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OFFICE OF THE SUPERINTENDENT

November 12, 2026

TO: The Honorable William Arakaki
Chairperson, Student Achievement Committee

FROM: Keith T. Hayashi
Superintendent

SUBJECT: Action on updated computer science content and performance standards

1. EXECUTIVE SUMMARY

The Hawaiʻi State Department of Education (Department), through the Office of Curriculum and Instructional Design (OCID), has completed the alignment update for Hawaiʻi's pre-kindergarten through grade 12 Computer Science (CS) standards with the national 2026 Computer Science Teachers Association (CSTA) Pre-Kindergarten-12 (PK-12) CS Standards. Hawaiʻi's CS educational specialist served on the national standards revision committee, helping ensure that Hawaiʻi's equity priorities, educational contexts, and community perspectives informed the updated framework.

The update follows the Department's Curriculum Management System (CMS) Standards Adoption timeline and process. The 2026 CSTA PK-12 CS Standards were developed over a three-year iterative process driven by a multi-disciplinary writing team across states. To ensure comprehensive feedback prior to final publication, complex area CS teams were systematically engaged to provide public input during all three major draft stages. Under the CMS Standards Review Checklist, Section 2c, it was collaboratively determined that a "replace" adoption path is appropriate. This path represents full adoption of the updated standards rather than adaptation of or supplementation to the existing standards.

This action addresses the nine-year gap since the 2017 standards update and aligns CS education with the four guiding principles of the CMS:
1) Equity and Excellence; 2) Connections to Culture and Place; 3) Focus on the Whole Child; and 4) College, Career, and Community Readiness.

2. RECOMMENDATION

The Department recommends the Board of Education (Board) approval of the 2026 CSTA PK-12 CS Standards for pre-kindergarten through 12th grade.

3. RECOMMENDED EFFECTIVE DATE

The Department recommends that the revised standards take effect in school year (SY) 2027-2028. The preceding SY 2026-2027 is designated as the training and transition year for schools to prepare for implementation.

4. RECOMMENDED COMPLIANCE DATE (if different from the effective date)

Full compliance and implementation of the revised 2026 CSTA PK-12 CS Standards will begin in SY 2027-2028.

5. DISCUSSION

a. Conditions leading to the recommendation:

As the 8th content area to undergo the CMS-based review, the update to the CS standards was necessitated by several critical drivers:

- Decade Gap Between Revisions: Addressing the nearly 10-year interval since the 2017 standards, the longest in CSTA history.
- Growth in CS Education Research: Utilizing a vastly expanded, evidence-based literature foundation for learning progressions.
- Emerging Fields and Technological Advances: Integrating rapid developments in Artificial Intelligence (AI), cybersecurity, quantum computing, and data science.
- Alignment with Postsecondary Standards.
- Surge in K-12 Implementation: Analyzing real-world classroom trends to resolve identified gaps and pain points.
- Evolution of State-Level Standards: Incorporating insights from the 46 states that have now adopted CS standards.
- Global Framework Application: Maintaining alignment with international reference points to ensure Hawai‘i’s students remain globally competitive.

As of SY 2024-2025, all public elementary, middle and high schools have been required to provide CS experiences for students. The Department has been committed to CS education, and while initially providing virtual CS convenings, with legislative support, the Department has been hosting in-person summits to provide exposure to national best practices, standards revision updates, available resources, and networking opportunities.

The Department was directly involved in shaping the national 2026 CSTA PK-12 CS Standards, with its CS educational specialist serving on the revision advisory team while informing and providing feedback from complex area CS leads that have standing monthly meetings. Grounded in equity, community input, future readiness, flexibility, and research, these updated standards create clear PK-12 learning progressions. They also align with the Department's tri-level CMS framework to guide district policy, teacher preparation, and resource evaluation.

The 2026 CSTA Standards Architecture and Review Process

The 2026 standards establish a comprehensive framework defining the essential content, behaviors, and mindsets for CS learning, supported by boundary statements that define grade-band scope and prevent inappropriate technical complexity.

The revision process for the 2026 CSTA PK-12 CS Standards spanned nearly three years, moving from foundational research to final publication. A multi-disciplinary writing team drove the development, releasing three major drafts for review. Throughout this iterative process, complex area CS teams had opportunities to provide public input for each of the draft stages (Drafts 1.0, 2.0, and 3.0) to ensure comprehensive feedback before the final launch.

Revision Timeline Highlights:

- Fall 2023: Research phase initiated with the "Reimagining CS Pathways" project to evaluate extensive literature and 12 national/international frameworks.
- Summer 2024: A 24-member multi-disciplinary writing team was convened, including K-12 educators, researchers, and curriculum experts.
- Fall 2024: Official launch of the writing phase and release of "Draft 1.0" for targeted community feedback on organizational structure.
- Spring 2025: Completion of initial "learning progressions" across the five core concept areas.
- Summer 2025: Release of "Draft 2.0" for public review, focusing on coherence and grade-band flow.
- Fall 2025: Development of detailed "standard clarifications," including boundary statements and practice alignments.

