

IT Career Pathways Summit: Making Connections Between K-12, Post Secondary, and Industry

**October 3rd, 2023, from 8:30 am to 3 pm
to be followed by a social mixer
*@ the Japanese Cultural Center of Hawai'i***

Sponsored by:



UNIVERSITY of HAWAII*



Agenda

TIME	DESCRIPTION
8:00am – 8:30am	Check-in and Refreshments
8:30am – 9:00am	Welcome
9:00am – 10:00am	HIDOE CS/IT Pathway Overview
10:00am – 11:00am	Post-Secondary IT Pathway and Panel
11:00am – 12:00noon	Industry Panel: Pathway Insights from the Real World
12:00noon – 1:00pm	Lunch and Student Panel: My Pathway Success Story
1:00pm – 1:15pm	Break
1:15pm – 2:15pm	Breakout Groups: Strengthening the Pathway Connections
2:15pm – 3:00pm	Group Share Out and Next Steps
3:00pm – 5:00pm	Mixer

Welcome

- Greg Hester, CIO Council of Hawai'i
- Stephen Schatz, Hawai'i P20
- Alan Ito, University of Hawai'i

THURSDAY, 9/28 10:00 AM - 1:00 PM

Careers in Intelligence Fair In-person
This career fair allows participants to explore career options in the intelligence community and other industry partners.
Held at UHM Campus Center Ballroom
Sponsored by University of Hawaii, P3I, Chamber of Commerce Hawaii, and UH ISAP

THURSDAY, 9/28 5:00 PM - 7:00 PM

Talk Story with Tech Pros In-person
DOE welcome!
Students meet and interact informally with tech professionals.
Held at the RISE Building
Sponsored by ThriveHI, PACE, and University of Hawaii

TUESDAY, 10/3 8:30 AM - 5:00 PM

IT Career Pathways Summit: Making Connections Between K-12, Post Secondary, and Industry In-person
DOE Invite-Only
Bringing together educators and industry professionals to collaborate on IT opportunities and learnings.
Held at the Japanese Cultural Center
Sponsored by the CIO Council of Hawaii, University of Hawaii, Chamber of Commerce Hawaii and P-20

THURSDAY, 10/5 10:00 AM - 1:00 PM

Careers in IT and Cyber Fair In-person
As part of the UH West Oahu Career & Internship Fair, this career fair allows participants to explore career options in the information technology and cybersecurity field and connect with businesses and organizations looking to recruit students for multiple positions.
Held at UH West Oahu Campus Center, Multipurpose Room C-208
Sponsored by UH West Oahu, University of Hawaii, UH Community Colleges and Chamber of Commerce Hawaii

TUESDAY, 10/10 8:00 AM - 3:00 PM

IT Educator Externship In-person
DOE welcome!
Provides DOE teachers an opportunity to hear from and visit local tech and intelligence employers.
Held at various locations TBA
Sponsored by Chamber of Commerce Hawaii and P3I

HAWAII TECH DAYS OF FALL 2023

Join us for activities aimed at preparing and connecting Hawaii's young people to Information Technology careers in local companies!

Employers, register for career fairs at:

<https://go.hawaii.edu/nZX>



See the full listing of events at:

<https://go.hawaii.edu/km3>



FRIDAY, 10/13 9:00 AM - 3:30 PM

Hawaii - Future in Cyber Workshop In-person
This workshop gives students the opportunity to play World of Haiku, a first-of-its-kind video game that teaches critical cybersecurity skills. They also will meet real cybersecurity experts and discover what it's like to work in the field.
Held at University of Hawaii - West Oahu
Sponsored by University of Hawaii, Ember River, World of Haiku, Cyber Hawaii, and CIO Council of Hawaii

FRIDAY, 10/13 2:00 PM - 4:00 PM

Careers in Tech Fair In-person
This career fair gives an opportunity to explore career options with local and national industry partners for students studying Information and Computer Science, Computer Engineering, and Management Information Systems (including software engineering and development, data sciences, system analyses, etc.).
Held at UHM Campus Center Ballroom
Sponsored by UH Manoa ICS Dept., ACM Student Chapter and Chamber of Commerce Hawaii

TUESDAY, 10/17 9:30 AM - 11:30 AM

Middle School E-Sports Field Trip In-person
This field trip gives middle schoolers the opportunity to learn more about the E-Sports program at UH and future careers in this emerging field. This event will only be available to select middle schools.
Held at the UH iLab
Sponsored by University of Hawaii and Chamber of Commerce Hawaii

MONDAY, 10/23 - FRIDAY, 10/27 9:00 AM - 5:00 PM

CyberStrike Training Program In-person
This in-person training program works to enhance the ability of energy sector owners and operators to prepare for a cyber incident impacting operational technology through live instruction and hands-on exercises drawing from elements of the 2015 and 2016 cyber incidents in Ukraine, as well as more recent cyber events.
Held at the RISE Building
Sponsored by U.S. Dept. of Energy, University of Hawaii, Hawaii State Department of Homeland Security, CyberHawaii, and PACE

DATE TBA TIME TBA

Tech & Intelligence Career Awareness Fair for High School Students In-person
Provides high school students an opportunity to hear and discuss opportunities with tech/intelligence organizations.
***More information coming soon**
Sponsored by University of Hawaii and Chamber of Commerce Hawaii

In Partnership with:



HIDOE CS/IT Pathway Overview

- Brett Tanaka – Computer Science Educational Specialist
- Troy Sueoka – CTE Educational Specialist
- Trisha Kim – Windward Complex Area CS Lead
- Pam Kohara – Kaimuki-McKinley –Roosevelt Complex Area CS Lead
- Harmony Paz & Grant Toyooka – Leilehua Complex Area CS Leads

OFFICE OF

**Curriculum & Instructional
Design**

**IT Career Pathways
Summit**

**K-12 Computer Science and CTE-IT Learning
Opportunities**

Desired Outcomes

- Overview of Hawaii DOE Computer Science and CTE IT Pathways and Programs of Study
- Introduce Proposed Computer Science and CTE IT Pathway Integration
- Inform on Industry Partnerships
- Clarify and Answer Questions

Computer Science in Hawaii DOE Overview

State CS Team

SY 23-24 HIDOE Computer Science Team



Brett Tanaka

**Computer Science
Educational Specialist
brett.tanaka@k12.hi.
us**



Miki Cacace

**Computer Science
Resource Teacher
miki.cacace@k12.hi.
us**

Digital Design Team Administrator



Charles Souza
charles.souza@k12.hi.us

Computer Science Definition

“The study of computers and algorithmic processes, including their principles, their hardware and software designs, their applications, and their impact on society” ~

(Tucker et. al, 2006, p. 2)

K–12 Computer Science Framework. (2016). Retrieved from

<http://www.k12cs.org>

K-12 Computer Science Standards

- May 3, 2018
 - Board of Education approved the adoption of Computer Science Standards based on the K-12 Computer Science Teachers Association (CSTA) Standards (<https://csteachers.org/k12standards/>)



Membership ▾ Chapters ▾ Standards ▾ Professional Development ▾ Advocacy ▾ About ▾ CSTA Voice

JOIN CSTA

K-12 Standards

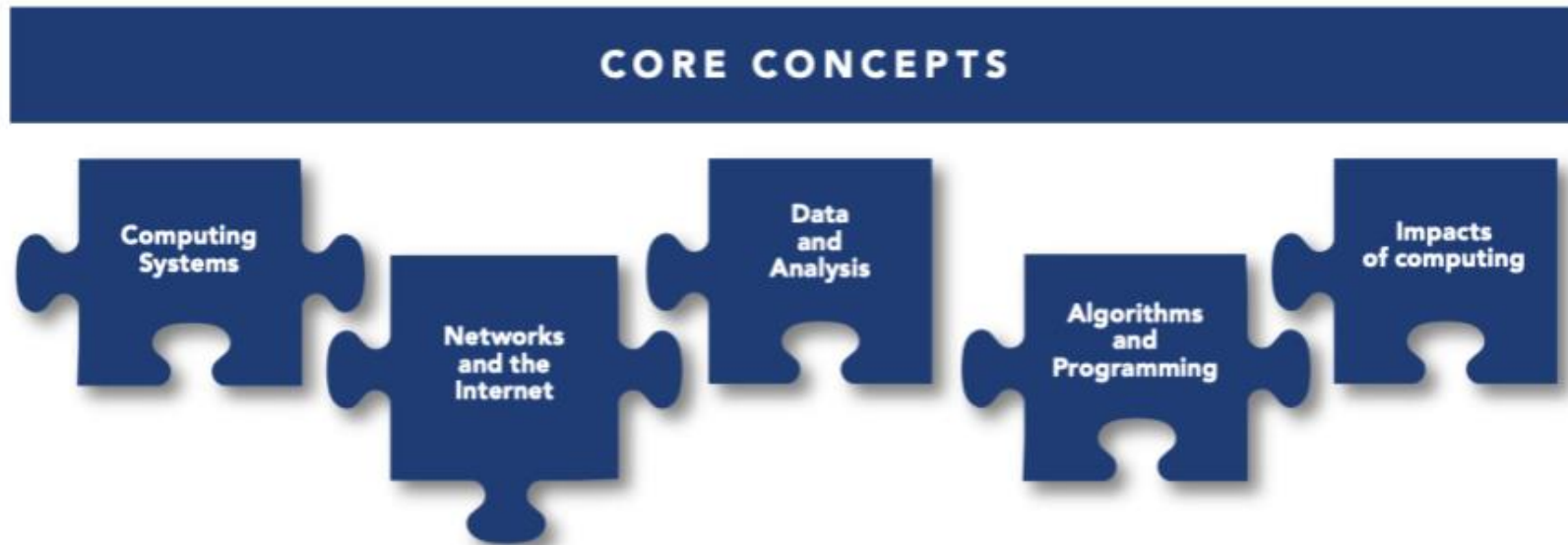
[Home](#) / K-12 Standards

Computer science and the technologies it enables rest at the heart of our economy and the way we live our lives. To become well-educated citizens in a computing-intensive world, and to prepare for careers in the 21st century, our students must have a clear understanding of the principles and practices of computer science.

The *CSTA K-12 Computer Science Standards* delineate a core set of learning objectives designed to provide the foundation for a complete computer science curriculum and its implementation at the K-12 level.

K-12 Computer Science Core Concepts

- Conceptually, the K-12 CS Standards are currently organized by the following five (5) core concepts.



K-12 Computer Science Standards Progression Chart - <https://bit.ly/3RH8FsO>

For each core concept, there are subconcepts organized by Grade Band levels.

