The Darien Difference

October 2026 - STEM at DPS

Dear Community Members,

Welcome to the October edition of The Darien Difference - our District Newsletter that spotlights all the wonderful things that make the Darien Public Schools truly special. Each month we are taking a deep dive into an area within our schools that showcases how the Vision of the Graduate is in action every single day and how it contributes to truly setting Darien apart from other Districts in Connecticut.

This month, we explore the STEM learning that is happening in all of our schools - both in daily classroom lessons as well as extracurricular activities. From robotics at all of our elementary schools, with equipment graciously donated by the Darien Foundation, to projects at the middle and high school levels that give real-world experiences to our students, STEM is tightly woven into the rich fabric of our curriculum in Darien.

I hope you enjoy reading about the incredible work our teachers and students are doing in the area of STEM. Looking ahead, we will focus the November edition on the many extracurricular opportunities available to our students that enrich their learning and expand their horizions!

Sincerely,

Eric Byrne, Ed.D.
Superintendent of Schools



Darien High School

🚀 Inside STEM, Science, and Math Innovation at Darien High School

Walk into the classrooms and labs of Darien High School on any given day, and one thing is instantly clear: learning here is not a spectator sport! From the hum of 3D printers and the spark of automotive tools to chalk-filled whiteboards solving predictive equations and steel marbles launching across physics labs, DHS students are actively translating abstract concepts into real-world solutions.

Across engineering, mathematics, and the physical sciences, DHS has built an environment where curiosity meets hands-on discovery. Here is a look inside three dynamic programs showing how Blue Wave students design, model, and innovate their way into the future. 🌊✨



A Woods II student mastering the tongue and groove technique for her table.



Students in DIY home repair course learn basic automotive maintenance by checking brake pads and rotating tires.

🛠️ Technology & Engineering: Practical Skills for Tomorrow

The Technology and Engineering Pathways give students hands-on experiences that bridge classroom theory with career-ready craftsmanship:

📐 **Foundational Electives (Grade 9):** Courses like Fundamentals of Engineering, Computer-Aided Design and Drafting (CADD), Architecture, and Computer Science introduce students to design thinking, structural analysis, and coding fundamentals.

🎓 **Advanced Capstones:** Upperclassmen advance into rigorous courses including Principles of Engineering (POE), AP Computer Science A, and Independent Projects in Engineering (IPIE) to tackle open-ended prototyping and research.

What sets these pathways apart is their real-world application:

🪚 **Woods II:** Students master fine craftsmanship and precision joinery, such as carving tongue-and-groove joints to build custom tables.

🚗 **DIY Home Repair:** Students build practical self-reliance, learning essential automotive maintenance like checking brake pad wear and safely rotating tires.

🖨️ **Fundamentals of Engineering:** Students watch digital CADD blueprints come to life layer-by-layer on high-speed Bambu Lab 3D printers.

Whether preparing for engineering degrees or simply learning how the physical world works, students leave these courses as capable, proactive problem-solvers.

Darien High School

Math Modeling Club: Turning Equations into Real-World Answers
Written by DHS Student Charlotte Straden

"In the Math Modeling Club at DHS, we focus on solving real-world problems. Our work is highly collaborative, and you'll often find a bustling room of students working together at the whiteboards, actively mapping out variables and creating predictive models.
We learn how to tackle these complex, multifaceted problems by first defining the problem, making assumptions to simplify and make the problem solvable, justifying those assumptions, and determining the variables. We analyze the data available to us. Then we move to building the actual model—using equations and reasoning. We evaluate the strengths and weaknesses of our model and our solution, go back and tweak it for more accuracy, and repeat as necessary."

This fall, the club is tackling these real-world challenges:

🚌 **The DHS Bus Dilemma:** Analyzing whether it is more cost-effective for the district to buy or rent buses for athletic teams and student clubs, accounting for depreciation, gas, maintenance, and driver wages.

