Curriculum & Student Development Committee Meeting

March 10, 2026
Neck River Elementary School

Grades K-5
STEAM

This is How We Learn & Grow in STEAM

STEAM at Neck River and Brown

"The first thing she wanted to do when she got home was build a zipline."

~Kindergarten Parent

"STEAM is always the "rose" when we talk about our day."

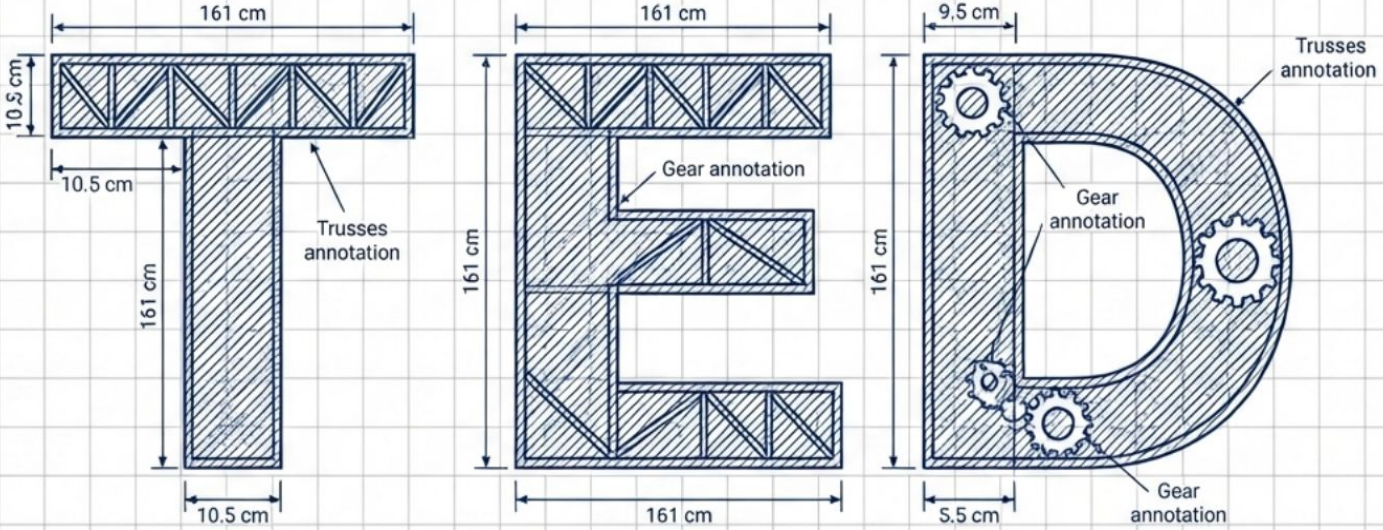
~5th, 3rd, 1st Parent

Technology, Engineering & Design

WP
MS

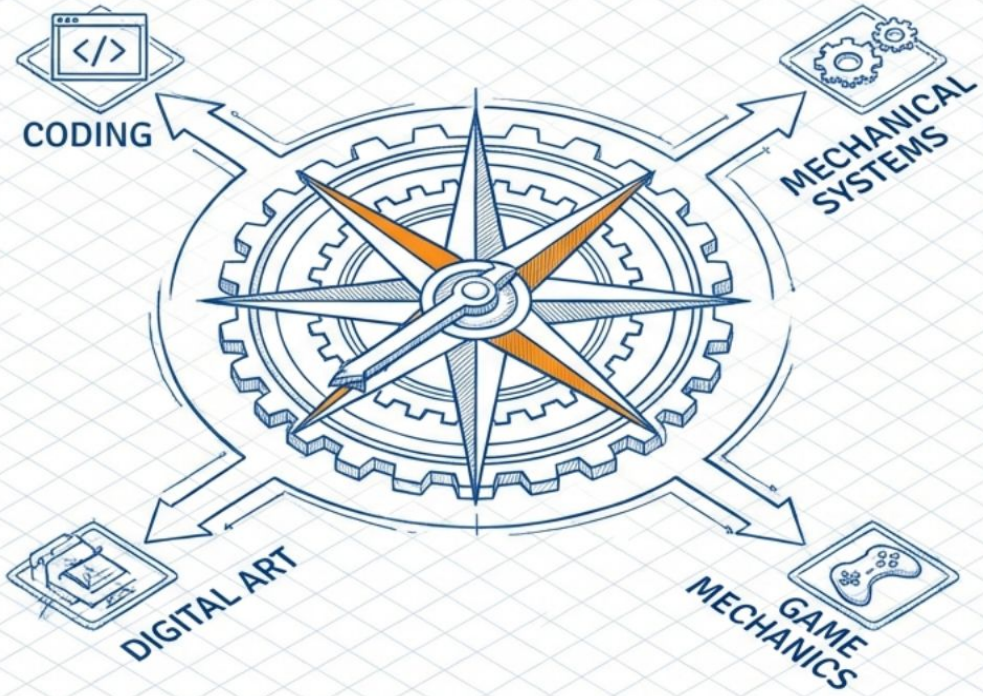
Technology, Engineering, & Design

Choice. Challenge. Creation.