Progression of Computer Science Teachers Association (CSTA) K-12 Computer Science Standards, Revised 2017					
Concept	Subconcept	Level 1A (Ages 5-7) <i>By the end of Grade 2, students will be able to...</i>	Level 1B (Ages 8-11) <i>By the end of Grade 5, students will be able to...</i>	Level 2 (Ages 11-14) <i>By the end of Grade 8, students will be able to...</i>	Level 3A (Ages 14-16) <i>By the end of Grade 10, students will be able to...</i>
Computing Systems	Devices	1A-CS-01 Select and operate appropriate software to perform a variety of tasks, and recognize that users have different needs and preferences for the technology they use. (P1.1)	1B-CS-01 Describe how internal and external parts of computing devices function to form a system. (P7.2)	2-CS-01 Recommend improvements to the design of computing devices, based on an analysis of how users interact with the devices. (P3.3)	3A-CS-01 Explain how abstractions hide the underlying implementation details of computing systems embedded in everyday objects. (P4.1)
	Hardware & Software	1A-CS-02 Use appropriate terminology in identifying and describing the function of common physical components of computing systems (hardware). (P7.2)	1B-CS-02 Model how computer hardware and software work together as a system to accomplish tasks. (P4.4)	2-CS-02 Design projects that combine hardware and software components to collect and exchange data. (P5.1)	3A-CS-02 Compare levels of abstraction and interactions between application software, system software, and hardware layers. (P4.1)
	Troubleshooting	1A-CS-03 Describe basic hardware and software problems using accurate terminology. (P6.2, P7.2)	1B-CS-03 Determine potential solutions to solve simple hardware and software problems using common troubleshooting strategies. (P6.2)	2-CS-03 Systematically identify and fix problems with computing devices and their components. (P6.2)	3A-CS-03 Develop guidelines that convey systematic troubleshooting strategies that others can use to identify and fix errors. (P6.2)
Networks & The Internet	Network Communication & Organization		1B-NI-04 Model how information is broken down into smaller pieces, transmitted as packets through multiple devices over networks and the Internet, and reassembled at the destination. (P4.4)	2-NI-04 Model the role of protocols in transmitting data across networks and the Internet. (P4.4)	3A-NI-04 Evaluate the scalability and reliability of networks, by describing the relationship between routers, switches, servers, topology, and addressing. (P4.1)
	Cybersecurity	1A-NI-04 Explain what passwords are and why we use them, and use strong passwords to protect devices and information from unauthorized access. (P7.3)	1B-NI-05 Discuss real-world cybersecurity problems and how personal information can be protected. (P3.1)	2-NI-05 Explain how physical and digital security measures protect electronic information. (P7.2)	3A-NI-05 Give examples to illustrate how sensitive data can be affected by malware and other attacks. (P7.2)
					2-NI-06 Apply multiple methods of encryption to model the secure transmission of information. (P4.4)
Data & Analysis	Storage	1A-DA-05 Store, copy, search, retrieve, modify, and delete information using a computing device and define the information stored as data. (P4.2)	Continuation of standard 1A-DA-05	2-DA-07 Represent data using multiple encoding schemes. (P4.2)	3A-DA-09 Translate between different bit representations of real-world phenomena, such as characters, numbers, and images. (P4.1)
	Collection, Visualization, & Transformation	1A-DA-06 Collect and present the same data in various visual formats. (P7.1, P4.4)	1B-DA-06 Organize and present collected data visually to highlight relationships and support a claim. (P7.1)	2-DA-08 Collect data using computational tools and transform the data to make it more useful and reliable. (P6.3)	3A-DA-11 Create interactive data visualizations using software tools to help others better understand real-world phenomena. (P4.4)
	Inference & Models	1A-DA-07 Identify and describe patterns in data visualizations, such as charts or graphs, to make predictions. (P4.1)	1B-DA-07 Use data to highlight or propose cause-and-effect relationships, predict outcomes, or communicate an idea. (P7.1)	2-DA-09 Refine computational models based on the data they have generated. (P5.3, P4.4)	3A-DA-12 Create computational models that represent the relationships among different elements of data collected from a phenomenon or process. (P4.4)
	Algorithms	1A-AP-08 Model daily processes by creating and following algorithms (sets of step-by-step instructions)	1B-AP-08 Compare and refine multiple algorithms for the same task and determine which is the most	2-AP-10 Use flowcharts and/or pseudocode to address complex problems as algorithms. (P4.4, P4.1)	3A-AP-13 Create prototypes that use algorithms to solve computational problems by leveraging prior

Computer Science Vision and Mission



All Hawaii DOE students will graduate with foundational computer science knowledge and skills to thrive in our increasingly digital world.



Provide equitable access to high quality computer science education for all preK-12 students across all grade bands (PreK-12)

Act 51 (HB2607)

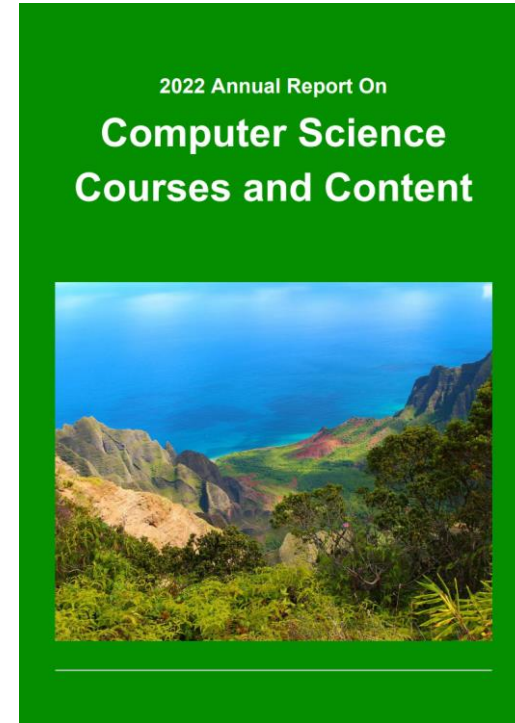
- Signed by Gov. David Ige June 21, 2018
- Key Requirements
 - Develop and implement a statewide computer science curricula plan for public students in kindergarten through twelfth grade that may include design thinking as part of the curricula.
 - Beginning with the 2021-2022 school year, ensuring that each public high school offers at least one computer science course during each school year.

Act 158 (SB242)

- Signed by Gov. David Ige July 21, 2021
- Key Requirements
 - Beginning 2022-23 SY **at least one** ES and one MS/IS in each complex area offers CS course/content.
 - Beginning 2023-24 SY **no less than 50%** ES and MS/IS in each complex area offers CS course/content.
 - By SY 2024-25 **100%** ES and MS/IS schools in each complex area offers CS course/content.

Act 158 (SB242)

- By June 30, 2022, and by each June 30 thereafter, the superintendent shall submit to the board and legislature a report of the computer science courses and computer science content offered during the previous school year at the schools in each complex.
- Note: The 2023 Legislative Report is in the final approval process.



https://www.hawaiipublicschools.org/Reports/DOE_REPORT2022_ComputerScience.pdf

HRS 302a-323 (2021 Act 158) Public Data Dashboard

- We created a dashboard to make it easier for legislators and the public view the data at a glance.
- The dashboard data is updated twice a year:
 - After the 1st Semester
 - At the end of the school year

Offerings Reach Schools Teachers

HRS 302a-323 (2021 Act 158) Reporting

Hawaii State Department of Education Public Schools
Computer Science Courses & Content Offerings

Dashboard updated with 2021 data as of 7/25/2021

On July 1, 2021, the legislature of the state of Hawaii enacted Act 158 (SB242), requiring the Hawaii State Department of Education (Department) to annually report on the computer science courses and computer science content offered during the previous school year at the schools in each complex area.

The Act 158 requirements are distributed over a three-year period. The first requirement states that at least one public elementary school and one public middle or intermediate school in each complex area shall offer computer science courses or content beginning with the 2022 - 2023 school year. The second requirement states that no less than fifty percent of the public elementary schools and no less than fifty per cent of the public middle and intermediate schools in each complex area shall offer computer science courses or content beginning with the 2023-2024 school year. The third requirement states all public elementary, middle, and intermediate schools shall offer computer science courses or content.

Provide equitable access to high quality Computer Science education for all students within the Hawaii State Department of Education.

HIDOE CS Mission Statement

Resources

Act 158 (SB242) Computer Science for Hawaii

#CSforHI

The Department has established baseline metrics that can be used to document HIDOE's progress toward the Act 158 legislative requirements in an annual progress report. This report may be viewed on the Department's website at:

<https://www.hawaiipublicschools.org/VisionForSuccess/reports.aspx>

The Department has also created this dashboard to accompany the legislative report, utilizing the same data to visualize inquiries related to access to courses by school, student reach by demographics, and teacher details.

This dashboard is a supplemental tool; the detailed progress towards Act 158 is found in the legislative report and its appendices.

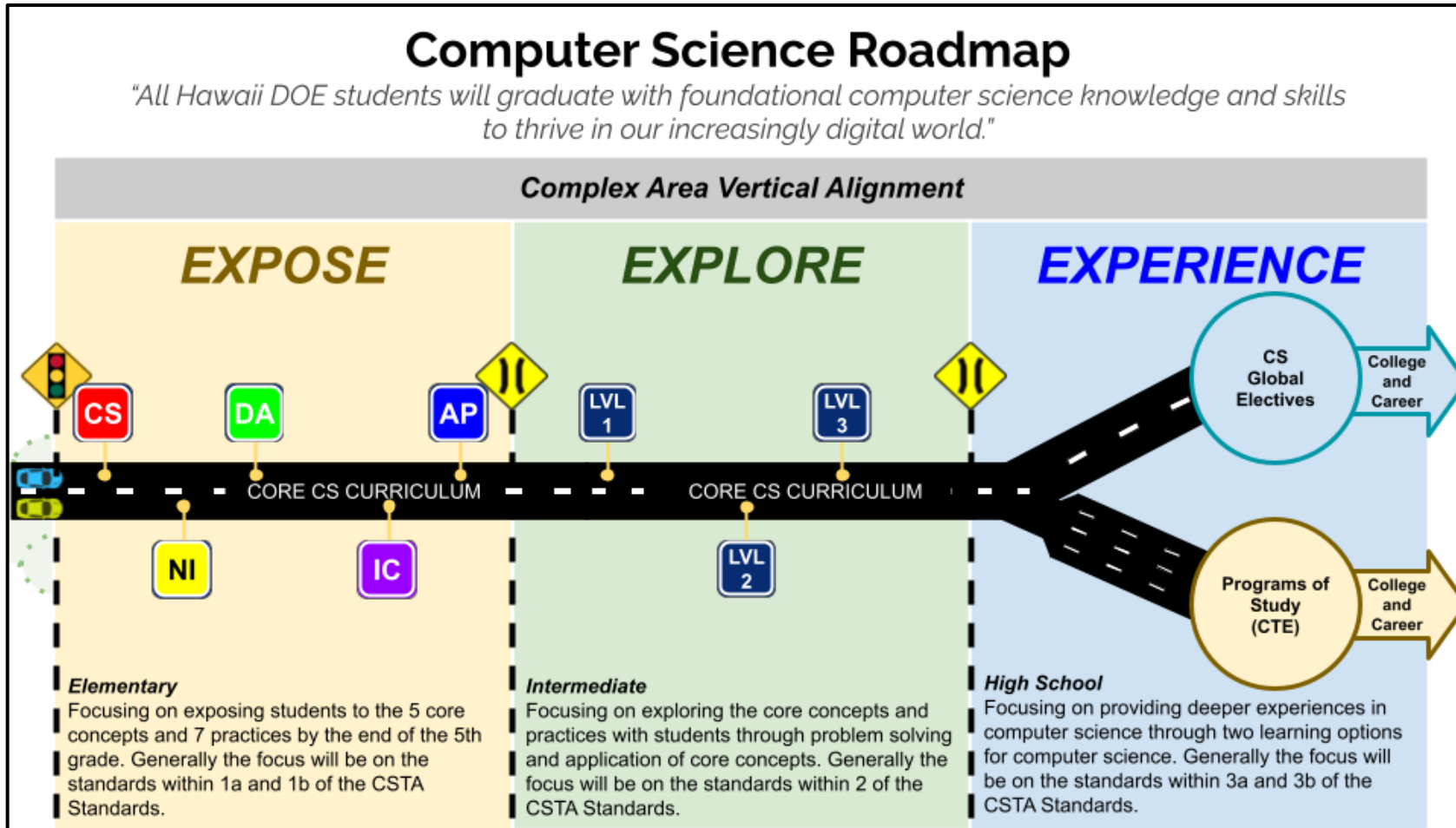
Download PDF

Dashboard built by the Hawaii State Department of Education Data Science & Analytics Group

<https://public.tableau.com/app/profile/hidoe.dga/viz/ACT158PublicDashboard/Cover>

K-12 Computer Science Learning Pathways

Computer Science Roadmap - Foundational CS



Foundational Computer Science Courses

Foundational CS Courses must meet the following three (3) criteria:

1. Students learn CS during the school day.
2. The course/content must include time spent covering CS through the five (5) core concepts and seven (7) practices of the K-12 CS Framework/CSTA Standards.
3. Develop a CS foundation skill set that prepares students for scaffolded CS courses and/or Career and Technical Education (CTE) programs.