🌊 **Environmental & Energy Forecasting:** Projecting coastal sea-level rise along Long Island Sound and calculating the ideal school thermostat temperature to optimize energy costs and classroom comfort.

⏱️ **The 14-Hour M3 Challenge:** Competing against the clock in the national MathWorks Math Modeling Challenge. Past prompts had students construct mathematical models predicting financial loss and social impacts tied to mobile sports betting across different demographics.

Learn more on the DHS Math Modeling Club Website or join via Google Classroom (code: lpv75jy)

Physics in Action: The Basket Catch Challenge

Down the science hall, theoretical physics meets precision accuracy in the annual Basket Catch Competition - an assured learning experience shared across all DHS physics sections.
The mission: calculate the exact launch speed, angle, and parabolic flight path of a steel marble rolling off an elevated ramp so that it lands directly in a small basket on the floor.

To hit the target, student lab teams must master key mechanics:
📏 Breaking motion into horizontal and vertical velocity vectors
⏱️ Factoring in gravity, launch height, and friction
📐 Deriving exact parabolic projectile trajectories

Equipped with meter sticks, photogates, and notebooks of calculations, teams make their final predictions. Cheers erupt as theoretical equations prove themselves in real time.

Living the DPS Vision of the Graduate

Across all three areas, these programs bring the district's core values to life every day:
💡 Creativity: Believing in an idea and giving it form - in wood, code, or filament.
🔍 Curiosity: Testing assumptions and diving deep into how physical and financial systems work.
🤝 Independence: Taking project ownership, collaborating across teams, and learning from trial and error.

From the engineering shop to the math whiteboards and physics labs, DHS students don't just study STEM - they put it to work!

Middlesex Middle School

Future Innovators at Work: Inside MMS STEM & Tech! 🛠️✨

At Middlesex Middle School, our Unified Arts classrooms are buzzing with curiosity, creativity, and big ideas! In grades 7 and 8, students dive into STEM 7 and 8, Computers 7, and Global Innovators 8 - dynamic courses that bring the Darien Public Schools mission of innovative problem solving to life every single day.

Rather than just learning about technology from a textbook, our middle schoolers learn by doing - designing, coding, building, and testing their way through real-world challenges!

🎒 What's Happening in the Labs & Classrooms?

Here is a peek at the exciting projects taking shape across our grade levels:

💻 7th Grade Computers: Students become savvy digital creators! From cracking coding logic and designing interactive mobile apps to mastering digital citizenship and online safety, students build foundational digital literacy that lasts a lifetime.

🧸 **Design & Modeling:** Where imagination meets engineering! Students sketch precise orthographic drawings, master 3D CAD (Computer-Aided Design) software, and build physical prototypes - including heartfelt projects like custom therapeutic toys designed for children with special needs.

⚙️ **8th Grade Engineering:** How do structures stand tall and machines move? Eighth graders unpack real-world mechanical and civil design, discovering the science and ingenuity behind the human-made world around us.

🌍 **8th Grade Global Innovators**: Thinking globally, creating locally! Students blend graphic design, programming, and video production into powerful multimedia campaigns advocating for global sustainability and positive change.



7th Grade STEM students utilizing the steps of the design process to create and iterate a fun therapeutic toy for a child with cerebral palsy.

🎓 Paving the Path to Darien High School

The skills students spark right here at MMS build an instant bridge to high school success!

Middle schoolers drafting in CAD, writing code, and testing structural prototypes will feel right at home stepping into DHS freshman electives and capstone pathways, including:

📐 Fundamentals of Engineering & CADD
💻 Computer Science & Web Design / App Development
🏛️ Architecture
🪚 Woodworking & DIY Home Repair

By encouraging our students to experiment, embrace trial and error, and bring their ideas to life, MMS is helping shape the next generation of Darien creators, designers, and engineers!



8th Grade Global Innovators students editing public service announcements (PSAs) they filmed focused on important global issues

Hindley Elementary School

🎃 Hindley's Makerspace Day is a Howling Success!