- Winter 2025-2026: Release of "Draft 3.0" for final public input regarding granularity and grade-band placement.
- Spring 2026: Finalization of standards text and creation of supplementary implementation resources.
- June 2026: Department-led solicitation of feedback from internal and external stakeholders.
- July 2026: Official national announcement of the 2026 CSTA PK-12 CS Standards.

Definition of Computer Science

In the current Hawai‘i CS standards, computer science is defined as *“the study of computers and algorithmic processes, including their principles, their hardware and software designs, their implementation, and their impact on society”* (Tucker et al., 2003, p6). The updated standards definition now states, *“computer science is the study and human-centered practice of using data, algorithms, and computing systems to solve problems, make discoveries, and express ideas.”*

Three-Dimensional Framework and Restructured Concepts

The framework operates across three foundational dimensions, updating core concepts to elevate computational logic, modern security, and data literacy:

- Concepts (What Students Know): The five core concepts are:
    - Algorithms and Design: Elevated as a standalone concept emphasizing problem decomposition and procedural logic prior to code execution.
    - Programming: Refocused to emphasize program comprehension, including reading, analyzing, evaluating, and debugging code (including AI-generated code).
    - Data and Analysis: Expanded to cover data fluency, large-scale datasets, and foundational data science principles.
    - Systems and Security: Unifies computing systems, hardware, and networks while elevating cybersecurity and system resilience.
    - Computing and Society: Examines computing history, careers, and the reciprocal relationship between technology and societal impacts.
- Practices (What Students Do): The 12 crosscutting skills are categorized into four categories:
    - Ethics and Social Responsibility
    - Inclusive Collaboration
    - Computational Thinking
    - Human-Centered Design
- Dispositions (How Students Approach Learning): The seven prioritized habits of mind are:
    - Creativity
    - Critical Thinking

    - Curiosity
    - Persistence
    - Reflectiveness
    - Resourcefulness
    - Sense of Belonging

Embedded AI, Ethics, and Human-Centered Design
Rather than treating emerging fields as isolated electives, the 2026 standards integrate modern technical and ethical considerations across all grade bands:

- Pervasive AI Integration: AI learning outcomes are distributed across all five concepts rather than treated as a standalone topic. Individual standards and boundary statements include explicit "AI-related" tags whenever they directly address machine learning, model evaluation, or AI impacts.
- Embedded Ethics and Social Responsibility: Informed by research showing that ethics is taught inconsistently when isolated, ethical decision-making and social impacts are woven directly throughout core concepts and practices.
- Human-Centered Design: Emphasizes user empathy, accessibility, and responsible design values to ensure technology solutions empower diverse users and mitigate algorithmic bias.

High School Specialty Pathways and Interdisciplinary Options
To support postsecondary and workforce readiness, the 2026 Standards introduce flexible advanced learning options beyond foundational high school coursework:

- Two-Tier Specialty Structure: Establishes a two-tier structure to prepare students for postsecondary coursework, industry certifications, or technical careers:
    - Specialty I (introductory domain study)
    - Specialty II (advanced study)
- Six High-Demand Specialty Domains: Defines dedicated advanced standards across six areas:
    - Artificial Intelligence
    - Cybersecurity
    - Data Science
    - Game Development
    - Physical Computing
    - Software Development
- Interdisciplinary X+CS standards: Provides guidelines for integrating high school CS into non-CS subjects such as:
    - Biology
    - Journalism
    - The arts

Boundary Statements and Implementation Supports
To support classroom implementation and ensure grade-band clarity, every standard includes distinct clarifying components:

- Boundary Statements: Explicitly define what is in-scope and out-of-scope for each standard, ensuring consistent interpretation and preventing inappropriate technical complexity across grade levels.
- Practice and Disposition Alignments: Identifies specific crosscutting practices and habits of mind developed through instruction for each standard.
- Research-Grounded Foundation: Grounded in extensive research syntheses led by WestEd, which evaluated learning progressions and benchmarked CSTA standards against national, international, with science, technology, engineering, and mathematics/humanities frameworks.

Alignment with Hawai‘i System Goals and Student Outcomes
The 2026 Standards directly support state-specific instructional priorities outlined in the CMS Instructional Design Criteria:

- Nā Hopena A‘o (HĀ): The standards' emphasis on human-centered design, inclusive collaboration, and ethical impact supports HĀ outcomes (belonging, responsibility, excellence, aloha, total well-being, and Hawai‘i).
- General Learner Outcomes (GLOs): Dispositions and crosscutting practices reinforce key GLOs, including becoming self-directed learners, complex thinkers, effective communicators, and effective and ethical users of technology.
- Culture and Place-Based Contexts: Practice standards encourage students to apply computing solutions to community-based issues and local cultural contexts, including ‘āina-based learning.