CTE IT Pathways & Programs of Study

Troy Sueoka
CTE Educational Specialist

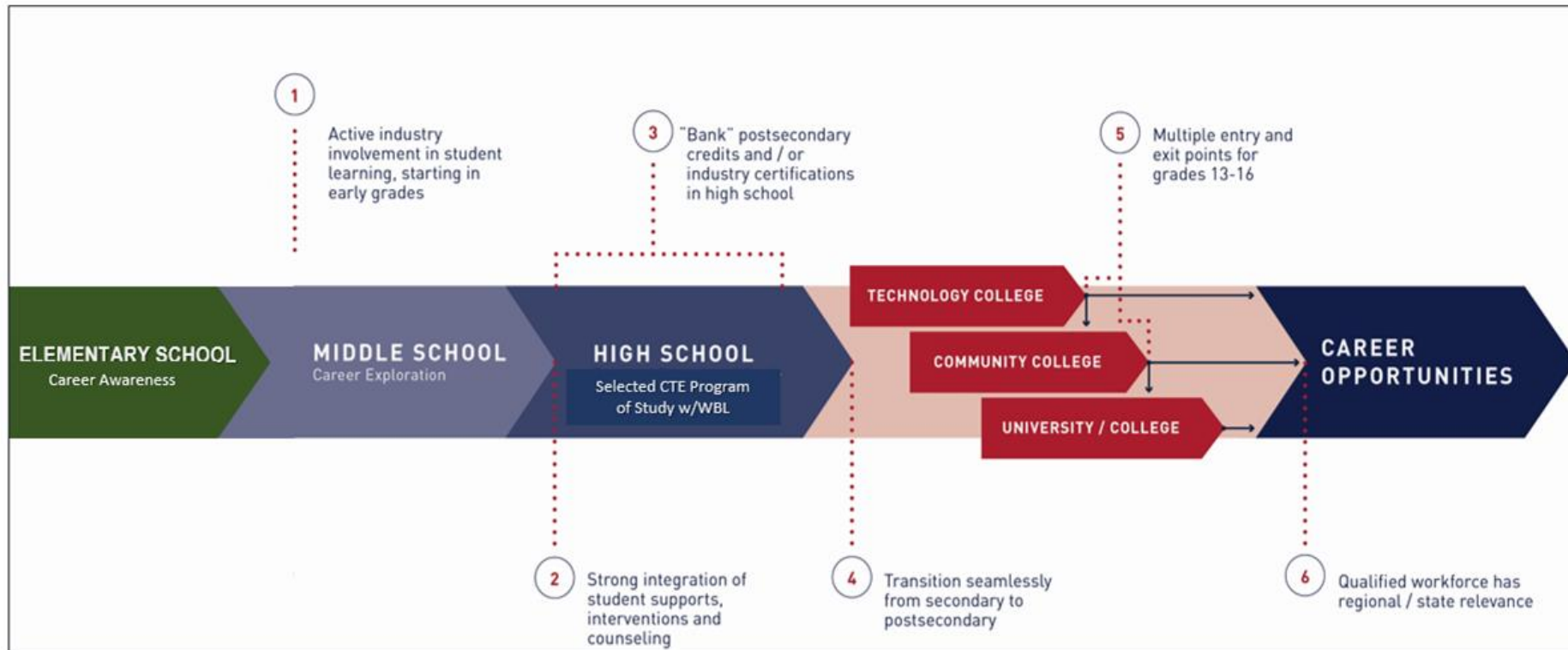
CTE is for ALL Students

Board Policy 105.6 Career & Technical Education

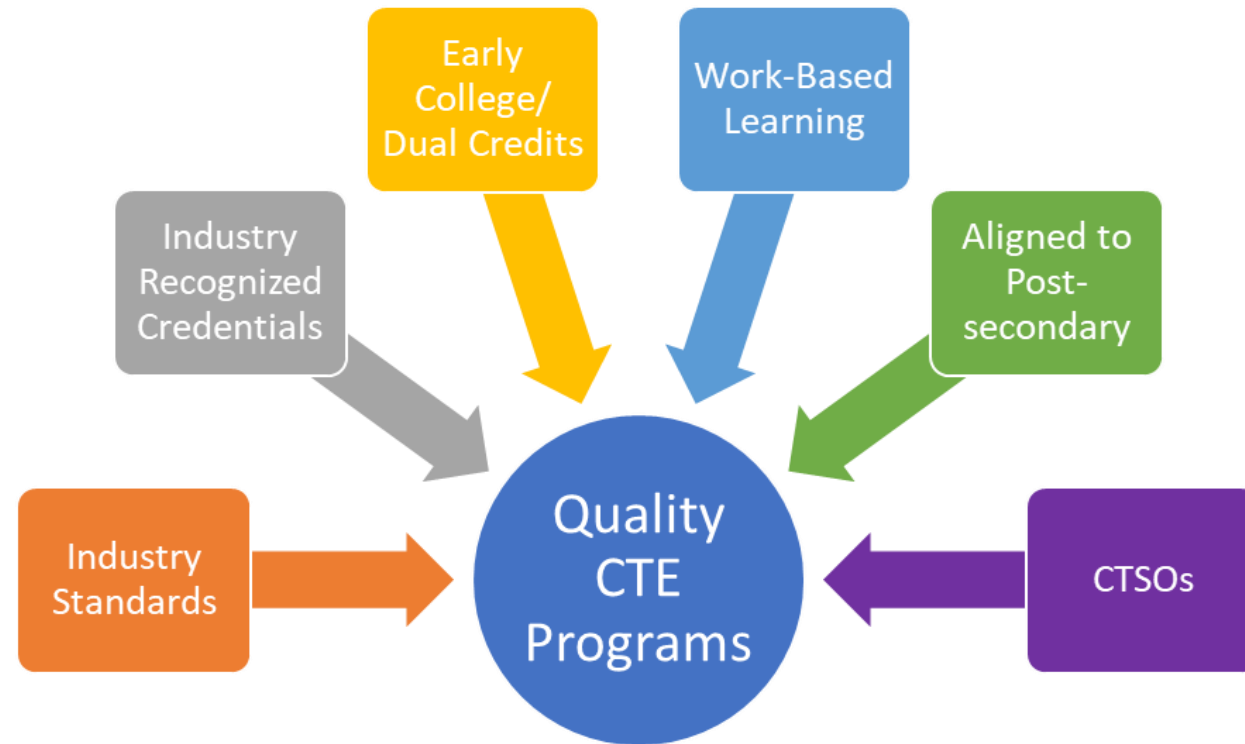
- “Career and Technical Education **encompasses both career and academic education** and shall be incorporated into the curriculum **at each grade level** in the public schools. Elementary and **middle/intermediate schools** shall implement **technological design** and **career planning standards** by integrating **career awareness and exploration** opportunities into the curriculum.”

Career and Technical Education - K-12 and Beyond

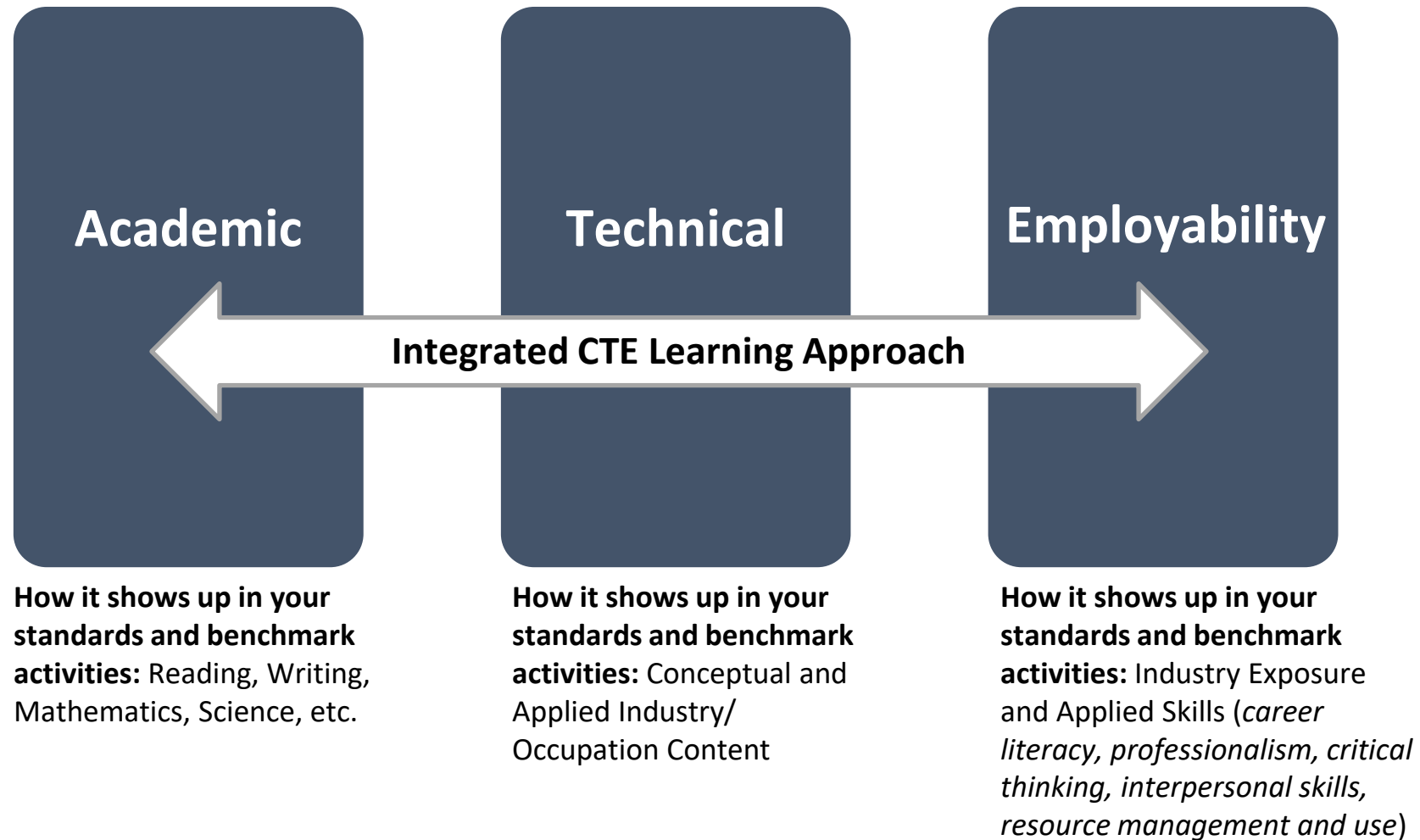
Visually, K-12 CTE is nestled and reflected as a vertical pathway – appropriately exposing and preparing students for college and career.



CTE Drives Workforce Development Through Well-Rounded Educational Opportunities



Holistic Approach to Teaching and Learning



CTE Program of Study (POS)	CTE POS: Course Sequence				HI Career Pathway
	Level I	Level II	Level III	Level IV	
Artificial Intelligence (AI)	Foundations of Computer Systems and Technology	Artificial Intelligence 1	Artificial Intelligence 2 - Programming	Artificial Intelligence 3 - Machine Learning <u>and/or</u> Dual Enrollment: specialized <u>and/or</u> AI: WBL	Information Technology and Digital Transformation
<p>Description: The Artificial Intelligence program is designed for students interested in pursuing a career in the emerging AI industry and workforce. The program and its curriculum focus on how complex inputs, such as vision, language and huge databases, can be used to make decisions or enhance human capabilities.</p>					
Networking	Foundations of Computer Systems and Technology	Networking 1	Networking 2	Introduction to Cloud Networking <u>and/or</u> Dual Enrollment: specialized <u>and/or</u> Networking: WBL	Information Technology and Digital Transformation
<p>Description: The Networking program is designed to provide students with the knowledge and skills necessary to emphasize the conceptual and practical skills necessary to design, manage, and diagnose network hardware and software. The program will focus on how to design, implement, and manage linked systems of computer and associated software.</p>					

CTE Program of Study (POS)	CTE POS: Course Sequence				HI Career Pathway
	Level I	Level II	Level III	Level IV	
Cybersecurity (Cyber)	Foundations of Computer Systems and Technology	Networking 1	Cyber 1	Cyber 2 <u>and/or</u> Dual Enrollment: specialized <u>and/or</u> Cyber: WBL	Information Technology and Digital Transformation
<p>Description: The Cybersecurity program is designed to provide students with the knowledge and skills to address security integration, cybersecurity practices and devices, ethics, internal and external threats to network security and design, malware threats, cryptography, wireless technologies and network level security policies.</p>					
Web Design and Development (WDD)	Foundations of Computer Systems and Technology	WDD 1	WDD 2	WDD 3 <u>and/or</u> Dual Enrollment: specialized <u>and/or</u> WDD: WBL	Information Technology and Digital Transformation
<p>Description: The Web Design and Development program is designed to provide students with the knowledge and skills necessary to develop fundamental skills in both theory and practical application of the web design and development process. Emphasis will be placed on applying the design process toward projects of increasing sophistication, culminating in the production of a functional, static website. Acquired skills will include coding, project management, programming troubleshooting and validation, and content development and analysis.</p>					

CTE Program of Study (POS)	CTE POS: Course Sequence				HI Career Pathway
	Level I	Level II	Level III	Level IV	
Programming	Foundations of Computer Systems and Technology	Programming 1	Programming 2: Mobile Applications Development	Programming 3: Game Development <u>and/or</u> Dual Enrollment: specialized <u>and/or</u> Programming: WBL	Information Technology and Digital Transformation
<p>Description: The Programming program is designed to provide students with the knowledge and skills necessary to conduct program and coding techniques, utilize logic tools, and design and development methodologies to create applications in multiple mediums and for various sources.</p>					