Thanks to a fantastic collaboration with the Hindley Administration, Mr. Duff's Makerspace Day has officially taken off! Every F-Day, students have the exciting option to swap their outdoor recess for a hands-on creative experience with Mr. Duff. To make sure everyone gets in on the action, students rotate throughout the year - meaning every child who wants to participate gets a turn, and many even get to visit multiple times!







💡 Creativity, Curiosity, & Independence in Action

Directly aligning with the DPS Vision of the Graduate, Makerspace Day empowers students to "believe in their vision and give form to their ideas."

So, what are students building, coding, and creating?

🎨 Arts & Crafts & Keva Plank Building
🧱 LEGOs & STEM Board Games
🏎️ Sphero Indi Robot Racers
🎙️ Podcasting & Green Screen Videography

With endless smiles from students and rave reviews from teachers, Makerspace Day is quickly becoming a favorite Hindley tradition!

Holmes Elementary School

🦴🎃 The Great Bone Bridge Challenge: Little Engineers at Holmes!

There has been serious construction going on at Holmes - both on our school grounds and right inside our STEM classroom! Inspired by the real-world beams going up around our Global Learning Commons construction project, our young innovators recently tackled a spooky, hands-on engineering task: The Bone Bridge STEM Challenge! 🏗️✨

💡 Walking in Real Engineers' Shoes

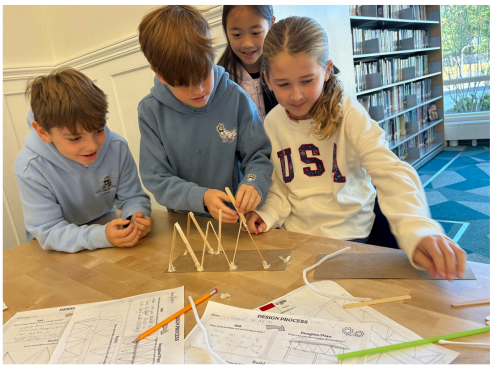
Before picking up any building supplies, our students stepped through the authentic Engineering Design Process:

💭 Brainstorming: Imagining how to make structures both sturdy and span a gap.

📝 Planning & Diagramming: Sketching blueprints and carefully selecting their materials.

🔨 Building & Testing: Putting their architectural ideas into physical form.

🔧 Troubleshooting & Iterating: Identifying weak spots, redesigning beams, and testing again!





🎃 The Mini-Pumpkin Test

The big goal? Design and build a bridge long enough to span the distance and strong enough to support the weight of a mini pumpkin! Using their knowledge of weight distribution and beam support, student teams experimented with balance, foundation strength, and structural integrity. There were gasps, cheers, and lots of giggles as pumpkins were placed on the bridges to see whose structure could hold the load without tumbling down.

🤝 Teamwork That Builds Bridges

Beyond the science and physics, the heart of the challenge was collaboration and communication. Working in small teams, students practiced listening to each other's ideas, dividing roles, and solving problems together when a design didn't hold on the first try.

Watching our students cheer each other on and celebrate every design breakthrough showed true Holmes spirit. Hats off to our creative, resilient young builders!







Ox Ridge Elementary School

🤖 Robotics Returns to Ox Ridge! 🚀

We are thrilled to welcome the Robotics Club back to Ox Ridge School! Led by Mrs. McIntosh, this exciting hands-on program gives our young innovators the chance to build, code, problem-solve, and collaborate through active, playful learning.

Using engaging, classroom-ready computer science tools, our budding engineers aren't just sitting behind screens - they are programming robots to navigate challenges, building dynamic structures, and working together to bring big ideas to life! 💡✨





Grades 2 & 3: Robotics with Dash

Powered by Wonder Workshop

Second and third graders dive into the fundamentals of coding and robotics using the friendly Dash robot. Students practice writing sequences of code, programming obstacle navigation, and tackling teamwork missions.

