

The Revised NJ Student Learning **Technology Standards**

) In Practice and
Across the Curriculum

Marc Natanagara, Ed.D. 2022



What's in
Standards 8.1 & 8.2:
Computer Science
& Design Thinking

[formerly Ed Tech and Tech Ed]



Standard 8.1 Computer Science Disciplinary Concepts

1. computing systems
2. networks, internet and cybersecurity
3. human impact of computing
4. data and analysis
5. algorithms and programming



Standard 8.2 Design Thinking Disciplinary Concepts

1. engineering design
2. interaction between tech & humans
3. nature of technology & innovation
4. effects on the natural world
5. ethical and cultural implications



Standards 8.1 & 8.2
Are About More Than Tech—
They Are About
Ways of Thinking



Computational Thinking



1. Pattern recognition
2. Abstraction
3. Decomposition
4. Algorithms



Standard 8 Revisions in Sum

New focus on:

1. Coding
2. Design process
3. Impact and Equity
4. Problem based learning
5. Ways of thinking

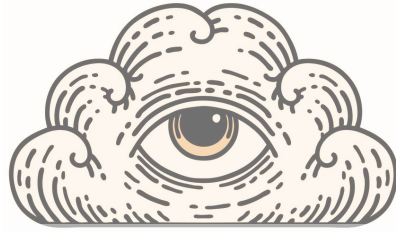


Standard 8

Across the

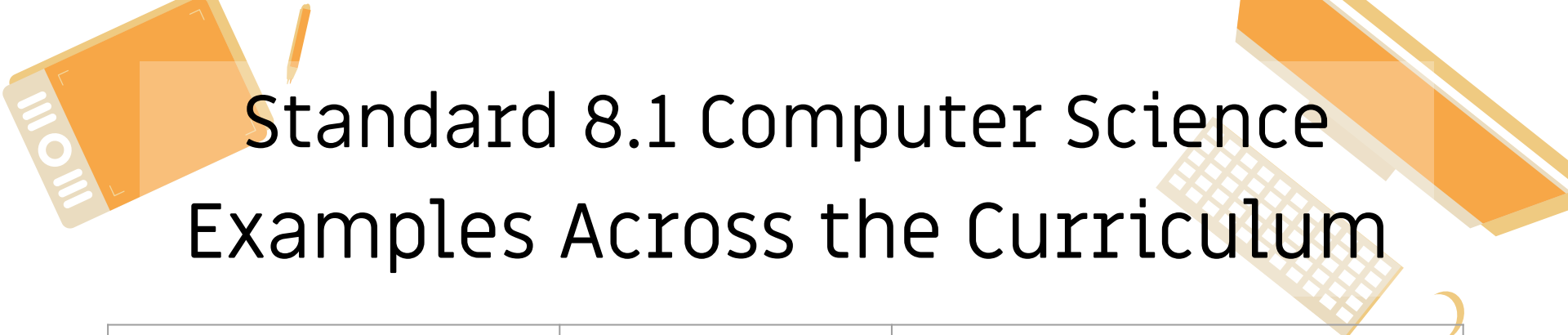
Curriculum

Image: <https://www.seattleschild.com/19-creative-ideas-for-outside-fun-with-kids/>



“Talking about **integrating** tech into our curriculum is like talking about integrating pencils into our writing. The pencil isn’t the point. It’s just a tool. The writing is what matters.

Let’s evolve our language to describe how we are **applying** technology to address gaps in our curriculum, rather than focusing on tech itself.”



Standard 8.1 Computer Science Examples Across the Curriculum

Disciplinary Concept	Content Area	Application
1. computing systems	Visual Arts	Ergonomics and aesthetics
2. networks & internet	Health	Cyberbullying, screentime
3. human impact	Civics	E-waste, fraud, privacy
4. data analysis	Math/Statistics	Data visualization
5. algorithms & coding	Phys Ed	Game design [rules, processes]