Proposed CS and CTE IT Pathway Integration

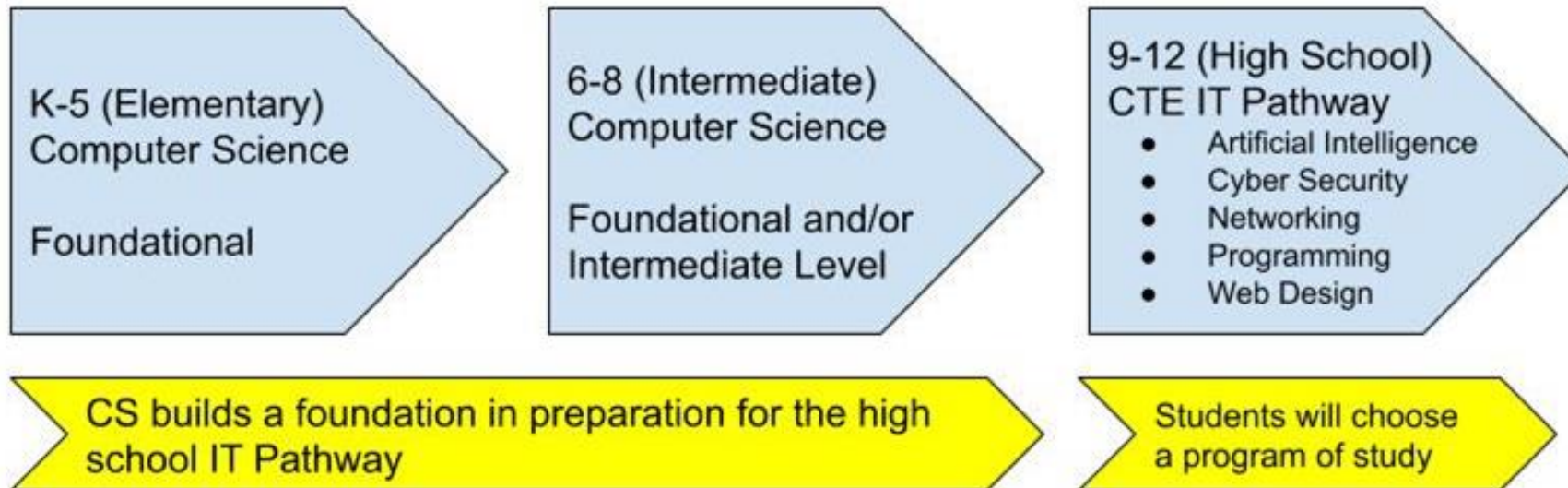
Computer Science and CTE IT Pathway Integration

Rationale

1. Streamline the curriculum, avoid duplicating efforts, and ensure a more efficient use of resources.
2. Make it easier for students to navigate their career paths and bring clarity to how we engage with industry partners.
3. Open up CTE funding opportunities to support students interested in pursuing careers in CS and IT.
4. Facilitate better collaboration between the CS and CTE programs, as well as improved course design and teaching strategies.
5. Enable CS and CTE to more effectively respond to and meet the needs of the tech sector.

Curricular Aims

- Create a more streamlined and cohesive educational experience for students
- Broaden opportunities for schools to provide students with a comprehensive foundation in CS and IT
- Prepare students for college and career success

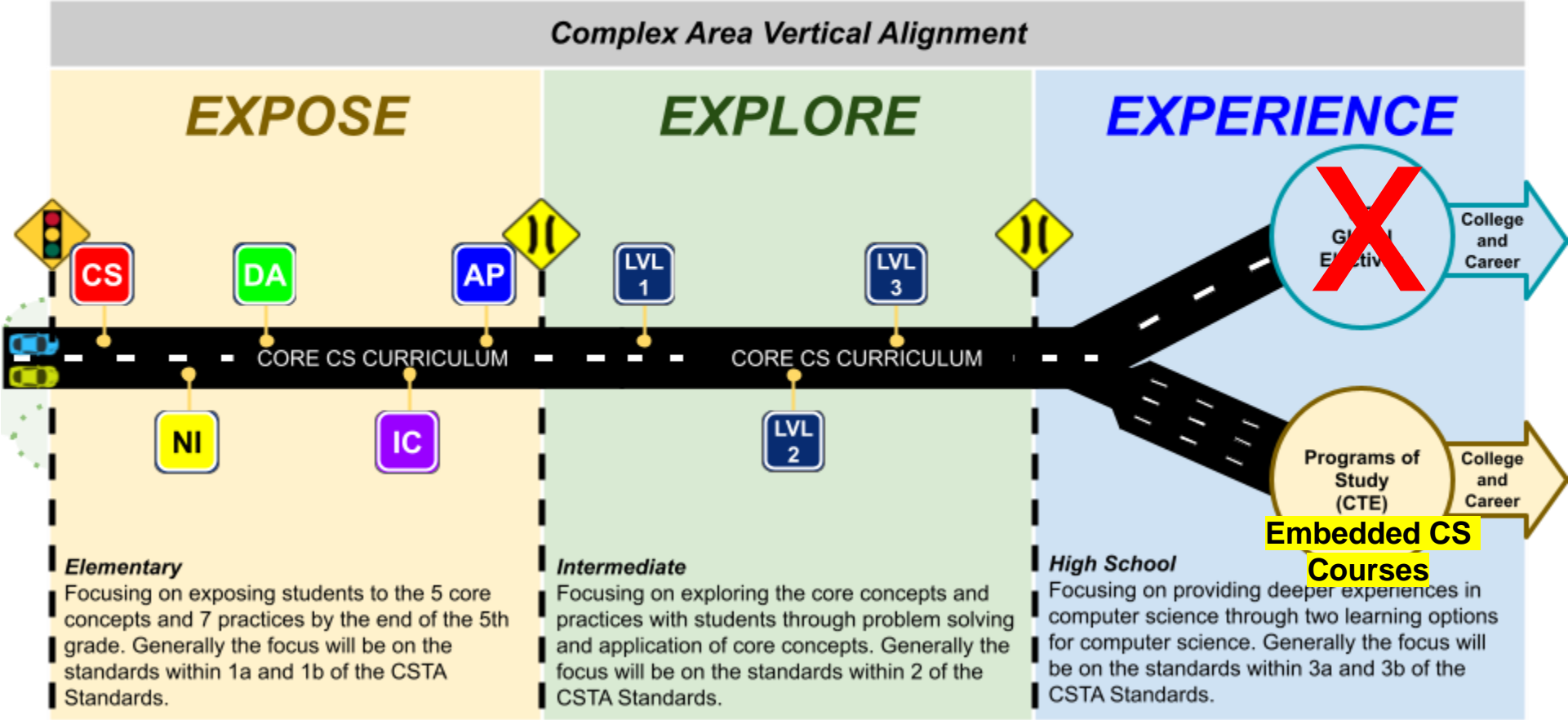


Sample New Program of Study Sequence

CTE Program of Study	CTE POS: Course Sequence					HI Career Pathway
Programming	Foundations of Computer Systems and Technology or AP CS Principles	Programming 1 or AP CS A	Programming 2: Mobile Applications Development	Programming 3: Game Development <u>and/or</u> Dual Enrollment: Specialized <u>and/or</u> Programming: WBL		Information Technology and Digital Transformation

Computer Science Roadmap

"All Hawaii DOE students will graduate with foundational computer science knowledge and skills to thrive in our increasingly digital world."



Industry Partnerships

Industry partnerships play a key role in workforce development.

Industry partners provide:

- Guidance to ensure the curriculum and standards taught in the classroom reflect industry priorities and standards.
- Authentic learning opportunities to enable students to develop job-related skills in a real-world setting.
- Externships for teachers to gain firsthand experience in the workplace and keep abreast of the developments in the field of study, which will inform their classroom instruction.

CS/CTE-Workforce Development Collaboration

CS and CTE Program

Develops program standards and guides curriculum and instruction to ensure that the standards taught and classroom experiences provided reflect current industry standards.

Workforce Development Branch

Connects schools with business and industry partners to provide students authentic work-based learning opportunities and teachers relevant externships that inform curriculum development and instruction.

CS/CTE + Workforce Development

Co-facilitates a comprehensive approach to support schools and students

Complex Area CS Teams

Complex Area CS Teams

- Established fifteen (15) Complex Area K-12 Computer Science Teams:
 - Identify successful strategies for broadening participation and equity in K-12 computer science education.
 - Develop and expand Complex Areas' School Design for CS implementation plans.
 - Coordinate and support CS-related learning resources and professional development opportunities.
 - Participating in scheduled virtual meetings

Complex Area CS Teams

[Aiea Moanalua Radford](#)

Ileta Patton
ileta.patton@k12.hi.us

[Baldwin Kekaulike Kūlanihākoʻi](#)

[Maui](#)

Alfred "Freddie" Perez
alfred.perez@k12.hi.us

Lori Yatsushiro
Lori.Yatsushiro@k12.hi.us

[Campbell Kapolei](#)

Hope Espinda
hope.espinda@k12.hi.us

[Castle Kahuku \(Windward\)](#)

Trisha Kim
trisha.kim@k12.hi.us
Melissa Mano
melissa.mano@k12.hi.us

[Farrington Kaiser Kalani](#)

Terrence Tenjoma
terrence.tenjoma@k12.hi.us

Luana Seitz
luana.seitz@k12.hi.us

Loretta Yee
Loretta.Yee@k12.hi.us

[Hana Lahainaluna Lanai Molokai](#)

Ian Katsuda
ian.katsuda@k12.hi.us

Janine Fisk
janine.fisk@k12.hi.us

[Hilo Waiakea](#)

Polly Quigley
polly.quigley@k12.hi.us

[Honokaa Kealakehe Kohala](#)

[Konawaena](#)

Fern White
fern.white@k12.hi.us

Sarah Uehara
sara.uehara@k12.hi.us

[Kailua Kalaheo \(Windward\)](#)

Trisha Kim
trisha.kim@k12.hi.us

Melissa Mano
melissa.mano@k12.hi.us

[Kaimuki McKinley Roosevelt](#)

Pam Kohara
pamela.kohara@k12.hi.us

[Kapaa Kauai Waimea](#)

Sean Doi
sean.doi@k12.hi.us

Blisse Lester
blisse.lester@k12.hi.us

[Kau Keaau Paho](#)

Jodie Menino
jodie.menino@k12.hi.us

Iwalani Harris
lwlani.harris@k12.hi.us

[Leilehua Mililani Waialua](#)

Grant Toyooka
grant.toyooka@k12.hi.us

Harmony Paz
harmony.paz@k12.hi.us

[Nanakuli Waianae](#)

Evangeline Casinas
evangeline.casinas@k12.hi.us

[Pearl City Waipahu](#)

Lee Anne Rabelliza
lee_anne.rabelliza@k12.hi.us

Elementary School Overview

Windward Complex Area

Trisha Kim



Windward District Elementary Computer Science Journey

IT Pathway Summit
December 3, 2023



@windwardcte



facebook.com/windwardacademyforcte



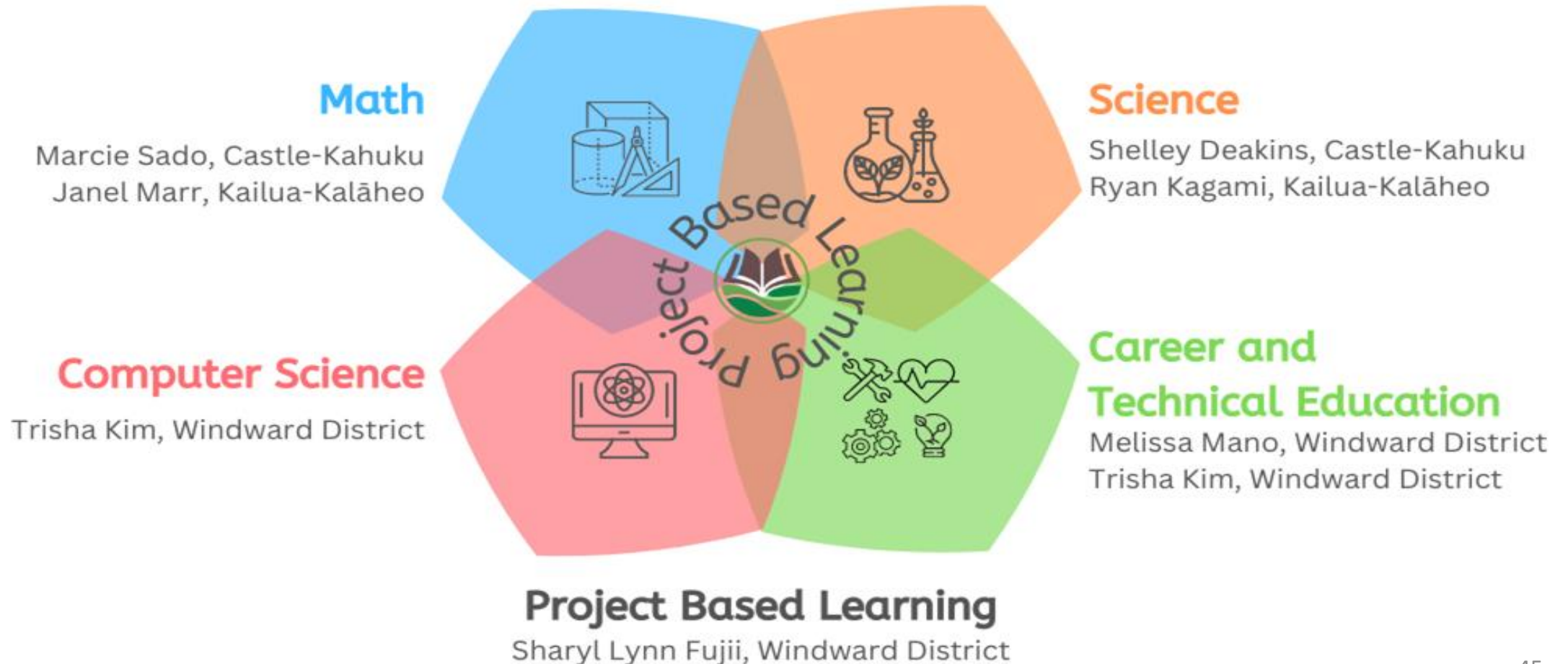
@windwardacademyforcte

Tag Us: #WindwardCTE



Windward Academy
FOR CAREER AND TECHNICAL EDUCATION

Academic Integration Team (AIT)