Student and System Impact

- All students from grades PK-12 are expected to benefit from updated, equity-centered CS standards.
- The standards prepare students for high-demand career pathways in artificial intelligence, cybersecurity, data science, and related fields.
- Embedded ethics and inclusive collaboration practices address opportunity gaps and support broader participation in CS.
- The update maintains Hawai‘i's leadership in CS education policy and supports a coherent statewide approach to CS learning.

b. Previous action of the Board and Committee(s) on the same or similar matter:

- April 5, 2018: The Student Achievement Committee recommended the adoption of the K-12 CSTA Standards.

- May 3, 2018: The Board officially adopted the K-12 CSTA Standards at its General Business Meeting. These standards have remained the state benchmark since that date.

c. Other policies affected:

The proposed action does not affect any current policies.

d. Arguments in support of the recommendation:

As technology rapidly evolves, updating Hawai‘i’s PK–12 CS standards is essential to ensuring students develop the digital literacy, technical competencies, and critical thinking required for modern society. Stakeholder feedback from both community members and internal educators highlights that the proposed 2026 CSTA PK–12 CS Standards offer a strong, forward-looking foundation.

- Pervasive and Modernized AI Integration: AI concepts are embedded across all five core concepts rather than isolated. The standards specifically require students to read, evaluate, and debug AI-generated code.
- Robust National Framework with Ethical Grounding: The framework establishes a high-quality national benchmark that treats digital ethics, safety, and societal impacts as essential components of technical skill development.
- High Document Usability and Logical Structure: Stakeholder feedback confirmed the framework is intuitive, easy to navigate, and provides a reliable blueprint for curriculum design.

e. Arguments against the recommendation:

While the proposed 2026 CSTA PK–12 CS Standards offer a modernized national framework, feedback from Hawai‘i educators and community members highlights arguments against their adoption as currently presented.

- Local Cultural Omission: Concerns that a national framework lacks Hawai‘i-specific cultural contexts or Nā Hopena A‘o.
- Workforce Readiness: The heavy reliance on elementary generalists who may lack specialized CS training or formal certification.

f. Other agencies or departments of the State of Hawai‘i involved in the action:

The Department maintained intellectual collaboration with the University of Hawai‘i at Mānoa College of Education (Learning Design and Technology) throughout the revision process.

g. Possible reaction of the public, professional organizations, unions, Department staff, and/or others to the recommendations:

The Department gathered feedback from internal and external stakeholders using local and national surveys as well as direct outreach. These engagement opportunities were promoted through internal communication channels and on the Department's public website. Additionally, OCID presented these feedback initiatives directly at leadership meetings to maximize participation. Stakeholder responses ranged from strong enthusiasm for AI modernization to practical concerns regarding the logistics of elementary-level integration.

h. Educational implication:

The 2026 CSTA PK-12 CS Standards fulfill the Department's mission to ensure students are globally competitive. By embedding AI fluency and computational thinking into the PK-12 continuum, the framework prepares Hawai'i's learners for a world and economy powered by computing.

i. Personnel implications:

The Department's CS educational specialist and resource teacher will continue to lead implementation efforts, leveraging their experience as a convening member of the national revision process. Professional development will be coordinated with statewide complex area CS teams throughout the SY 2026-2027 transition year.

j. Facilities implications:

Not applicable.

k. Financial implications:

The Department will utilize existing departmental funding, resources and personnel for complex/school-level support.

6. OTHER SUPPLEMENTARY RECOMMENDATIONS

Not applicable.

Thank you for your consideration.

KTH:tu
Attachment

c: Office of Curriculum and Instructional Design

HAWAIʻI STATE DEPARTMENT OF EDUCATION

Office of Curriculum and Instructional Design

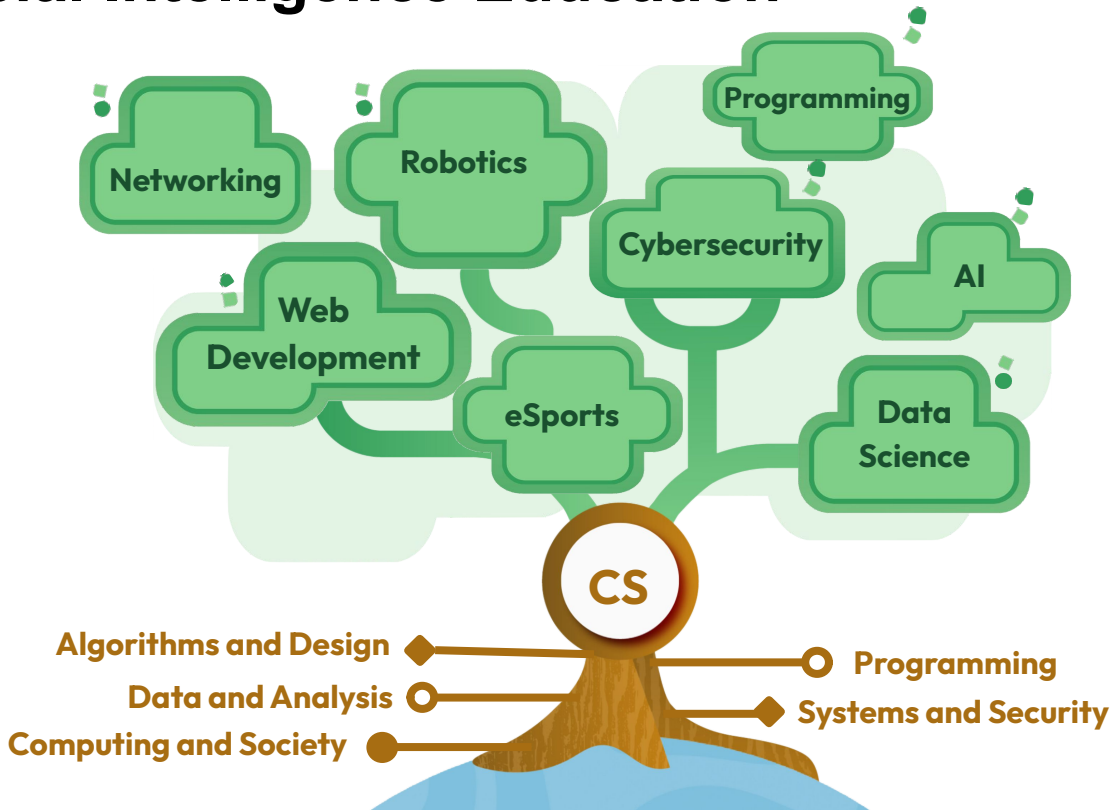
Action on updated computer science content and performance standards