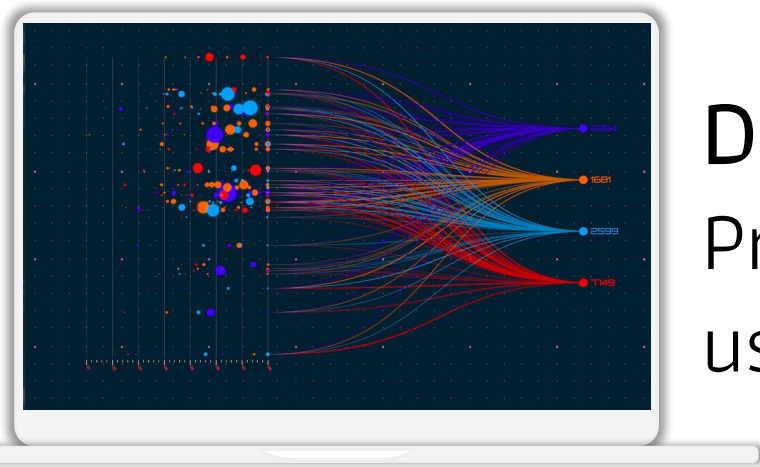
Standard 8.2 Design Thinking Examples Across the Curriculum

Disciplinary Concept	Content Area	Application
1. engineering design	Social studies	City building and management
2. interactions w/tech	World languages	Language software/translators
3. Nature of tech	History	Evolution of the assembly line
4. impact analysis	Business	e-Commerce
5. ethical applications	English Lang Arts	Communicating w/social media



Standard 8.1 Computer Science In Action

Image: <https://techcrunch.com/2016/02/24/computer-science-is-now-a-high-school-graduation-requirement-in-chicagos-public-school-district/>



Data Visualization [DA1]

Presenting data graphically
using VisualizeFree

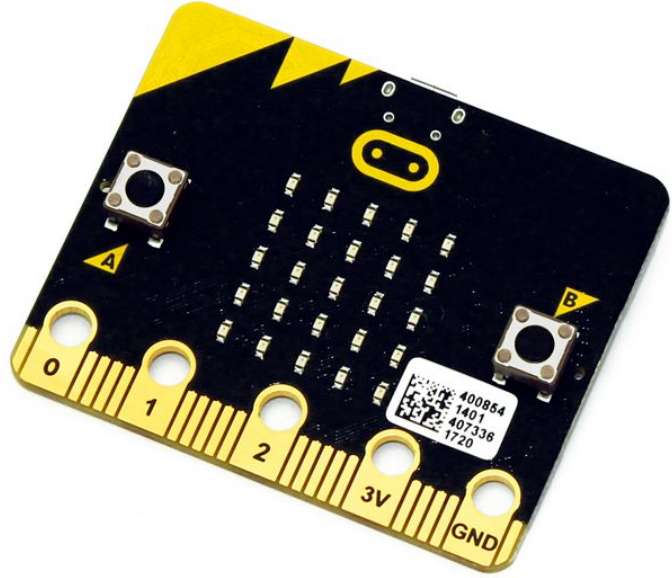
Click images/icons to access content





Algorithms [AP1]

Gaming and functions with Algorithm City



Coding [AP6]

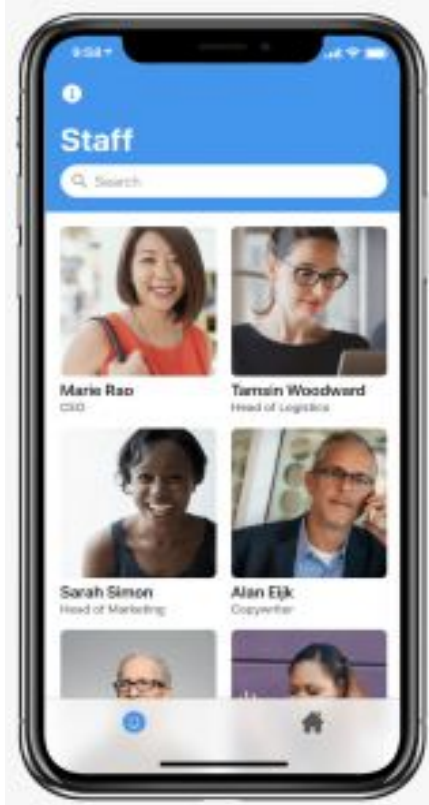
Programming a Micro:bit to predict the future with Python





Cybersecurity [NI2]

