstrating 7-8: type, demonstrating 9-12: type
	In our own words: Students will become proficient at keyboarding.	
	Examples: (with links eventually) K-1: 2-3: 4-6: 7-8: 9-12:	
	Potential Tools: K-1: image of keyboard, keyboard 2-3: keyboard (Chromebook) 4-6: keyboard (Chromebook) 7-8: keyboard (Chromebook) 9-12: keyboard (Chromebook)	
	Prior skills needed: K-1: letter recognition, basic key recognition 2-3: hand eye coordination 4-6: stamina 7-8: stamina 9-12: proficient skills at keyboarding	Anticipated pitfalls: K-1: access, consistency 2-3: access, consistency 4-6: access, consistency 7-8: access, consistency 9-12:



Contact: Catherine Honeyman
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Sample Curriculum Mapping Tool

IMPACTS OF COMPUTING							
Standard	Description	Activities/Resources currently implemented	Grade Implemented	Subject area	Ideas/Activities/Resources that could be implemented	Grade Implemented	Subject area
9-12.IC.1 Evaluate the impact of computing technologies on equity, access, and influence in a global society.	The focus should be on how computing technologies can both perpetuate inequalities and help to bring about equity in society.						
9-12.IC.2 Debate laws and regulations that impact the development and use of computing technologies and digital information.	The focus is on developing and defending a claim about how a specific law related to computing technologies impacts different stakeholders.						
9-12.IC.3 Debate issues of ethics related to real-world computing technologies.	The focus is on developing and defending a claim about a specific ethical dilemma related to computing technologies.						
9-12.IC.4 Assess personal and societal trade-offs related to computing technologies and data privacy.	The focus is on discussing the personal and societal benefits and drawbacks of different types of data collection and use, in terms of ethics, policy, and culture.						
9-12.IC.5 Describe ways that complex computer systems can be designed for inclusivity and to mitigate unintended consequences.	The focus is on applying an understanding of bias and ethical design in order to make recommendations for designing with inclusivity and social good in mind.						
9-12.IC.6 Create accessible computational artifacts that meet standard compliance requirements or otherwise meet the needs of users with disabilities.	At this level, considering accessibility becomes part of the design process and awareness of professionally accepted accessibility standards.						
9-12.IC.7 Investigate the use of computer science in multiple fields.	At this level, the focus is on making connections between computer science and the fields of interest of individual students.						
Standard	Description	Activities/Resources currently implemented	Grade Implemented	Subject area	Ideas/Activities/Resources that could be implemented	Grade Implemented	Subject area
9-12.CT.1 Create a simple digital model that makes predictions of outcomes.	The focus is on using data to build alternative numerical models that can best represent a data set.						
9-12.CT.2 Collect and evaluate data from multiple sources for use in a computational artifact.	The emphasis is on designing and following collection protocols. Data sources include, but are not limited to, sensors, web or database scrapers, and human input.						
9-12.CT.3 Refine and visualize complex data sets to tell different stories with the same data set.	The emphasis is on refining large data sets to create multiple narratives depending upon the audience. Large data sets require use of a software tool or app to cross-reference, analyze, refine, and visualize subsets of the data.						
	The focus is on having students think about how to						

Sample Curriculum Mapping Tool

Standard	Description	Activities/Resources currently
9-12.IC.1 Evaluate the impact of computing technologies on equity, access, and influence in a global society.	The focus should be on how computing technologies can both perpetuate inequalities and help to bring about equity in society.	
9-12.IC 2 Debate laws and regulations that impact the development and use of computing technologies and digital information.	The focus is on developing and defending a claim about how a specific law related to computing technologies impacts different stakeholders.	
9-12.IC3 Debate issues of ethics related to real-world computing technologies.	The focus is on developing and defending a claim about a specific ethical dilemma related to computing technologies.	