Hawaiʻi State Board of Education
Student Achievement Committee
November 12, 2026

Dr. Teri Ushijima, Assistant Superintendent, Office of Curriculum and Instructional Design

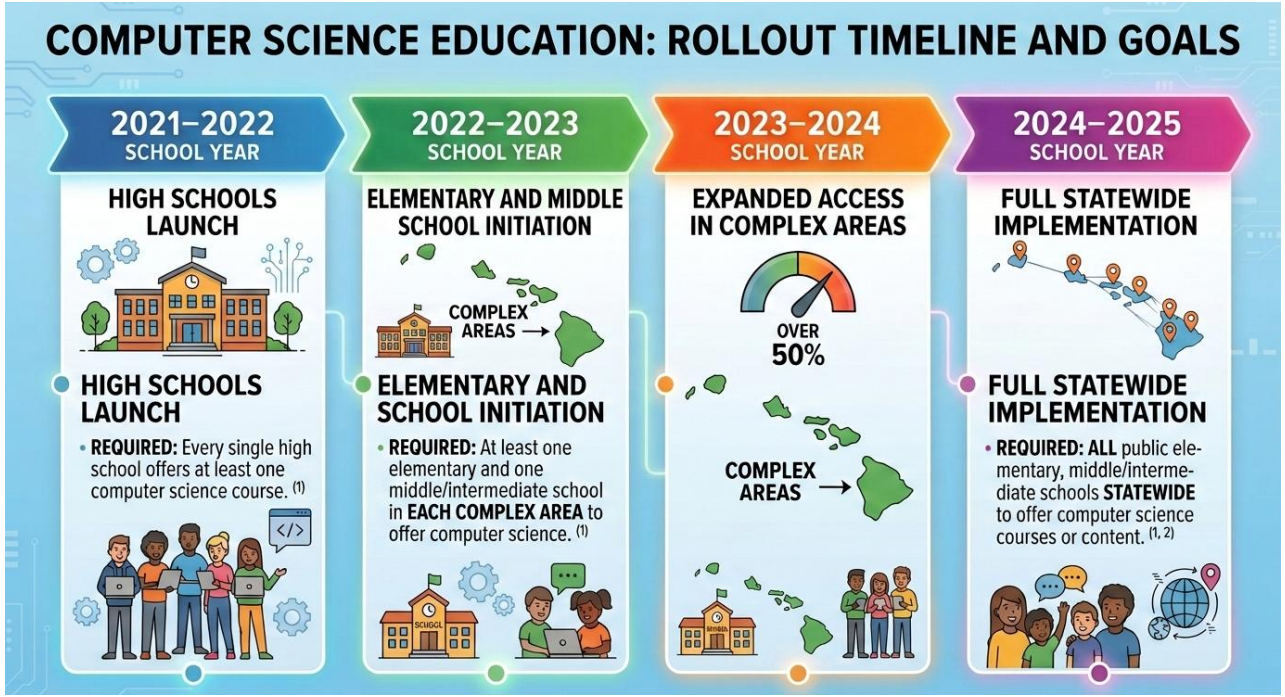
Foundational Computer Science and Artificial Intelligence Education

In an age of **artificial intelligence (AI)**, **computer science (CS)** isn't just mandatory; it is **foundational**