Polson Middle School Elective Course Overview

STUDENT AGENCY: THE CORE OF TED

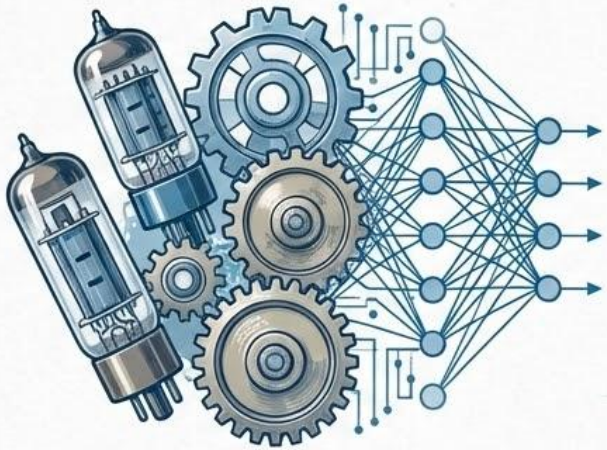


TED is an elective course at Polson Middle School grounded in student agency. From the outset, students have meaningful ownership—not only in what they create, but in how they approach learning.

Whether a student gravitates toward coding, mechanical systems, digital art, or game mechanics, TED provides space for personal direction while maintaining high expectations for technical skill, critical thinking, and iterative improvement.

Part One

Analog AI



Game Title: Color Clash

Materials Needed: Color Clash

How to Play Color Clash:

Goal: Be the first player to empty your hand!

Players: You play against 3 opponents.

Setup: Everyone starts with 7 cards. The remaining cards form the Draw Pile. One card is flipped to start the Discard Pile.

On Your Turn:

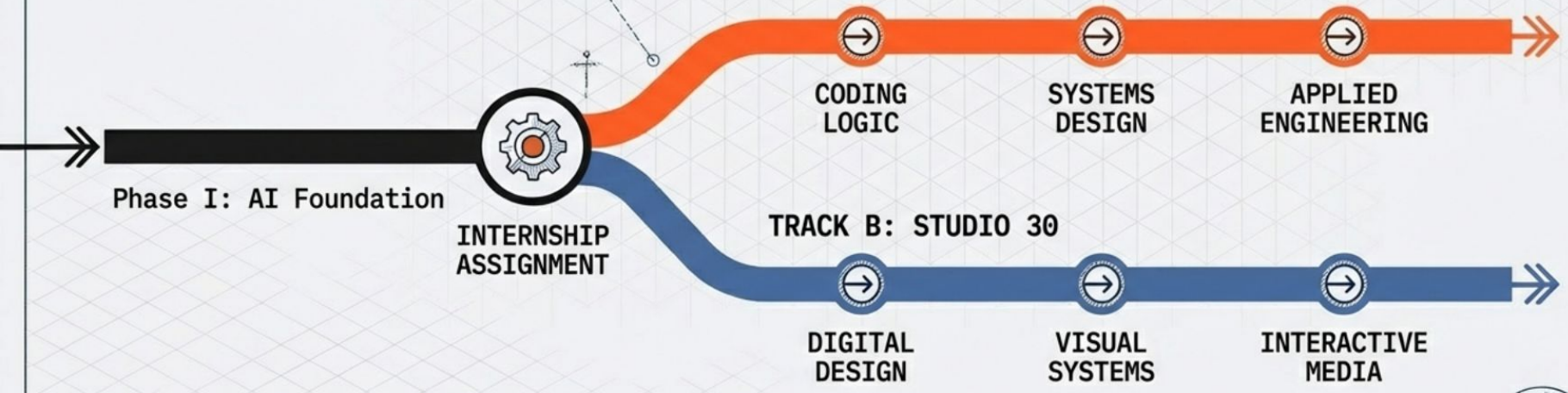
- Match: Play a card from your hand that matches the top card of the Discard Pile by **Color** (Red, Blue, Green, Yellow) or **Value** (1-5, or 'D2').
- No Match? You must click the **Draw Pile** to draw one card.
- Pass: If you drew a card and still can't play, your turn ends automatically.

Action Cards:

- D2 (Draw Two): The next player must draw **two** cards and loses their turn. This

THE DIVISION SPLIT: SPECIALIZATION & SKILLS

Students exercise agency by selecting a specialized track based on interest.