Windward CS Work Group

- Established in SY 2020-21 as of HIDEOE CS Initiative
- All levels (elementary, middle, and high school) represented on the work group
- Thought partner support
- Provides feedback on CS implementation plan and support





K-12 Computer Science Progression

Elementary

Expose

Focusing on exposing students to 5 core concepts and 7 practices by the end of the 5th grade. Generally the focus will be on the standards within 1a and 1b of the CSTA Standards.

Course Offerings:

[Elementary CS ACCNs](#)

Classroom teacher Integrates CS into curriculum and/or
Computer Class or STEM/Tech Teacher teaching CS lessons

Other CS Learning Opportunities:

CS Clubs or Extracurricular Activities

College/Career Learning Opportunities:

- High School Mentors/Students Teaching Students
- Career Guest Speakers
- Project/Problem-Based Learning with Industry Mentor

Intermediate

Explore

Focusing on exploring the core concepts and practices with students through application of the core concepts. Generally the focus will be on the standards within 2 of the CSTA Standards.

Course Offerings:

CS learning experiences integrated into a non-CS course and/or
CS Electives

- [Middle School CS ACCNs](#)

Other CS Learning Opportunities:

CS Clubs or Extracurricular Activities

College/Career and Work-Based Learning Opportunities:

- Career Guest Speakers
- Project/Problem-Based Learning with Industry Mentor
- Job Shadowing

High School

Engage & Experience

Focusing on engaging students in deeper CS learning experiences through two learning path options. Generally the focus will be on the standards within 3a and 3b of the CSTA Standards.

Course Offerings:

[High School CS ACCNs](#)

Path A:

Information Technology and Digital Transformation CTE Pathway

Path B:

CS Electives

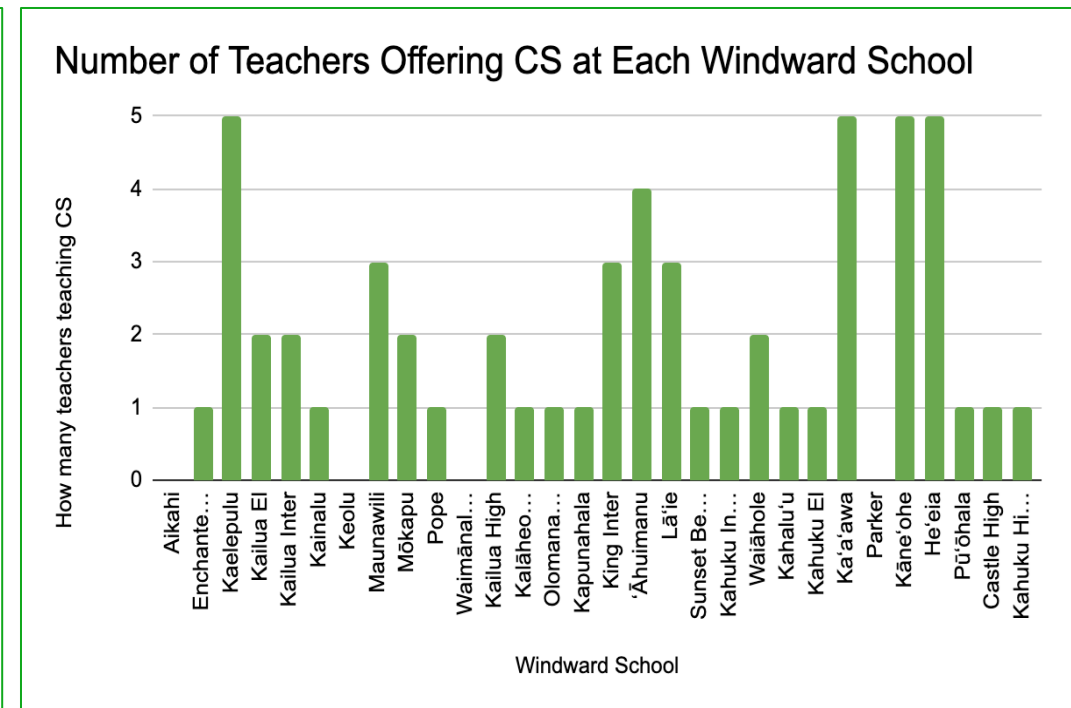
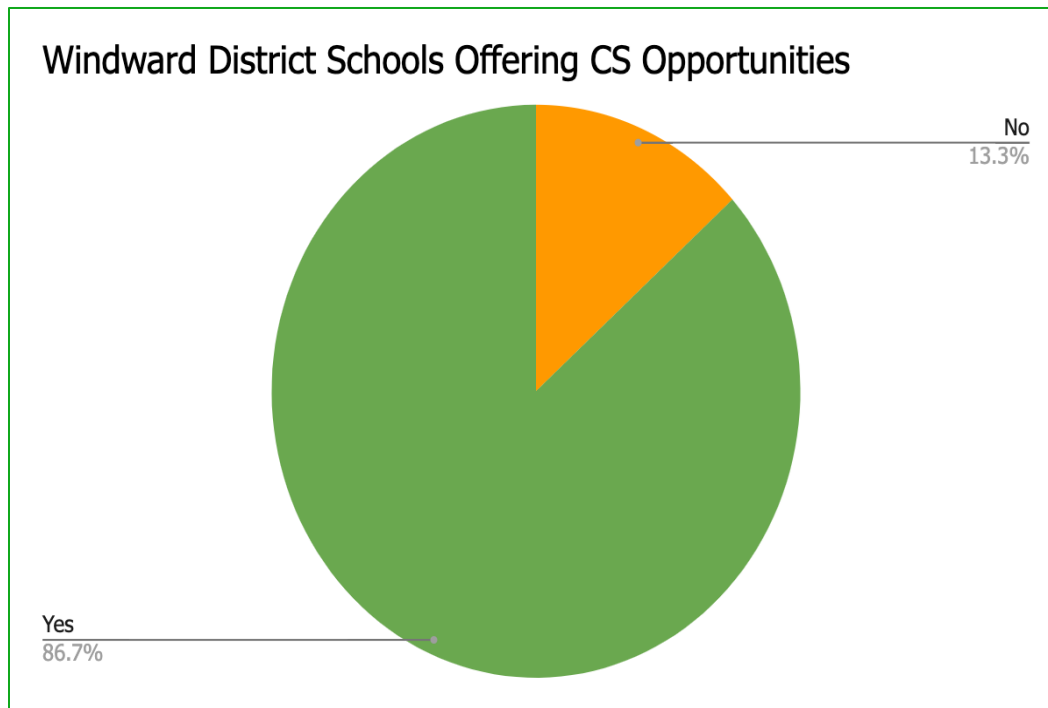
Other CS Learning Opportunities:

CS Clubs or Extracurricular Activities

College/Career and Work-Based Learning Opportunities:

- Job Shadowing
- Interest Projects with Industry Mentor
- Internships
- Industry-Recognized Certifications

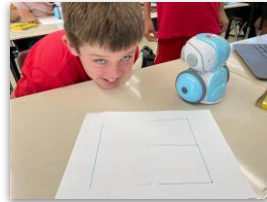
CS Landscape Survey in SY 21-22



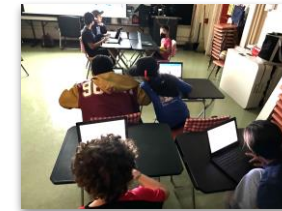


Integration into other content areas

Examples of CS Elementary Learning Experiences



Lending Library Usage



Code.org Activities



Robotics Clubs



K-12 District Support System

Academic Integration Team

Professional development support for educators in the areas of CTE, computer science, math, science, and project based learning.



[AIT Brochure](#)

Lending Library

An innovative borrowing system for all Windward educators that allows them to borrow CS, CTE, math, and science tools and kits to implement in their classrooms.



[Lending Library Video](#)

Intermediary

Connecting teachers and students to community and industry partnerships for work based learning opportunities to support college and career readiness efforts.



[See SY 22-23 Intermediary Data](#)



K-8 CS Teacher Professional Learning Community

- Receive PD on various topics related to CS and resources that can be used
- Utilize strategies that support collaboration & sharing
- Reflect on teaching practices and implementation strategies



Full Day In Person 10/19/22

- CS Overview
- Introduction to Programming
- Integrated CS Lesson Model
- Lending Library Playground

After School Virtual 12/1/22

- Digital Citizenship
- Common Sense Media
- Artifact Sharing

After School Virtual 2/16/23

- MakeCode
- Micro:bits
- Artifact Sharing


After School Virtual 4/13/23

- Artificial Intelligence
- Divergent Thinking
- Reflection & Sharing



BootUp CS Elementary Teacher Cohort

- 89 Teachers Statewide
 - 9 Campbell-Kapolei
 - 14 Castle-Kahuku
 - 3 Farrington-Kaiser-Kalani
 - 43 Kailua-Kalaheo
 - 2 Kaimuki-McKinley-Roosevelt
 - 17 Leilehua-Mililani-Waialua
 - 1 Nanakuli-Waianae
- 74 teachers taking course for PD credit
- 15 teachers are auditing



amazon
future >> engineer | BootUp
Professional Development

BootUp Computer Science Elementary Teacher Cohort SY 2023-2024

Description:
Elementary educators will learn how to use Scratch and Scratch Jr and become confident and effective in coding by engaging in computer science (CS) and computational thinking concepts and practices. Through model teaching and coaching and the support from BootUp, teachers will be able to implement CS in their classroom using free curriculum and resources provided in the PD.

This PD is available for 3 PD credits. There is a \$50. Course fee payment instructions will be provided upon registration.

About BootUp:
BootUp provides teacher professional development, coaching and support that prepares teachers to facilitate coding projects using Scratch and Scratch Jr.