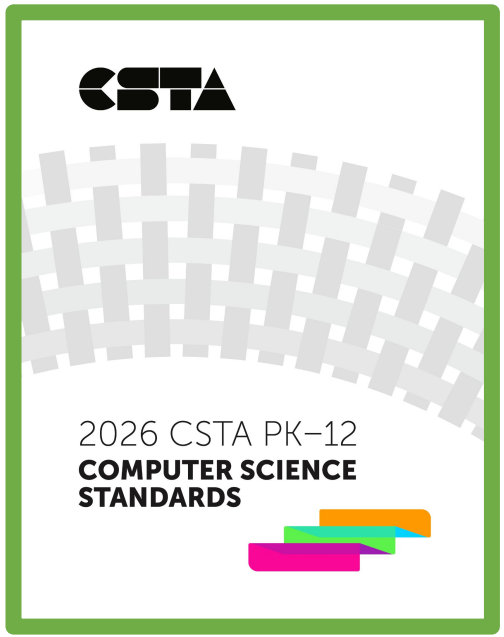
HIDOE Computer Science Legislation

Hawaii Revised Statutes §302A-323 timeline



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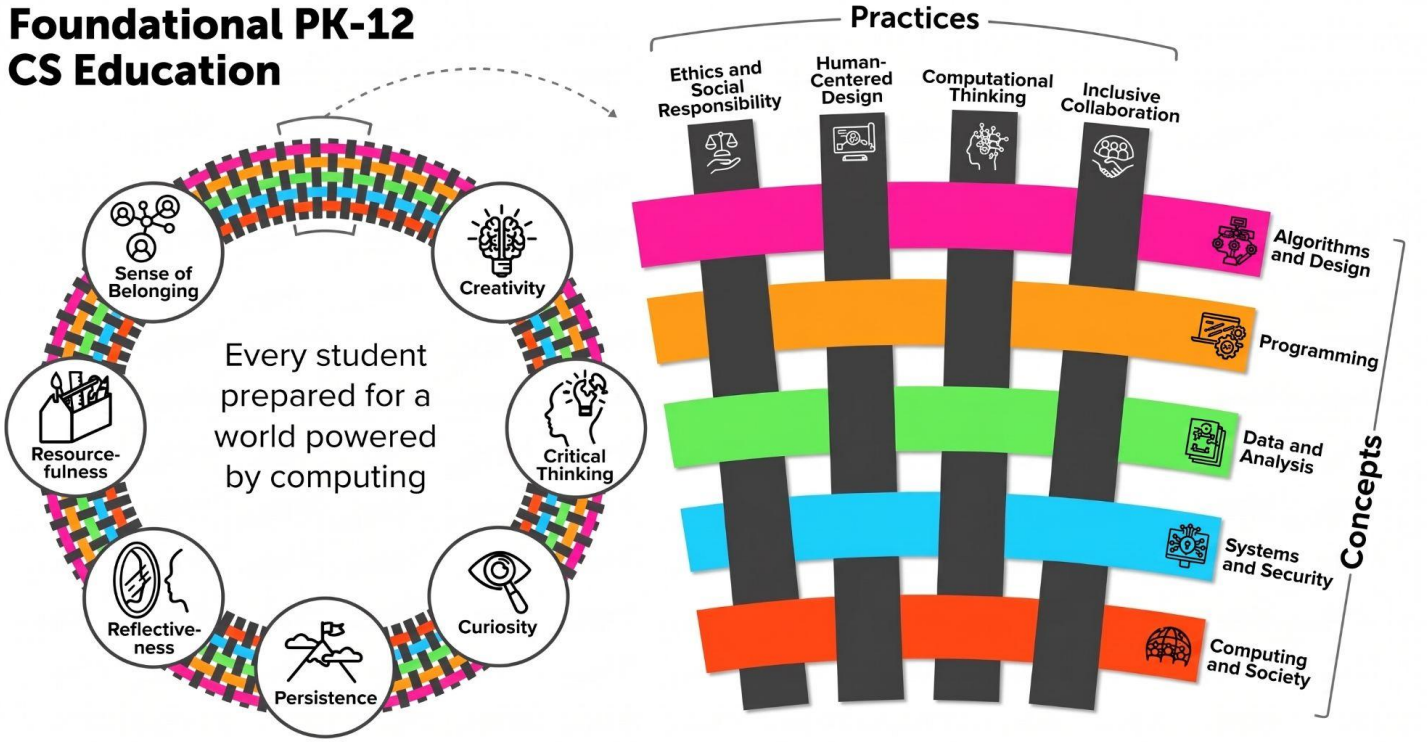
2026 CSTA PK-12 CS Standards and Definitions