Sample Curriculum Mapping Tool

Standard	Description	Activities/Resources currently implemented	Grade	Implementer	Subject area
7-8.CT.1 Compare the results of alternative models or simulations to determine and evaluate how the input data and assumptions change the results.	Clarifying Statement The focus is on understanding that models or simulations are limited by the data that they use, rather than understanding specifically how they use that data.	Calorie Counter- this is an optional project	78		VE tech
7-8.CT.2 Collect and use digital data in a computational artifact.	Clarifying Statement The emphasis is on designing and following collection protocols. Data sources include, but are not limited to sensors, surveys, and polls.				
	Clarifying Statement Refining includes, but is not limited to identifying relevant subsets of a data set				

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Options to Meet Requirements

- Utilize kidOYO aligned content and pathways
- NearPod Resources
- Book Creator (Potential Supports)
- Required Course Offerings, ex. AP Comp Science Principles, CodeHS
- Project Based Challenges (Rubric Incorporates all Standards)



Public Wall

Members

Courses

Challenges

Badges

Learning Paths

Guides

Discussion

Stories

Pages

Analytics

Announce

Connection

Apps

Co-Manage

Avatar / Alias

Settings

Activity Guide

Collecting Data in the Real World

Copy Link

Students will be able to understand what data is and the different ways data can be collected and used.

View on the Web

Temperature Gauge

Weather Chart A

Weather Images A

Weather Chart B

Weather Images B

CSTA : 1A-DA-07

NYS : 2-3.CT.2 K-1.CT.2 K-1.CT.7

Mentor Trish Created on 09 Nov '22

Activity Guide

How Computers Make Decisions

Copy Link

Students will be able to learn how computers make decisions without direct input from people.

View on the Web

NYS : 2-3.IC.5

Mentor Trish Created on 08 Nov '22

Activity Guide

Guided Lesson

Scratch Drawing to Python Turtles

Copy Link

Students will be able to get started learning the Python programming language by seeing similarities to programs written in the Scratch language using the Hatch! app.

View on the Web

Scratch Drawing to Python Turtles Slides

CSTA : 1B-AP-09 1B-AP-10 1B-AP-15 2-AP-11

NYS : 4-6.CT.6 4-6.DL.4 4-6.DL.5 7-8.DL.4 7-8.DL.5

Mentor Sabrina Created on 05 Oct '22

Activity Guide

Comparing Search Algorithms

Copy Link

Students will be able to understand and compare linear search and binary search.

View on the Web

Numbers

APCSP : AAP-2.L AAP-2.P AAP-4.A

CSTA : 3B-AP-10

NYS : 9-12.CT.6

Mentor Sabrina Created on 05 Oct '22



Nearpod Content Alignment for NYS Computer Science and Digital Fluency Learning Standards K-12

This alignment aims to support teachers with the New York State Computer Science and Digital Fluency learning standards by using content from Nearpod's Digital Citizenship and Literacy library, as well as content from other Nearpod libraries. Through this alignment, teachers can easily find and access standards-aligned computer science and digital fluency content that empowers students to use technology safely, ethically, and effectively in both classroom and real-world settings. The Nearpod content featured in this alignment is aligned to each of the five key concepts for computer science and digital fluency.

Alignment Documents:

[K-1](#)

[2-3](#)

[4-6](#)

[7-8](#)

[9-12](#)



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Impacts of Computing

Computational Thinking

Networks & System Design

Cybersecurity

Digital Literacy

Organized by the Concept Areas

Impacts of Computing

Society

K-1.IC.1: Identify and discuss how tasks are accomplished with and without computing technology.	Nearpod Lesson	Library
	Technology in the Workplace (Nearpod Team)	DCL*
	Offline vs. Online Communication Venn Diagram (Nearpod Team - Draw It)	Video & Activity*
	Spanish: Diagrama de Venn sobre la comunicación en línea (Nearpod Team - Draw It)	
	Portuguese: Comunicação online e offline: Diagrama de Venn (Nearpod Team - Draw It)	
K-1.IC.2: Identify and explain classroom and home rules related to computing technologies.	Nearpod Lesson	Library
	Device-Free Moments (Common Sense Education)	DCL*
	Spanish: Momentos libres de dispositivos (Common Sense Education)	
	Rules for Technology (Nearpod Team - Draw It)	DCL*
	Technology in the Home & Classroom (Nearpod Team - Draw It)	Video & Activity*