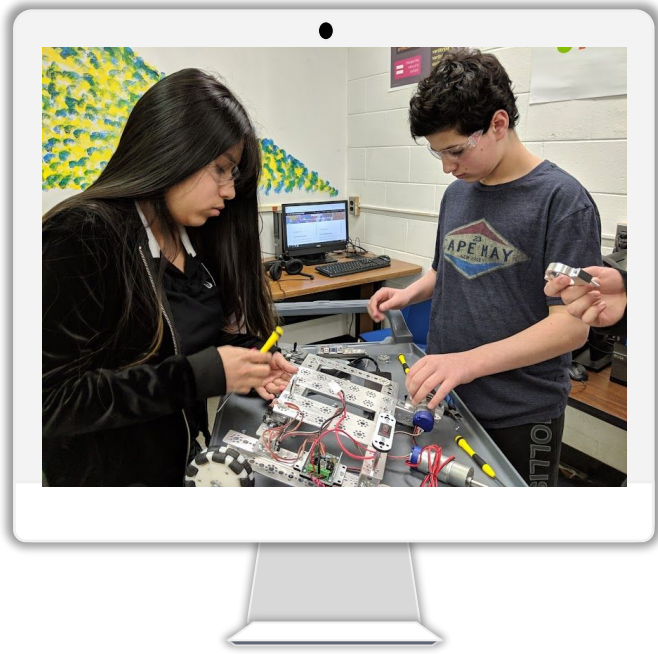
Pattern recognition using
Teachable Machine learning



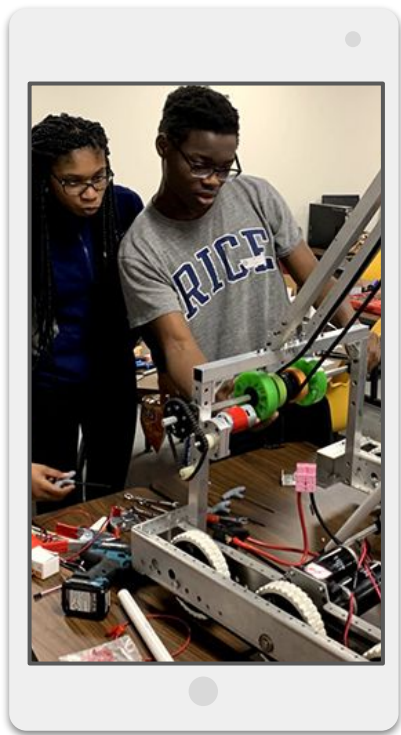
App Design [AP7]

Accessing Google Sheet data
using GlideApps





Equitable Access [IC2]
Recruiting diverse
students through robotics

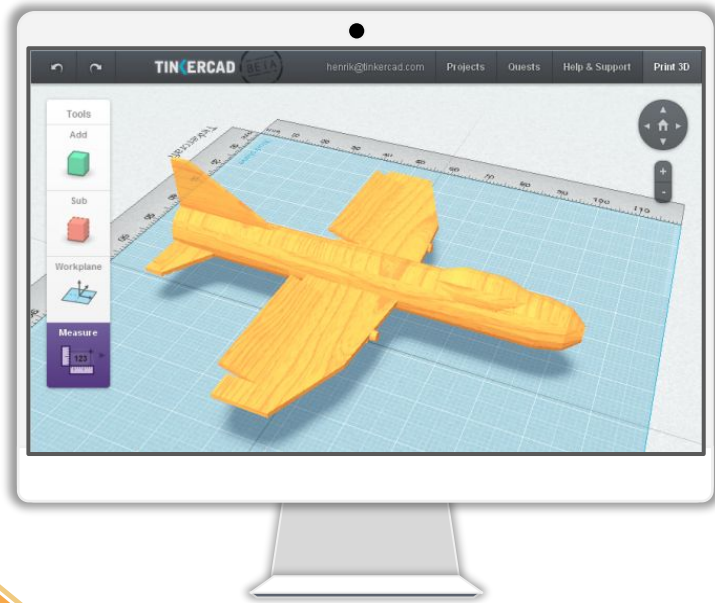


Standard 8.2

Design Thinking

In Action

Image: <https://csweb.rice.edu/news/student-mentors-needed-yates-high-school-robotics-club>