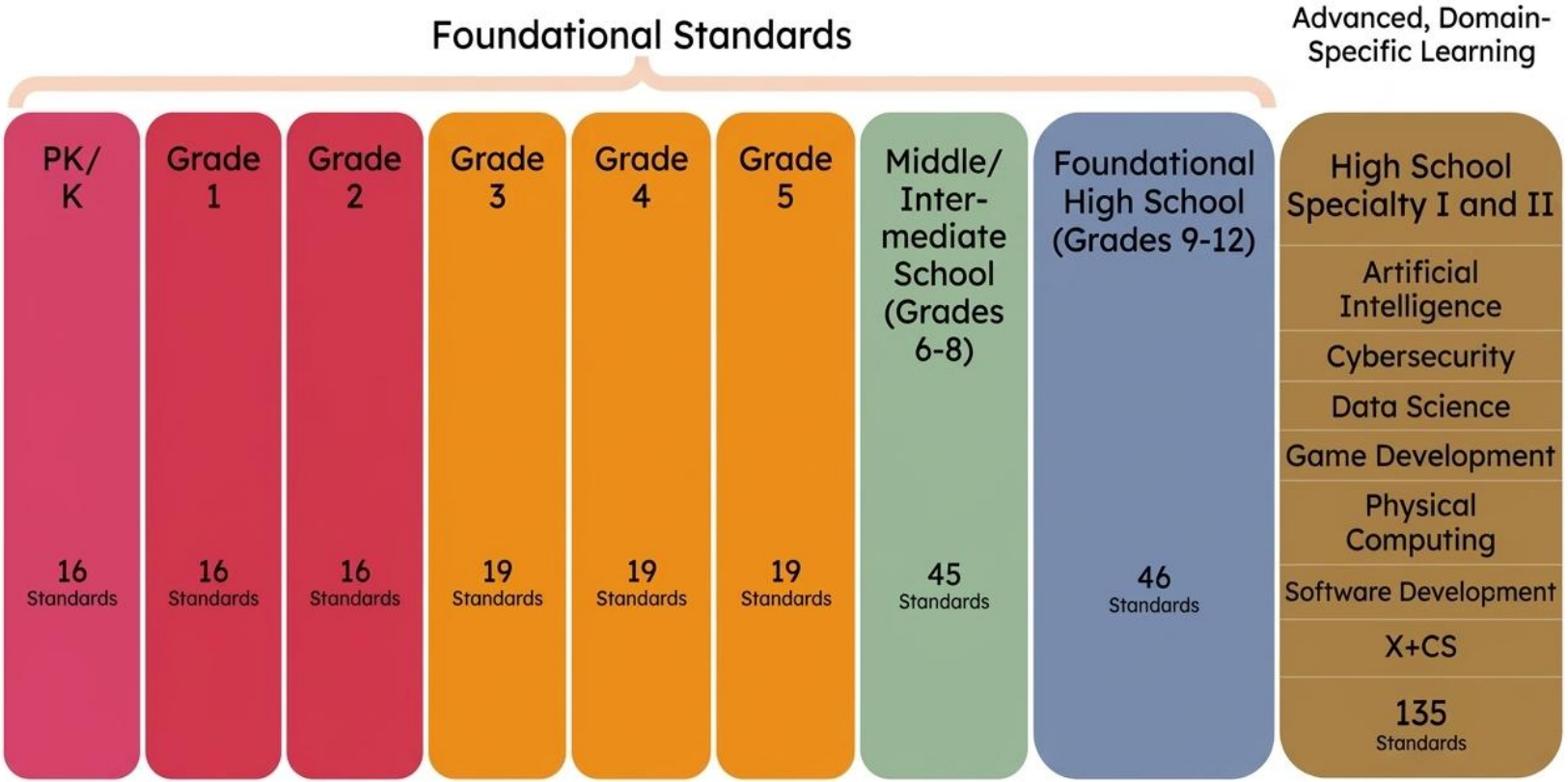
https://tinyurl.com/2026CSTACSStandards

Computer science is the study and human-centered practice of using data, algorithms, and computing systems to solve problems, make discoveries, and express ideas.