Ethics

K-1.IC.3: Identify computing technologies in the classroom, home, and community.	Nearpod Lesson	Library
	Identifying Collaboration and Communication Tools (Nearpod Team)	DCL*
	The Internet of Things (Nearpod Team)	DCL*
	Connecting Online (Nearpod Team - Draw It)	DCL*
	Collaboration and Communication Tools (Nearpod Team - Matching Pairs)	Video & Activity*



nearpod DCL
Digital Citizenship
& Literacy

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Identifying Collaboration and Communication Tools

TECHNOLOGY
APPLICATIONS



Identifying Collaboration and Communication Tools

Grade(s) K - 2nd

Lesson



Nearpod Team

Add to My Lessons

Teach



Live Participation

Control the pace on your own device; students respond to questions on their devices.



Student-Paced

Students complete the assignment on their own.

Related lessons





BOOK CREATOR

[Home Page](#)

Course Offerings

Huntington/Mineola: AP Computer Science Principles

Project-Based Options: *K-12 Robotics*



Ethics?

Critical Media Literacy and Civic Learning

Use of AI

Chat GPT

Chat GPT Resources

- [Teacher Guide](#)
- [UMASS Slide Deck](#)
- [For Educators, ChatGPT Poses Big Questions—and Big Possibilities](#)
- [Navigating the Risks and Rewards of ChatGPT](#)
- [What Students Are Saying About ChatGPT](#)
- [Some educators embrace ChatGPT as a new teaching tool](#)
- [Will ChatGPT Be A Blow To Learning, Or A Boon? We'll Decide.](#)

Chat GPT Resources (ISTE)

ChatGPT through an Education Lens

<http://bit.ly/ChatGPTinEdu>



WHAT ARE AI
CHATBOTS?



WHAT IS
ChatGPT?



TRY ChatGPT



DIVE DEEPER
WITH CHATBOTS



CURRICULUM
IMPACT



EDUCATOR
USES



ChatGPT
CHALLENGES



PODCASTS



ARTICLES



VIDEOS



ADDITIONAL
RESOURCES



WILL ChatGPT
REPLACE TEACHERS?

<http://bit.ly/ChatGPTinEdu>

[Credits: Click to View a List of Resource Hub Collaborators](#)

Implementation September 2024

Planning
Professional Development
Curriculum Writing (Summer 2024)
Hiring and Certification

Will Computer Science be considered an elective at the High School level?

- Currently courses in computer science can be counted either as elective credit or as the third unit of credit in Math or Science. See [“Using Courses in Computer Science to Meet the Requirements for a Regents or Local Diploma,”](#) issued in 2014.

Will Computer Science be a graduation requirement?

- The New York State Board of Regents have committed to a review of New York State graduation measures, which will involve stakeholder meetings and input. Any changes to graduation requirements will be considered as a part of this process. For the latest information, please visit the [NYSED Graduation Measures website](#).

Will there be a Regents Examination developed in Computer Science?

- Currently there is no plan to create a Regents Examination in Computer Science. Decisions regarding credit and assessment requirements for graduation will be considered as a result of the Board of Regents’ Graduation Measures initiative. Please see the [Graduation Requirements/Course Credit section of this FAQ page for more information. Frequently Asked Questions related to the new NYS K12 Computer Science and Digital Fluency Learning Standards.](#)

SOCE: Statement of Continued Eligibility

- Computer Science Certification / SOCE pushed to September 1, 2024
- Computer Science considered a CTE subject area
 - CDOS Option 1 Diploma Pathway
 - Can count towards Middle Level 1.75 units CTE requirement
 - Five-unit CTE sequence leading to Regents Diploma with Advancement Designation