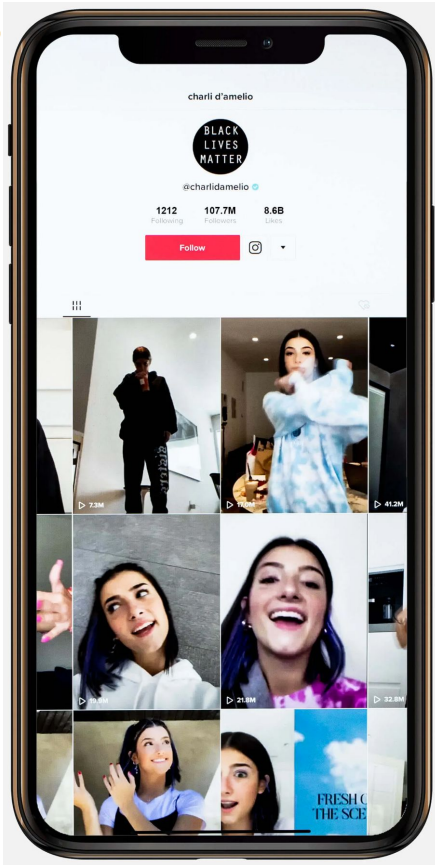


Improve product design [NT3]
Using TinkerCAD to modify a
tool



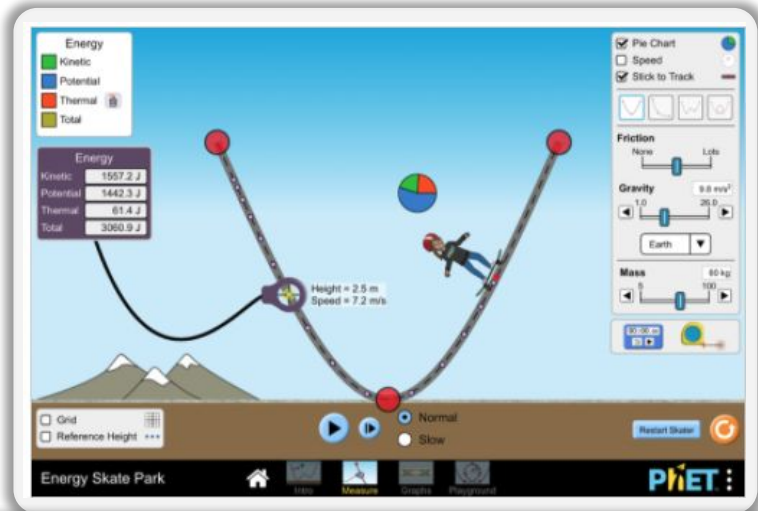


Evaluate sustainability [ETW1]
Using the Measure-AR App to
minimize packing waste



Impact of Social Media [ITH3]

Create videos about the + and - of TikTok, using TikTok



Problem Solve [ED1]
Designing a skatepark
using a PHET Simulator



ATTENTION LEADERS!



Teachers, students, parents, nurses, media specialists, coaches, directors, supervisors, principals, assistant principals, central office administrators, community members, higher ed staff, government entities, non-profits, libraries, commercial organizations...

YOUR GUIDANCE IS NEEDED!



Leader Roles

in Implementing Standard 8

- 
- 
1. Team building
 2. Courses, curriculum, programs
 3. Resource vetting and access
 4. Professional learning & support
 5. Evaluating practices
 6. Equity and advocacy

In Sum

To master Standards 8.1 and 8.2, teachers and students will

1. Experience them across the curriculum
2. Apply them to authentic problems
3. Try new [CS/ED] ways of thinking
4. Ensure all students have access
5. Evaluate technology use before, during, and after to ensure it fits

Resources

Sites

International Society for Technology in Education <https://www.iste.org>

Standard 8 2014 <https://www.nj.gov/education/cccs/2014/tech/8.pdf>

Standard 8 2020 <https://www.state.nj.us/education/cccs/2020/2020%20NJSLS-CSDT.pdf>

Sustainable Jersey <https://www.sustainablejerseyschools.com/actions/digital-schools-program/>

U.S. Department of Ed <https://www.ed.gov/oii-news/use-technology-teaching-and-learning>

Recommended Readings

<https://authenticlearningllc.com/tech-and-a-hierarchy-of-needs/>

<https://cei.umn.edu/active-learning>

<https://digitalpromise.org/initiative/computational-thinking/>

<https://districtadministration.com/using-project-based-learning-during-remote-instruction>

<https://www.edutopia.org/article/leveraging-technology-support-students-needs>

<https://www.edweek.org/teaching-learning/technology-fed-growth-in-formative-assessment/2015/11>

<https://harvardpolitics.com/education-tech-gaps/>

<https://medium.com/nightingale/when-data-visualization-and-art-collide-with-the-humble-org-chart-647a2df46c5c>



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This workshop was first facilitated at NJASA TechSpo on January 27, 2022 with co-presenter Tiffany Lucey @TiffanyLucey tinyurl.com/TiffanyLucey

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