

**Computer Science, Computer Assisted Design,  
Robotics**

**Rockville Centre**

**Schools**



# BOE Goal



To establish a K-12 Scope and Sequence in the areas of Computer Science, Robotics, and Computer Assisted Design



# Elementary

Kaitlin Caiola  
Tara O'Shea  
Lacey Lohr  
Jim Duffy  
Trish Montemarano  
Chris Zappia  
Christine Flanagan



# Middle School

Dan Lamanna  
Ryan Bockelman

## COMMITTEE MEMBERS



# High School

Patrick Walsh  
Keith Gamache  
David Beinlich  
John Segelke  
Lynn Voltaggio

# Admin

Michael Anderson  
Nicole Moriarty  
Sonia Hood  
Brian Zuar  
Matt Gaven



# Board of Ed Retreat

## Committee Goals



### Organizing Innovative Practices

Computer Science

Computer Assisted Design

Robotics



### Create a K-12 Scope and Sequence

Classes

Extra Curricular Activities

Common Projects

Skills

Community Partnerships

### Identify Growth Opportunities

Professional Development

Additional HS coursework

Extra Curricular Activities



## Challenges

- Start fast while building capacity
- Keeping a scope and sequence current as skills improve
- Staff training and certification

## Questions to consider as we work

- How do we design a linear and progressive curriculum while allowing for innovation?
- What extra curricular opportunities do we have or can we create?
- How do we provide equitable exposure while allowing students to have voice and choice?

What are our:

- Points of strength
- Opportunities for growth



# NYS Computer Science and Digital Fluency Standards



## Computer Science and Digital Fluency Learning Standards

The New York State K12 Computer Science and Digital Fluency Learning Standards were adopted by the Board of Regents in December 2020. The new standards focus on five key concepts:

Impacts of Computing



Computational Thinking



Networks & System Design



Cybersecurity



Digital Literacy





# NYS K-12 Computer Science and Digital Fluency Standards

## Computational Thinking

|                            | Grades K-1  | Grades 2-3   | Grades 4-6  | Grades 7-8   | Grades 9-12  |
|----------------------------|---|--|---|--|--|
| Algorithms and Programming | <b>K-1.CT.9</b>   | <b>2-3.CT.9</b>  | <b>4-6.CT.9</b>   | <b>7-8.CT.9</b>  | <b>9-12.CT.9</b>   |
|                            | Identify and fix (debug) errors within a simple algorithm.  | Identify and debug errors within an algorithm or program that includes sequencing or repetition.   | Explain each step of an algorithm or program that includes repetition and conditionals for the purposes of debugging.   | Read and interpret code to predict the outcome of various programs that involve conditionals and repetition for the purposes of debugging.   | Systematically test and refine programs using a range of test cases, based on anticipating common errors and user behavior.  |
|                            | <i>The focus should be on identifying small errors within a simple algorithm and fixing the errors collaboratively.</i> | <i>The focus should be on having students identify error(s) in an algorithm and suggest changes to fix the algorithm.</i>                | <i>Debugging frequently involves stepping or tracing through a program as if you were the computer to reveal errors.</i>  | <i>Programs can be debugged in numerous ways, including tracing and trying varying inputs. Perseverance is important in finding errors.</i>  | <i>The emphasis is on perseverance and the ability to use different test cases on their programs and identify what issues are being tested in each case.</i>   |
|                            | <b>K-1.CT.10</b>  | <b>2-3.CT.10</b>   | <b>4-6.CT.10</b>  | <b>7-8.CT.10</b>   | <b>9-12.CT.10</b>  |
|                            | Collaboratively create a plan that outlines the steps needed to complete a task.  | Develop and document a plan that outlines specific steps taken to complete a project.  | Describe the steps taken and choices made to design and develop a solution using an iterative design process.   | Document the iterative design process of developing a computational artifact that incorporates user feedback and preferences.  | Collaboratively design and develop a program or computational artifact for a specific audience and create documentation outlining implementation features to inform collaborators and users.   |
|                            | <i>The focus should be on collaboratively identifying a planning process which can be written, drawn, or spoken.</i>    | <i>The focus should be on developing and documenting a plan in writing, using appropriate tools (such as a storyboard or story map).</i> | <i>An iterative design process involves defining the problem or goal, developing a solution or prototype, testing the solution or prototype, and repeating the process until the problem is solved or desired result is achieved. Describing can include speaking or writing.</i> | <i>At this level, the emphasis is on using the iterative design process to create a solution or prototype with the end user in mind and to document the steps taken by the student to gather and incorporate information about the user into the computational artifact.</i> | <i>The focus is on the collaborative aspect of software development, as well as the importance of documenting the development process such that the reasons behind various development decisions can be understood by other software developers.</i> |



# Current CS/Coding Opportunities



## Elementary Level

- Code.org
- Kidlo
- Codable
- Intro to CS language vocabulary

## Middle School Level

- Tech 7
- Vex/Python
- Tech 8

## HS Level

- Intro to Coding course
  - some APCSP units
  - some Java Script

## ExtraCurricular

- No CS Extracurricular



# Current Robotics Opportunities



## Elementary Level

- Scribblers
- Cubelets
- Dash and Dot
- Lego Robotics\*Wilson Only

## Middle School Level

- Tech 7-Vex Robotics
- Arduino

## HS Level

- No courses currently

## ExtraCurricular

- MS Robotics
- HS Robotics

# Current Computer Assisted Design



## Elementary Level

- Some 3D printers\*not all buildings

## Middle School Level

- Tech 7-3D printing
- Tech 8-CAD
  - Design, Development, and Production
- Digital Photography
- Digital Music

## HS Level

- CAD
  - Wood Design
  - Intro to Computer Graphics
  - TV studio-Adobe Premier
  - Digital Photo I-II-Adobe Illustrator
  - Digital Music

## ExtraCurricular

- Video Production
- Wood Design club proposal



What gaps do we see?

Identified gaps

- Elementary
- MS
- HS



## Recommendations

What recommendations do we have for future work?



## Partnerships

What partnerships do we need to create or leverage to further this work?



# Multi-faceted Approach



Foundational

Developmental

Operational

## Board Retreat

Vision for the Future

- BOE Goals
- Establish North Star
- Enhance

July

## Administrator Retreat

Vision for the Future

- Where are we?
- Where is their opportunity to grow?
- How might we...?

August

## Superintendent's Conference Day

Current Reality

- Data Analysis
- Scheduling
- Plans for Experimentation

August

## Teacher Expertise Groups

Refining Research

- Defining the Categories
- Crafting Analysis

September

## Parent/Student Groups

Collect Data

- Diving Deeper
- Centering the learner's experience

Ongoing



# Upcoming Meetings

11/29

1/25

3/1



#GameOnRVC