📍 Location: Ms. Sproch's 3rd Grade Classroom

⏰ Meeting Time: Monday Mornings | 8:00 – 8:50 AM

🗓️ Fall Session Dates: October 5 – December 21

🎯 Key Focus: Coding sequences, logic puzzles, and peer collaboration

Grades 4 & 5: LEGO® SPIKE™ Essentials

Powered by LEGO Education

Fourth and fifth graders take their engineering up a notch with LEGO SPIKE Essentials. Combining colorful LEGO elements with intelligent hardware and block-based coding, students design and build working mechanical creations to solve real-world challenges.

📍 Location: Ms. Thadal's 5th Grade Classroom

⏰ Meeting Time: Wednesday Afternoons | 3:30 – 4:20 PM

🗓️ Fall Session Dates: October 7 – December 16

🎯 Key Focus: Mechanical design, sensors, critical thinking, and advanced teamwork

🛠️ What Our Students Are Discovering:

💻 **Coding & Logic:** Translating step-by-step algorithms into real robot movements.

⚙️ **Hands-On Engineering:** Testing balance, motor speed, and structural integrity.

🤝 **Teamwork & Resilience:** Brainstorming, troubleshooting bugs, and celebrating group success!

Looking Ahead

Thank you to our teachers, administration, and families for supporting STEM discovery at Ox Ridge.

Keep an eye out for additional robotics opportunities rolling out this spring! 🚀

Royle Elementary School

🚀 Full STEAM Ahead at Royle School! Innovation, Makerspace & Robotics in Action 🤖

Big ideas, buzzing creativity, and hands-on invention are everywhere at Royle School! From early-morning robotics challenges to collaborative flex-time explorations, our students are actively coding, constructing, and thinking like engineers.

Whether they're turning everyday objects into musical touchpads, designing autonomous robot paths, or exploring early artificial intelligence, our Royle learners are developing critical computational thinking and problem-solving skills - all while having a blast!

🛠️ Makerspace & After-School Robotics

Our makerspace and after-school robotics programs give young innovators the freedom to experiment, design, and bring mechanical ideas to life:

🧱 **Core Favorites in Action:** Students build, test, and program using beloved LEGO Robotics and Dash (Wonder Workshop) robots. Through interactive challenges, they hone spatial reasoning, mechanical design, and block-based coding fundamentals.

⚡ **Hands-On Circuitry & Invention:** With Makey Makey Invention Kits, students explore electrical conductivity and closed circuits by transforming everyday conductive objects - from bananas to foil - into functioning touchpads, game controllers, and musical instruments.

🌟 **Exciting New Additions - Finch & Hummingbird Kits:** We are thrilled to expand our toolkit with Finch and Hummingbird robotics kits! These tools empower students to design, wire, and program their own custom interactive robotic creations from scratch.







📚 Library & Flex Time STEM Exploration

Hands-on technology isn't just an after-school activity - it is woven directly into school-day learning through library visits and classroom flex time:

🧠 **Brand-New LEGO Computer Science & AI Kits:** New hands-on kits connect classic LEGO engineering with foundational concepts in modern computer science and artificial intelligence, giving students an age-appropriate glimpse into how smart systems work.

🏛️ **Structural Design with KEVA Planks:** Students test balance, gravity, and geometric principles as they plan, stack, and construct intricate 3D architectural towers and cantilever spans.

🐝 **Tactile Coding with Sphero Indi & Bee-Bot:** Students learn sequencing, directional logic, and algorithmic thinking by coding color-sensing Sphero Indi racers and programming path-navigating Bee-Bots.

🐒 **Digital Coding & Logic with CodeMonkey:** Students sharpen computational logic, syntax awareness, and step-by-step problem-solving strategies.

💡 What Our Students Are Learning

Beyond the excitement of gadgets and motors, these experiences nurture lifelong skills across every grade:

🔍 **Curiosity & Inquiry:** Asking "how does this work?" and diving in to test hypotheses firsthand.