PDE3 Course Information:
Course Title: BootUp Elementary Computer Science
Professional Development (Hybrid)
Course#: CS188056
Section#: 310842 (Section FULL)

PD Desired Outcomes:
Educators will be able to:

- Learn how to program using Scratch and Scratch Jr.
- Implement CS in their classroom
- Develop and implement project-based lessons integrated with other content areas
- Engage in collaborative sharing of CS and computational thinking concepts, practices, and pedagogy
- Reflect on their CS teaching practices

PD Dates and Times:
Session 1: July 25, 2023 from 8:30 am - 3:30 pm
Session 2: Sept. 30, 2023 from 8:30 am - 3:30 pm
Session 3: Mar. 2, 2024 from 8:30 am - 3:30 pm
(In person at the Office of Curriculum and Instructional Design)

Virtual After School Coaching Sessions

- Sept. 18, 2023 from 3:15 pm - 4:45 pm
- Jan. 30, 2024 from 3:15 pm - 4:45 pm
- Apr. 2, 2024 from 3:15 pm - 4:45 pm

Page 1 / 1



Elementary School Level PD

Integrated CS Model Lesson

- CS & NGSS Lesson using LEGO Spike Essentials
- Admin & Teachers experience lesson as












CS in Project Based Learning

- Modeling mini CS lessons used to build knowledge in a PBL unit using micro:bits
- Admin & Teachers



CS Lending Library Kits

 <p>Code-A-Pillar</p>	 <p>Coding Mouse</p>	 <p>Botley</p>
 <p>Ozobots</p>	 <p>Unruly Splats Username: HawaiiSplatters Password: gold-hare13</p>	 <p>Lego Spike Essentials & Prime</p>
 <p>Microbits</p>	 <p>Circuit Playground Express</p>	 <p>mingbird Robotics Kit</p>





LED Grow Lights ■ Toilet Paper Seed Starters ■
Static Hydroponics



Agriculture, Food, & Natural Resources Pathway ■
Learning Through Internships



WCC & Ho'okua'āina Apprenticeship ■
Kahuku Farms

Lending Library & CTE Resources



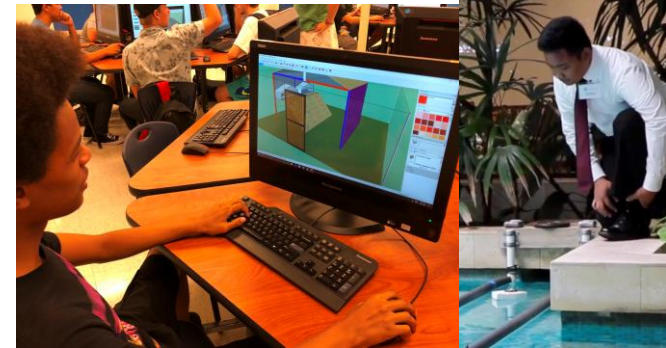
High School CTE Pathways



College & Career Readiness



Makedo ■ Straw Rocket Launchers ■
Snap Circuits



Engineering Pathway ■
Performance Based Assessments



UH Mānoa College of Engineering ■
Hawaiian Electric



Windward Academy
FOR CAREER AND TECHNICAL EDUCATION

Windward District Intermediary

Contact Information

To start the process of participation, please contact Rachael Aquino, Windward CTE Intermediary at support@hawaiiworkforcepipeline.com



PhD and MS, University of Hawaii
Kailua High School, c/o 2002

- The goal of the Intermediary is to provide college and career connections for our K-12 students.
- Elementary Teacher & Student WBL Opportunities:
 - Career fair
 - Guest speakers
 - PBL experts



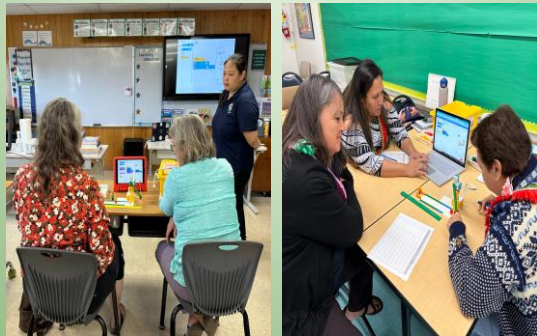
[Intermediary Flyer](#)
[Examples of School Support](#)



K-12 District Support System

Academic Integration Team

Professional development support for educators in the areas of CTE, computer science, math, science, and project based learning.



[AIT Brochure](#)

Lending Library

An innovative borrowing system for all Windward educators that allows them to borrow CS, CTE, math, and science tools and kits to implement in their classrooms.



[Lending Library Video](#)

Intermediary

Connecting teachers and students to community and industry partnerships for work based learning opportunities to support college and career readiness efforts.

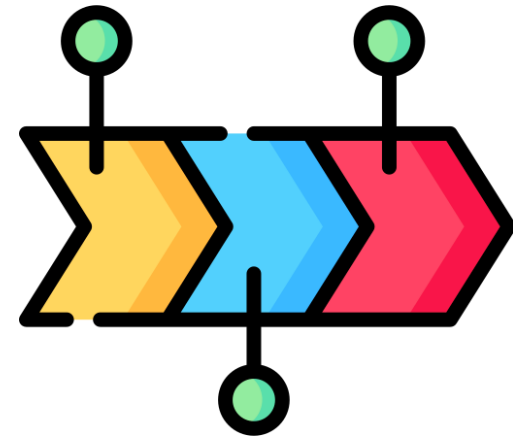


[See SY 22-23 Intermediary Data](#)



Next Steps for Windward CS

- Create a suggested elementary CS implementation plan
- Visit all levels of CS implementation:
 - Elementary School
 - Middle School
 - High School
 - Post-Secondary
 - Industry
- Summer CTE Camp for 5th Graders



Middle/Intermediate School Overview

**Kaimuki-McKinley-Roosevelt
(KMR) Complex Area**

Pamela Kohara



RT, **Pamela Kohara**: Computer Science & Science

EO, **Lehua Brown**: Complex Academic Officer for CS and Science

RT, **Cindee Izu**: Career Technical Education

Computer Science Middle School Progress

What is happening at Middle Schools?

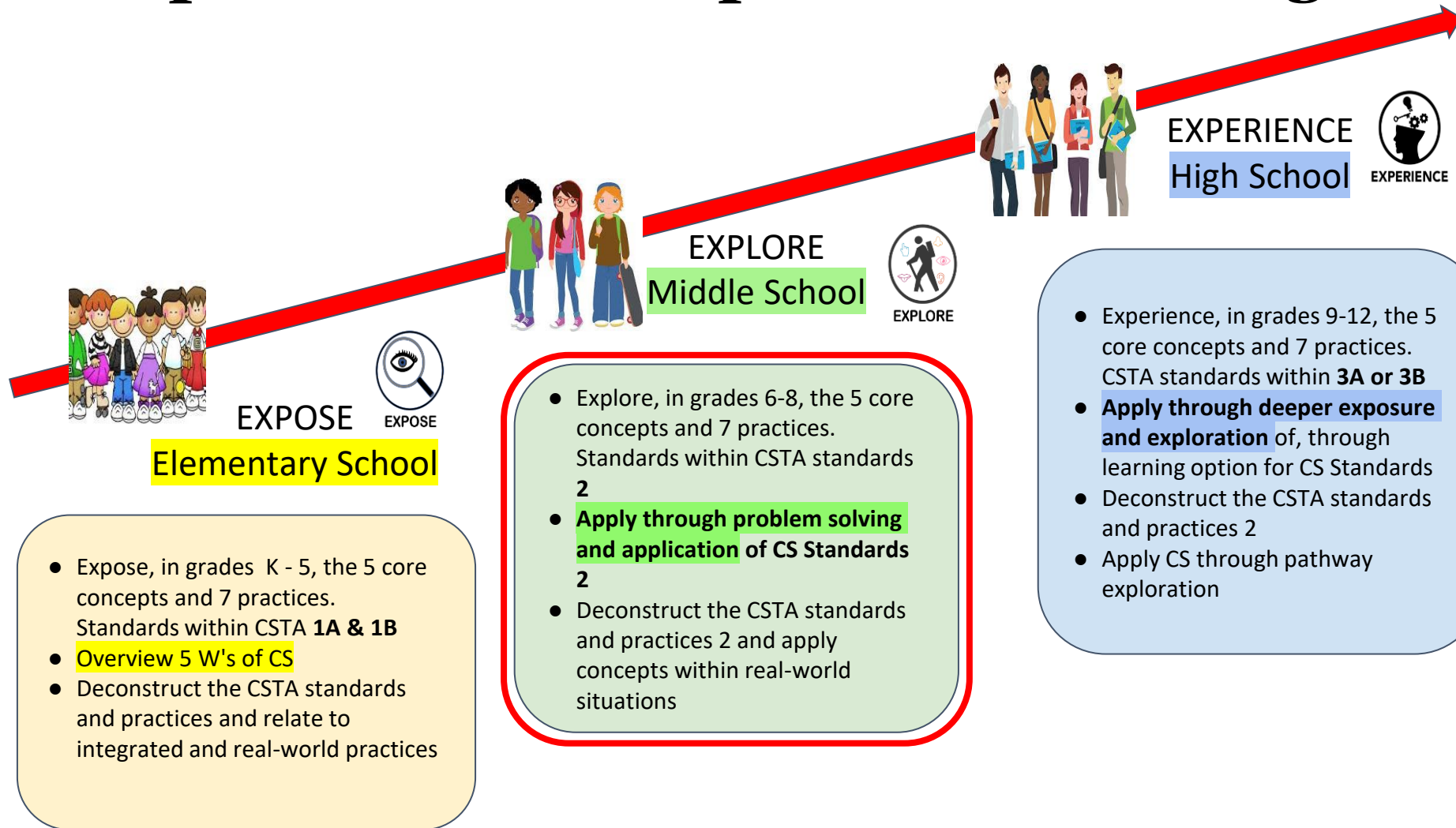
Desired Outcomes for KMR Middle Schools



- ★ Rollout of computer science (Law - vs - Student need)
- ★ Strengthening school-level planning and implementation of CS in providing greater equity, access, and rigorous balance CS instruction
- ★ Address schools implementation challenges, how schools are addressing CS implementation.
- ★ Support and Guidance for meeting our **CS Mission:**
 - Equity for all,
 - Balanced of CS Rigor,
 - Comprehensive K-12



Computer Science Implementation Targets



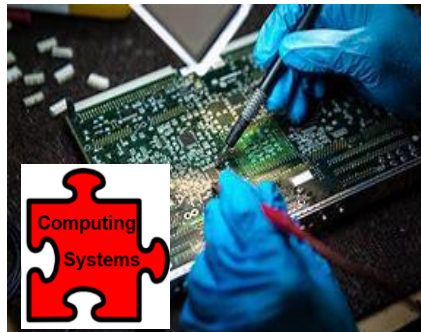


Balance = 5 Core Concepts



Computer Science Concepts - Balance of 5 Concepts (Summary)

Combined Summary	Explore
	Grade 8 Summary:
Computing Systems	*Improve a SW / HW design to extend capabilities of: operation, form, and function.
Network and Internet	*Work to utilize computer rule/function with considerations to secure transfer of data.
Data Analysis	*Use of technology to collect/organize/store and/or share information in meaningful and effective ways.
Algorithms & Programming	*Design algorithms in different situations using programs to control structures to help use, reuse, and/or repurpose, a solution to problem despite constraints.
Impact of Computing	**Computing technology changes daily activities and interactions. Students need to be challenged to explorations different viewpoints, platforms, sources, and security considerations.*





Balance = 5 Core Concepts

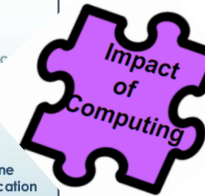
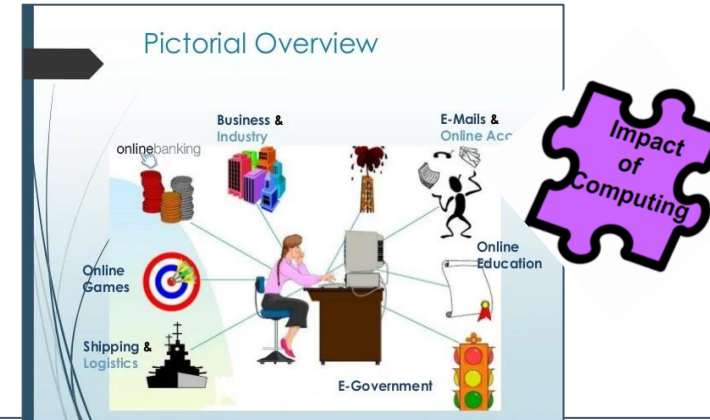
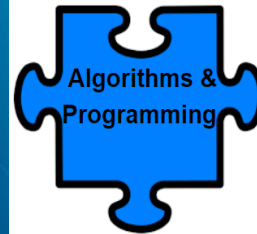


Computer Science Concepts - Balance of 5 Concepts (Summary)

Combined Summary

Explore

Grade 8 Summary:



Algorithms & Programming

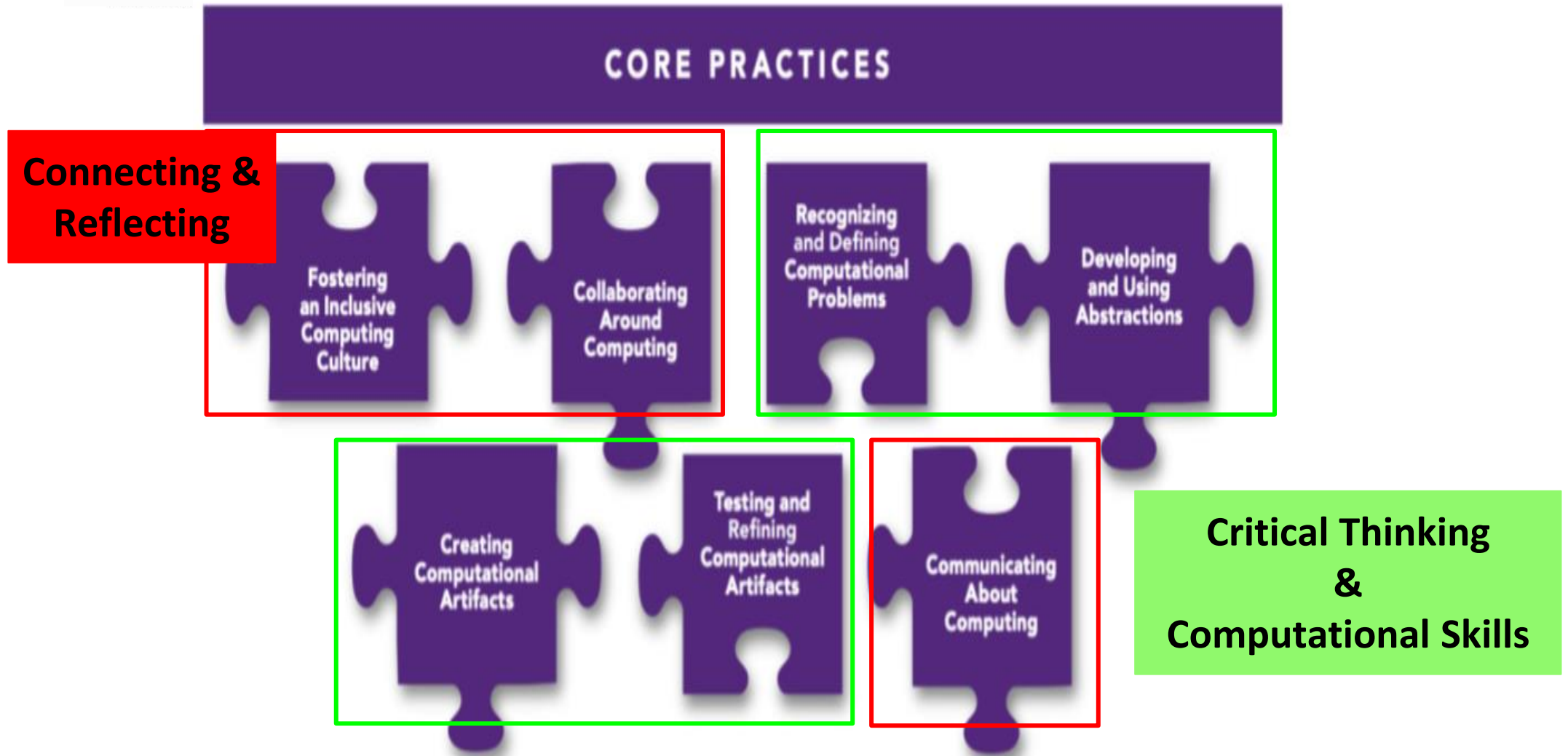
*Design algorithms in different situations using programs to control structures to help use, reuse, and/or repurpose, a solution to problem despite constraints.

Impact of Computing

*Computing technology changes daily activities and interactions. Students are challenged to explorations different viewpoints, platforms, sources, and security considerations.



Balance = 7 practices (the DO skills)



Next Steps	SY22-23	SY23-24	SY24-25	
OBJECTIVES				
Next Steps	SY21-22	SY22-23	SY23-24	SY24-25
OBJECTIVES				
Establish a school CS plan that promotes CS Vision and Mission	<input checked="" type="checkbox"/> There was a schoolwide effort to build computer science integrated lessons in their specific content to start to build a culture of the importance of computer science	<input checked="" type="checkbox"/> CS lessons are/have been implemented in all classes by integration in all Content Areas CS/IT committee will develop Kawaranskoia CS Vision and Mission with faculty feedback and input	<input type="checkbox"/> During the 22/23 school year there is a standalone 8th Grade CS req. elec. With a standalone CS class, the content teachers have been unburdened with CS content. During this year, it is planned for 8th grade wheel students take an intro to CS and have the 8th grade elective will be a level 2 or 3 course.	<input type="checkbox"/>
Establish a foundational CS program at each school	<input checked="" type="checkbox"/> The code.org curriculum was introduced in the 8th grade multimedia wheel class	<input checked="" type="checkbox"/> CS class incorporating code.org , arduino, arduino and allino platforms, Computer Science Class for all Grade 8 students	<input type="checkbox"/> CS class incorporating code.org , arduino and allino platforms, Computer Science Class for all Grade 8 students. Also a 6th grade wheel course will be introduced.	<input type="checkbox"/>
Logistics/Implementation				
Understanding CS requirements	<input checked="" type="checkbox"/> There had been a few professional development opportunities to the faculty	<input checked="" type="checkbox"/> Basic understanding by most faculty on some level.	<input type="checkbox"/> Basic understanding by most faculty on some level.	<input type="checkbox"/>
Accessing Foundational CS and CSTA	<input checked="" type="checkbox"/> CSTA, K12CS, code.org	<input checked="" type="checkbox"/> CSTA, K12CS, code.org	<input type="checkbox"/> CSTA, K12CS, code.org	<input type="checkbox"/>
Establish school systems and structures to support CS implementation	<input checked="" type="checkbox"/> CS/IT Committee	<input checked="" type="checkbox"/> CS/IT Committee	<input type="checkbox"/> The CS/IT committee may be dissolved and the support structure would be housed in the master schedule so to speak.	<input type="checkbox"/>
Determine school level resource(s) / CS curriculum	<input checked="" type="checkbox"/> CS/IT Committee/Jon Lum	<input checked="" type="checkbox"/> CS/IT Committee/Jon Lum (Ria and Ona have also taken/ing) the code.org PDI	<input type="checkbox"/> Jon Lum (Ria and Ona have also taken/ing) the code.org PDI	<input type="checkbox"/>
Curriculum map/Pacing guide	<input checked="" type="checkbox"/> CS/IT Committee, Jon Lum	<input checked="" type="checkbox"/> CS/IT Committee, Jon Lum	<input type="checkbox"/> Jon Lum create through code.org curriculum guide and supplementary activities	<input type="checkbox"/>
Install/establish Hardware structures on campus	<input checked="" type="checkbox"/> CS/IT Committee, equipment purchased by Bebi	<input checked="" type="checkbox"/> CS/IT Committee, equipment purchased by Bebi	<input type="checkbox"/> Majority of hardware structures are already in place	<input type="checkbox"/>
Personnel for CS instruction and support in place	<input checked="" type="checkbox"/> Jon Lum has taken and in the process of finishing CSD training	<input checked="" type="checkbox"/> Jon Lum (CS Teacher) may need to build more/deeper capacity (Ria and Ona have also taken/ing) the code.org PDI	<input type="checkbox"/> Jon Lum CS teacher, Cleve Hamasaki (?), Ria Lulia (?), Keona Mahi(?)	<input type="checkbox"/>
Implementation of Quality CS Curriculum	<input checked="" type="checkbox"/> Jon Lum has taken and in the process of finishing CSD training	<input checked="" type="checkbox"/> Jon Lum, EXS0100 AWARD-LEADER is qualified	<input type="checkbox"/> Jon Lum, EXS0100; Cleve Hamasaki EXS 103	<input type="checkbox"/>
Addressing Access of CS to all students	<input checked="" type="checkbox"/> "All" 8th grade students are enrolled in the wheel class	<input checked="" type="checkbox"/> Jon Lum, Anc Dumi, Veronica Victor ACCN List	<input type="checkbox"/> Jon Lum, Cleve Hamasaki, Anc Dumi, Veronica Victor ACCN List	<input type="checkbox"/>
Determine Professional Development needed to build faculty capacity	<input checked="" type="checkbox"/> CS/IT Committee and opportunities provided by PDE3	<input checked="" type="checkbox"/> CS/IT Committee and opportunities provided by PDE3	<input type="checkbox"/> Leadership/Admin	<input type="checkbox"/>
Building capacity of all faculty	<input checked="" type="checkbox"/> CS/IT Committee and opportunities provided by PDE3	<input checked="" type="checkbox"/> CS/IT Committee and opportunities provided by PDE3, other teachers have taken code.org training	<input type="checkbox"/> Admin via rwr hms	<input type="checkbox"/>
Optional				
Seek out / identify industry/provider partnerships	<input type="checkbox"/>	<input type="checkbox"/> Start having discussions and dialogue in the committee	<input type="checkbox"/>	<input type="checkbox"/>
Determine / plan possible community engagement events	<input type="checkbox"/>	<input type="checkbox"/> secure this once an industry partner is identified	<input type="checkbox"/>	<input type="checkbox"/>



Schools can only access their own plan

Use this tool to reflect on implementation considerations



Objectives

- Establish a school CS plan that promotes CS Vision and Mission
- Establish a foundational CS program at each school

Logistics/Implementation

- Understanding CS requirements
- Accessing Foundational CS and CSTA
- Establish school systems and structures to support CS implementation
- Determine school level resource(s) / CS curriculum
- Curriculum map/Pacing guide
- Install/establish Hardware structures on campus
- Personnel for CS instruction and support in place
- Implementation of Quality CS Curriculum
- Addressing Access of CS to all students.
- Determine Professional Development needed to build faculty capacity
- Building capacity of all faculty

Optional

- Seek out / identify industry/provider partnerships
- Determine / plan possible community engagement events

Course that Middle School Used to Address CS

EXS0102 - Introduction to Computer Science is designed as a semester-long Level 1 course introducing students to foundational computer science concepts and skills aligned to the Computer Science Teachers Association (CSTA) K-12 Computer Science standards. Students learn to explore and engage in hands-on, collaborative projects and discover ways to connect their learning to real-world experiences.

EX50100 - This course introduces students to computer programming concepts and skills. As much as possible, these concepts and skills will be taught in learning activities that take place in problem-solving context.

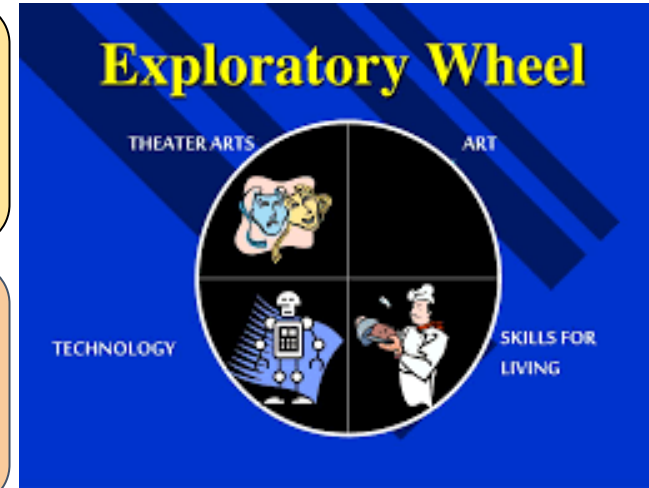
EXS0110 - This course will cover the more advanced computer science concepts and skills. Students will have opportunities to apply them in a problem-solving context. Computer science concepts covered may include programming, networking, and/or cybersecurity. Students will have opportunities to learn and apply computational problem-solving skills.

TMG0500 - This course is for those students who either have not had enough prior experience with using computers to be considered computer literate, or for those who wish to extend their knowledge of the basics of computer literacy. Emphasis on this course shall be on careers that involve information access, information processing, information management, and communication of information.

Quotes: Other Courses used to Address CS for All Student

All 6th graders take Computer Science
...It is part of the wheel.

Integrated STEM class” (but not even a course that is recognized by the compliance law)



“We will eventually start integrating the impact of computing in our social studies courses as students learn more about ChatGPT/AI capabilities and how it can be used to be ethical users of technology and continue to create content.”.

...Data Analysis happens in our science class. Since we are using Amplify Science, we pulled out the EDP sections/units and are teaching them through an EDP course which is grade banded - 6th, 7th & 8th. This is an elective and in addition to their GL science.

