Noteworthy News

New Coding Units at Concord Road Elementary School

Our commitment to Project Lead the Way™ (PLTW), a rigorous engineering curriculum, has expanded this year to include not only engineering units at Concord Road School but coding units as well.

Offering a comprehensive coding sequence in the elementary school will enable our students to be more comfortable for increasingly advanced engineering and computer science opportunities in middle school and in high school. Similar to learning a language early in life, students who have a strong foundation in coding will gain a deeper and more complete understanding of the logic and advanced thinking inherent in programming.

Most importantly, students want to learn how to code. They want to learn how to make tablets and computers do fun things because it is exciting and "cool." And while "cool" is motivating, what really matters are the lasting benefits of building these skill sets:

- Logical thinking;
- Problem solving;
- Persistence;
- Collaboration;
- Communication.

Matt Kennedy, the CRS STEAM educator will be teaching the coding sequence. Below are short descriptions of each unit by grade.

- **Animated Storytelling (Grade 1)**: Students explore the sequential nature of computer programs through hands-on activities, both with and without a computer. They examine key aspects of storytelling and devise how to transition a narrative from page to screen. Students discover the design problem through a story about Angelina, Mylo, and Suzi, who wish they could find a way to create a story with characters who move and interact with each other. Combining fundamental principles of computer science with story-building skills, students develop animations that showcase characters, settings, actions, and events from short stories of their own creation.
- **Grids and Games (Grade 2)**: Students investigate numerical relationships while learning about the sequence and structure required in computer programs. Starting with computer-free activities and moving to tablet-based challenges, students apply addition and subtraction strategies to make characters move on a grid. Angelina presents the design problem when she expresses her desire to design a game she can play on her tablet. Using skills and knowledge gained from these activities, students work together in groups to design and develop a game in which a player interacts with objects on a tablet screen.

- **Programming Patterns (Grade 3)**: This module introduces students to the power of modularity and abstraction. Starting with computer-free activities and progressing to programming in a blocks-based language on a tablet, students learn how to think computationally about a problem. Angelina, Mylo, and Suzi set the stage for the design problem as they discuss their desire to create video games on their tablet. Students then create a tablet game using modular functions and branching logic.
- **Input/Output: Computer Systems (Grade 4):** In this exploration of how computers work, students are encouraged to make analogies between the parts of the human body and parts that make up a computer. Students investigate reaction time as a measure of nervous system function. After Mylo suffers a concussion, his friends become interested in how to diagnose concussions and create a reaction-time computer program to assess a baseline before a concussion occurs. Students apply what they have learned to build their own reaction-time measurement devices on tablets.

These units compliment new PLTW engineering units that are also being introduced in CRS science classes. These include: Light: Observing the Sun, Moon and the Stars (Grade 1); The Changing Earth (Grade 2); Variations of Traits (Grade 3); and Energy: Collisions and Conversions (Grade 4).

Outside the classroom, parents might want to review and allow access to apps such as Kodable, The Foos, LightBot, Run Mario Run, and Daisy the Dinosaur which guide children through a series of puzzles and tasks. Scratch and code.org are also sites that kids absolutely love. In addition, students can find many "stemtastic" websites, as well as a number of Scratch tutorials that Mr. Kennedy designed, on his class page to nurture their interest in coding and to fuel their excitement.