🧩 **Algorithmic Thinking:** Breaking multifaceted challenges down into manageable, logical steps.

🤝 **Collaboration & Resilience:** Learning that debugging a program or rebuilding a fallen KEVA tower is just part of the creative process.

A huge thank you to our Royle educators and administration for cultivating an inspiring, hands-on learning environment where curiosity thrives every single day!

Tokeneke Elementary School

🧮 Young Math Minds in Action at Tokeneke School!

At Tokeneke School, math is so much more than numbers on a page - it is a hands-on adventure filled with curiosity, discovery, and creative problem-solving! From building early number sense in Grade 1 to tackling multi-step challenges in Grade 3, our classrooms are buzzing with students exploring concepts, testing strategies, and explaining their mathematical thinking with pride.

Here is an inside look at the exciting mathematical journeys taking place inside our Tokeneke classrooms!

🧩 1st Grade: Big Discoveries with Numbers & Operations!

Our first graders are diving deep into the foundations of how numbers work together! By exploring how numbers can be broken into parts and assembled back into wholes, students are unlocking the foundational secrets of addition and subtraction.

🔍 **What Our 1st Graders Are Exploring:**

🔄 **Parts & Wholes:** Building an intuitive understanding of number bonds by taking numbers apart and putting them back together again.

➕ **Flexible Addition:** Discovering that numbers can be added in any order while always leading to the exact same total.

➖ **Multiple Ways to Subtract:** Learning that subtraction isn't just one thing, it can mean taking away, counting backward on a number line, or finding the missing piece to complete a puzzle.

🌍 **Real-World Problem Solving:** Taking classroom math off the page to solve everyday, real-life challenges.

🏛️ 3rd Grade: Exploring the Realm of 10,000 & Beyond!

Third graders have stepped into an exciting new world of large numbers, journeying all the way to 10,000! With base-ten blocks in hand and place-value charts lining their desks, students are uncovering the architecture behind our number system.

🎯 **Key Milestones in 3rd Grade Math:**

🧱 **Building Big Numbers:** Using physical manipulatives and charts to represent numbers in standard form, expanded form, and word form.

🔍 **Pattern Hunters:** Skip-counting by ones, tens, hundreds, and thousands to spot mathematical patterns and strengthen mental agility.

📏 **Comparing & Rounding:** Navigating open number lines to order numbers from least to greatest and round with precision to the nearest ten and hundred.

➕ **Regrouping with Confidence:** Exploring versatile addition strategies from mental math tricks and number bonds to place-value algorithms with and without regrouping.

📊 **Bar Modeling Masters:** Organizing complex thoughts with visual bar models to conquer one-step and two-step real-world word problems.

🌈 The Tokeneke Impact: Growing Lifelong Problem Solvers

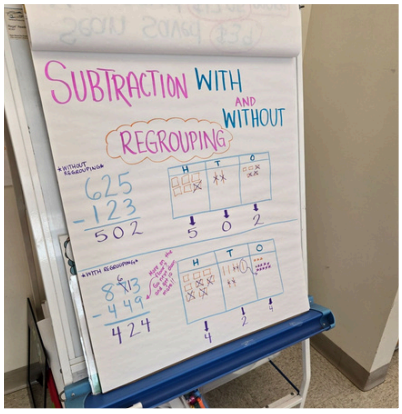
Whether they are snapping together blocks to make ten in first grade or drawing bar models to model a multi-step story problem in third grade, Tokeneke students are living out the district's mission of innovative thinking. They are learning that mistakes are just proof of trying, that collaboration makes problem-solving fun, and that they have the tools to tackle any challenge that comes their way!



Ms. Morgan's 1st grade class working on addition & subtraction



Ms. Sarf's 3rd grade class working on addition with larger numbers and decimals



Ms. O'Brien's 3rd grade class anchor chart teaching subtraction with multi-digits