Enduring Concepts, Dispositions and Practices

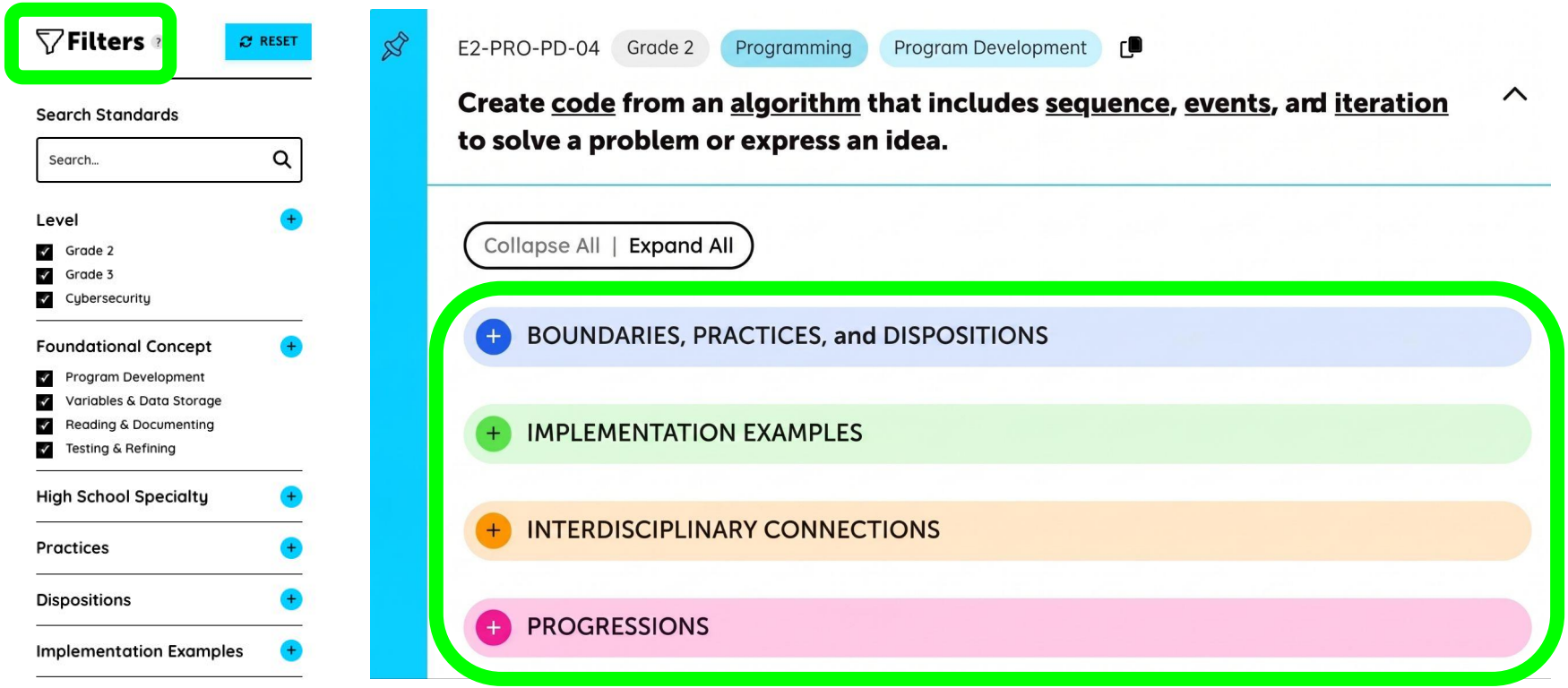


2026 CSTA PK-12 Standards by Level

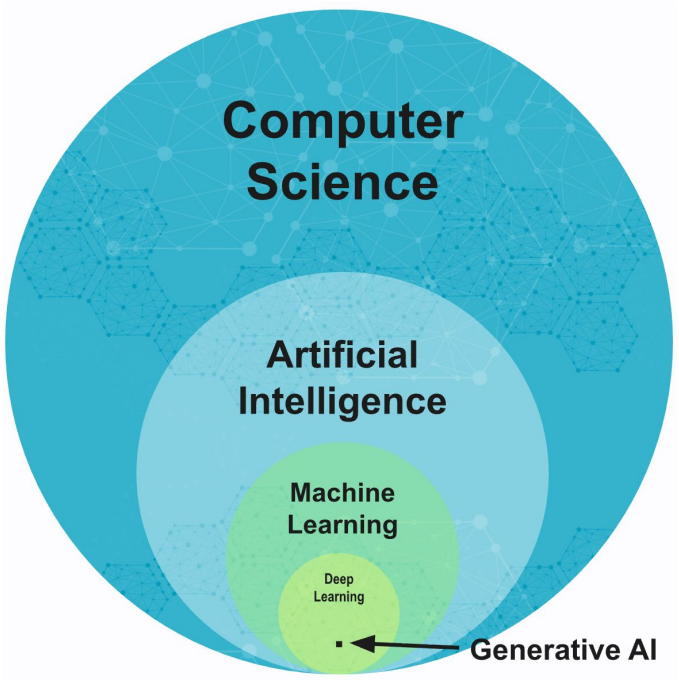


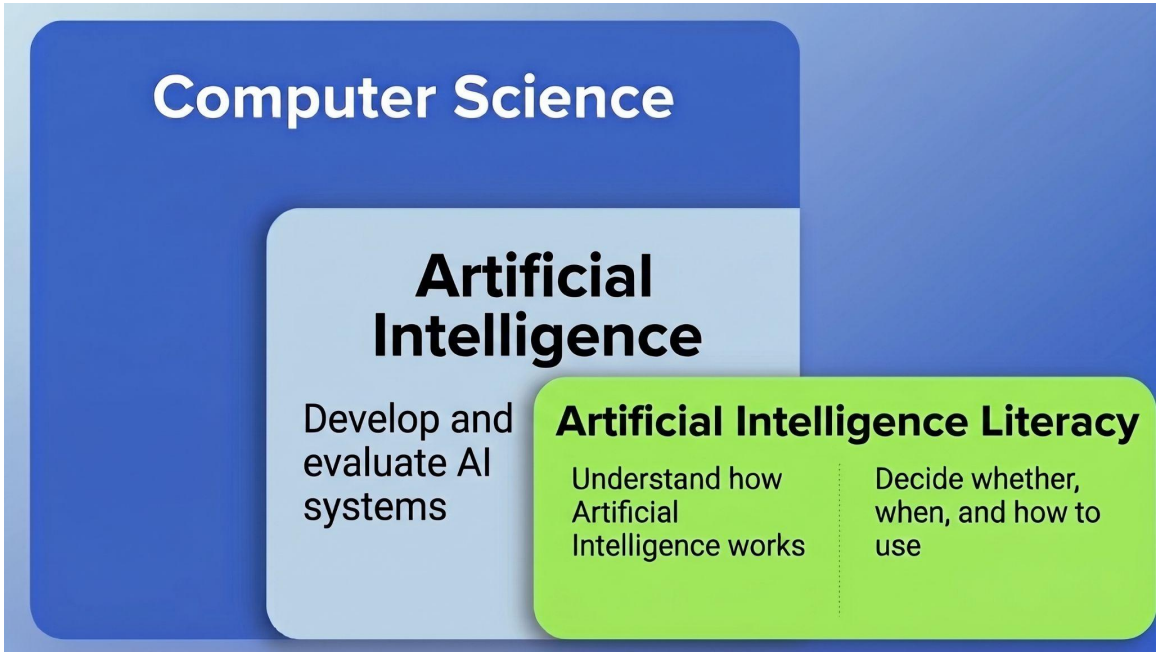
CSTA Standards Dashboard

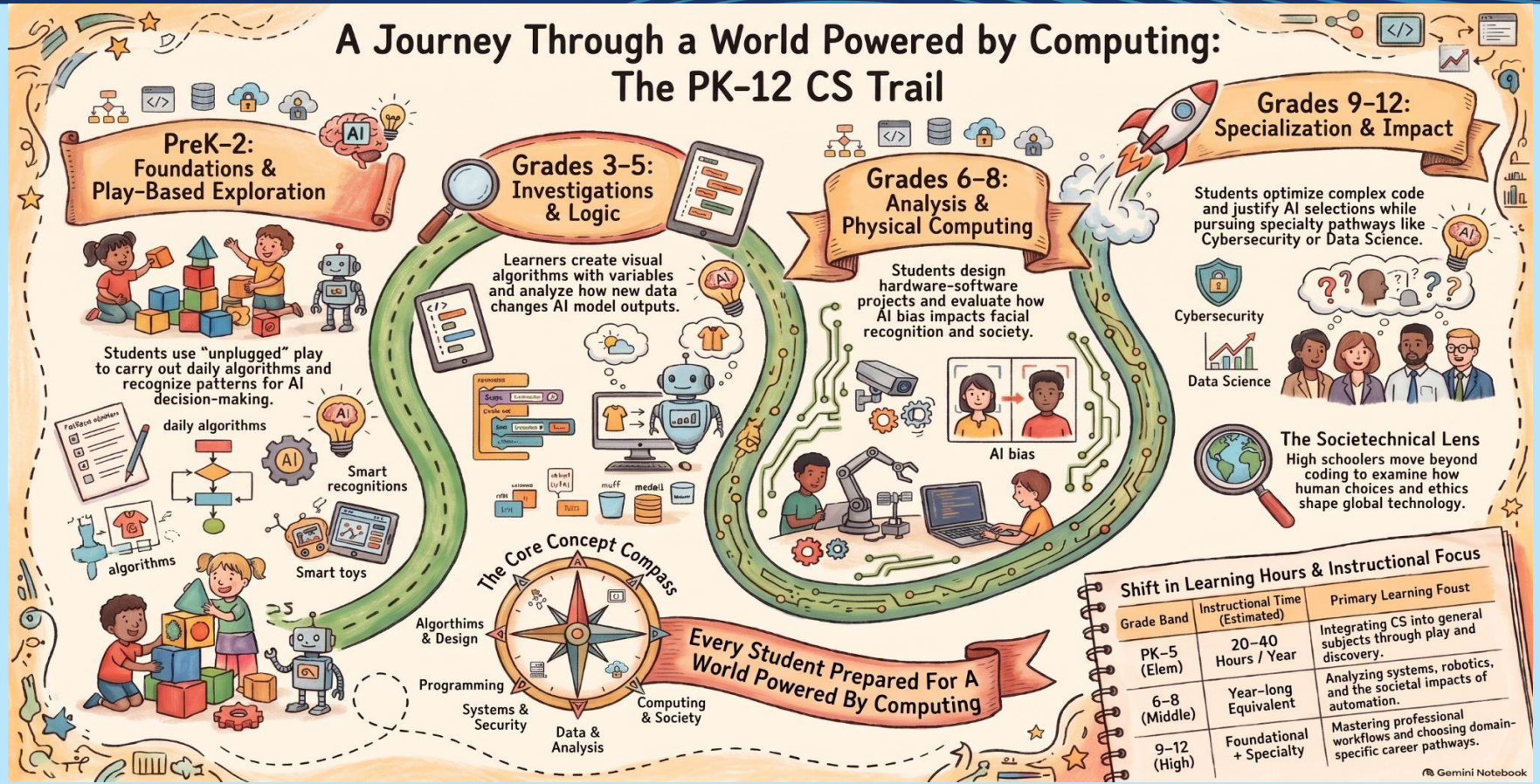
https://csteachers.org/pk12standards/view/



CS - AI Connections







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What Support Can the Board Provide?

1

Approve the Department's proposed adoption of the national *Computer Science Standards*

https://tinyurl.com/2026CSTACSStandards

2

Support the Department's implementation of the national *Computer Science Standards*