EXPLORE Computer Science Related Interests

Data visualization



Digital Communication



Digital Health

Social Emotional Impact: Mitigation and awareness

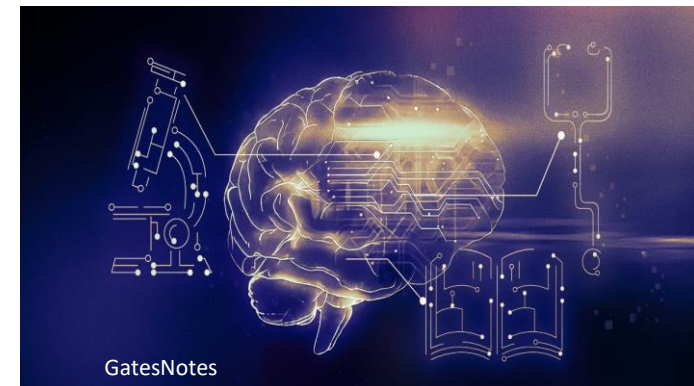


Adaptive equipment: Diversity and usability via re-engineering



Creative Thinking: programming, coding via robotic challenges

AI application



High School Overview

**Leilehua-Mililani-Waialua
Complex Area**

**Harmony Paz
Grant Toyooka**

CS & IT in the LMW Complex Area





Welcome to



**Leilehua High
School**



**Mililani High
School**



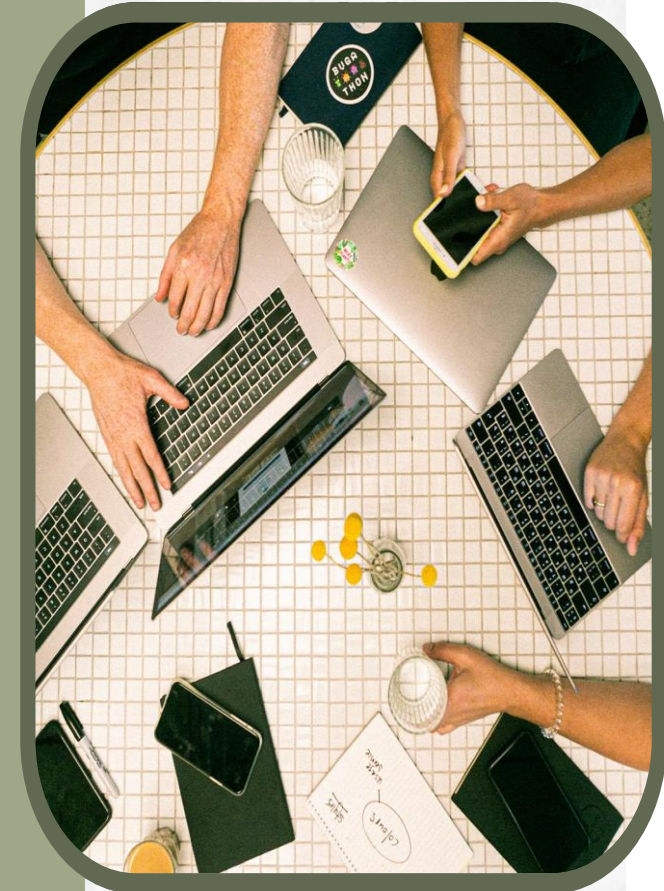
**Waialua High &
Intermediate
School**

Learning Opportunities in LMW



Pathways to College & Career

- CS and IT courses are offered in all LMW High Schools
- Students receive general pathway prep and selected AP/Early College options in CS/IT
- Working to expand opportunities for Work Based Learning and Certifications



Pathways & Programs of Study

- Career & Technical Education
 - Artificial Intelligence
 - Cybersecurity (L, M, W)
 - Networking (L, M, W)
 - Programming (M, W)
 - Web Design
- Computer Science
 - Intro to Computer Science (L)
 - AP Computer Science Principles (L, M, W)
 - AP Computer Science A - Java (M)



Current Work Based Learning & Certification Opportunities

- Work Based Learning
 - Individual partnerships established between schools and external organizations
 - Expanding Good Jobs Hawaii opportunities through our CTE IT pathways
 - Instruction and certification prep via UH partners
 - Summer internships via STEMWorks
- Certifications
 - LMW schools have pursued student certification in A+, Network +, and Security+
 - Cisco, AWS, and Google
 - Leilehua is a certified PearsonVUE testing site



Good Jobs Hawaii Pilot with LHS

- Spring 2023
- In partnership with LHS and the Chamber of Commerce
- Pilot cohort to place HS graduates into IT entry-level internships and careers

Leilehua K-12 IT Pathway Pilot



Leilehua High School students have the opportunity to earn...

NOTE: Preference given to students who are Seniors and plan to remain in Hawaii in the Fall.

No-cost certification in CompTIA Security+

Courses offered through Leeward CC in Spring 2023. Begins mid-March into May and will be around 30 hours

Paid Summer IT Internship with a Hawai'i employer

Upon completion of cert, student eligible for paid part-time internship/employment (\$15-20) over 6-8 weeks (20-30 hours per week)



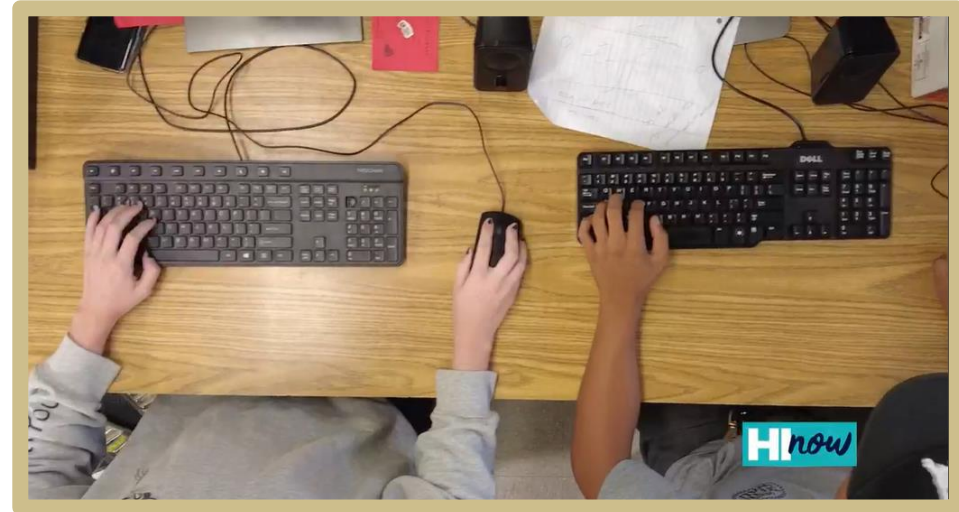
PearsonVUE Certification Center

- Transform an existing computer lab at LHS into a PearsonVUE Certified Testing Center
- Create the environment and opportunity for students to take certification exams in:
 - A+
 - Network+
 - Security+
 - Microsoft Office
 - College credits in core classes (College-Level Examination Program)



Promoting Equity Through CS

- Waialua High School computer science students, in partnership with Par Hawaii and the Public Schools of Hawaii Foundation have been working to refurbish and distribute computers to students throughout the State



Questions & Answers

Contact Info

Troy Sueoka, CTE Educational Specialist
troy.sueoka@k12.hi.us

Brett Tanaka, CS Educational Specialist
brett.tanaka@k12.hi.us

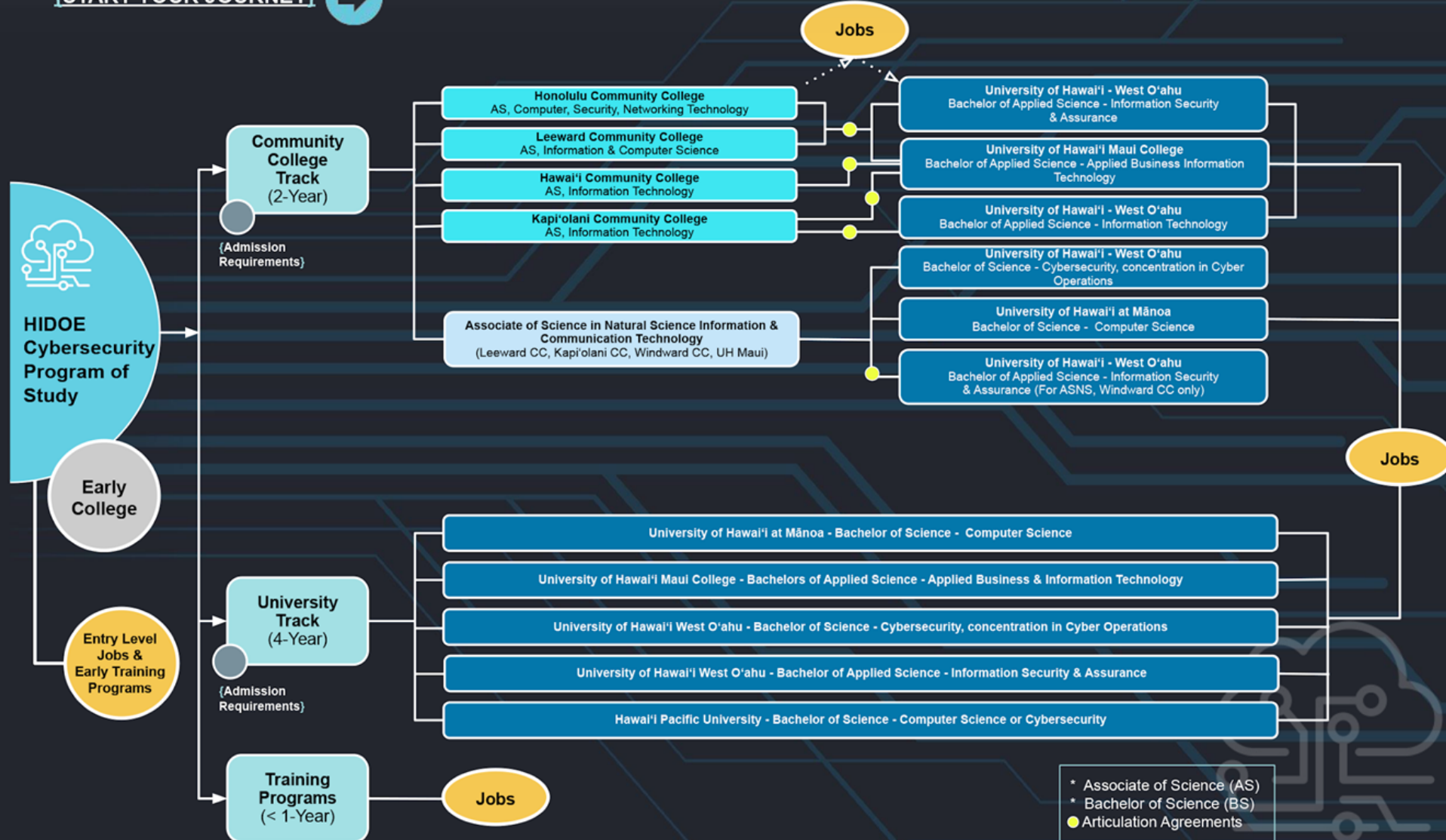
Mahalo!

Post-Secondary IT Pathway and Panel

- Michael Miranda, UH West Oahu
- Dale Nakasone, Kapiolani Community College
- Blanca Polo, Leeward Community College
- Scott Robertson, UH Manoa



{START YOUR JOURNEY}



Industry Panel: Pathway Insights from the Real World

- Ailin John, HMSA
- Edward Ontai, DataHouse Consulting
- Vincent Hoang State of Hawaii, Enterprise Technology Services
- Colbert Seto, Hawaii Dental Service

Lunch and Student Panel: My Pathway Success Story

- Joan Zara, UH Manoa
- Ross Ledda, UH West Oahu
- Derek Chee, UH West Oahu

Breakout Groups: Strengthening the Pathway Connections

Desired Outcomes

1. Determine existing strengths along the IT pathway continuum
2. Identify high-priority challenges to address to strengthen the IT pathway
3. Outline action steps to strengthen the IT pathway

Breakout Groups

45 minutes

Instructions:

- Join the group that corresponds with the colored dot on your name tag
- You will have 45 minutes to discuss
- Be prepared to share your top 3 priorities and next steps with larger group

Group 1: Sophia Wibholm

Group 2: Lord Ryan Lizardo

Group 3: Alan Ito

Group 4: Alan Rosenfeld

Group 5: Vanessa Rogers

Group 6: Joel Kumabe

Breakout Discussions:

Questions:

1. What are we already doing well that supports students as they progress along the IT pathway, from exposure to career?
2. What gaps have we discovered today about the IT Pathway?
3. How do we go about resolving those gaps? What would your top three priorities be and how would you go about taking action for these priorities?

Report Out:

- Capture top 3 priorities by group
- Capture next steps for each priority

Mahalo!



UNIVERSITY of HAWAII®