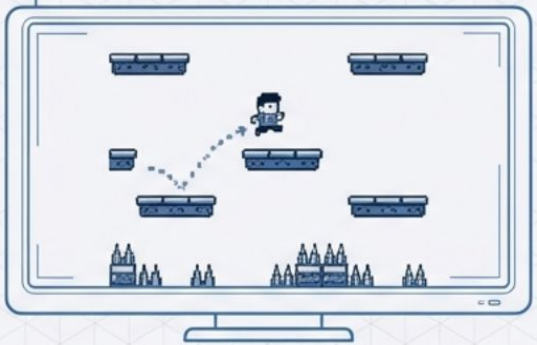
Part Two

Building Retro Games Through Code and Visual Design

RETRO-MEK: THE LOGIC OF GAME DESIGN

Space Shooter // Cartesian Coordinates

Platformer // Gravity Physics



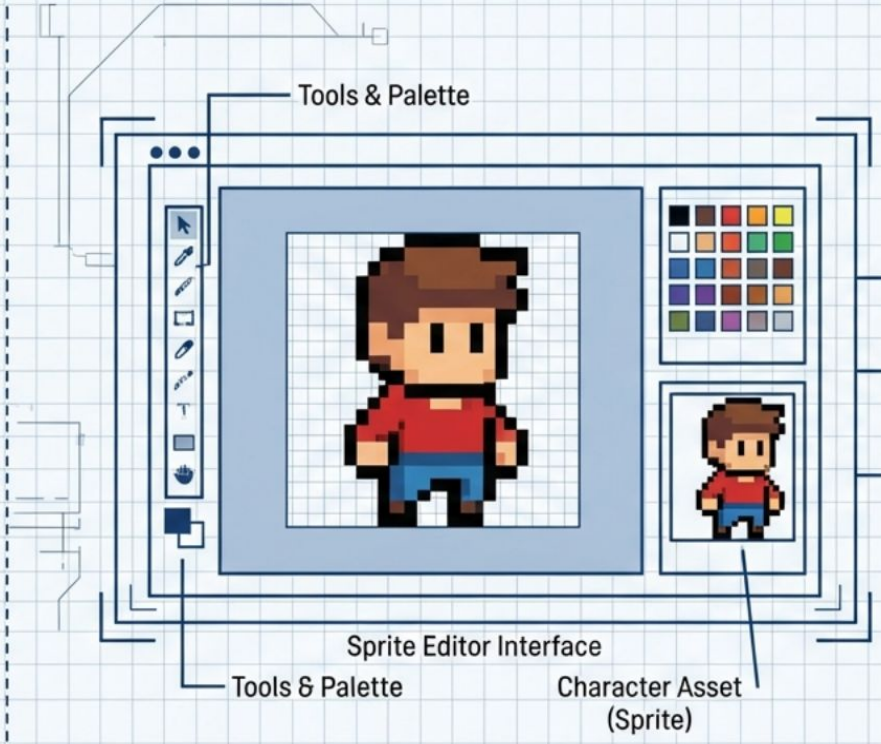
Puzzle Portal // Boolean Logic

ACADEMIC CONCEPTS:

- **Sequencing & Logic:** Event-based coding and conditionals.
- **Physics Modeling:** Collision detection and movement simulation.
- **Systems Thinking:** Enemy behavior and game balance.

Tool: Microsoft MakeCode Arcade

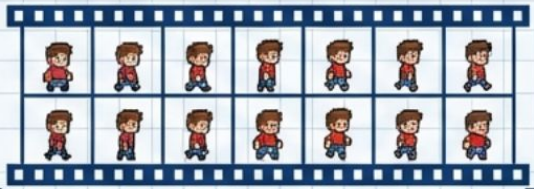
STUDIO 30: PIXEL ART CREATION & ANIMATION



TILEMAPS & ENVIRONMENTS

COLLECTIBLES & ITEMS

ANIMATED SEQUENCES



Animation Frames (Walk Cycle)

CROSS-FUNCTIONAL COLLABORATION

RETRO-MEK

- Physics
- Logic Systems
- Gameplay Code

SYNTHESIS

STUDIO 30

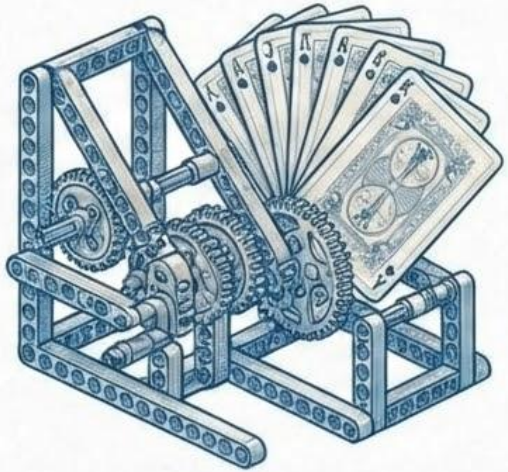
- Sprite Animation
- Backgrounds

GO-TO-MARKET ASSETS

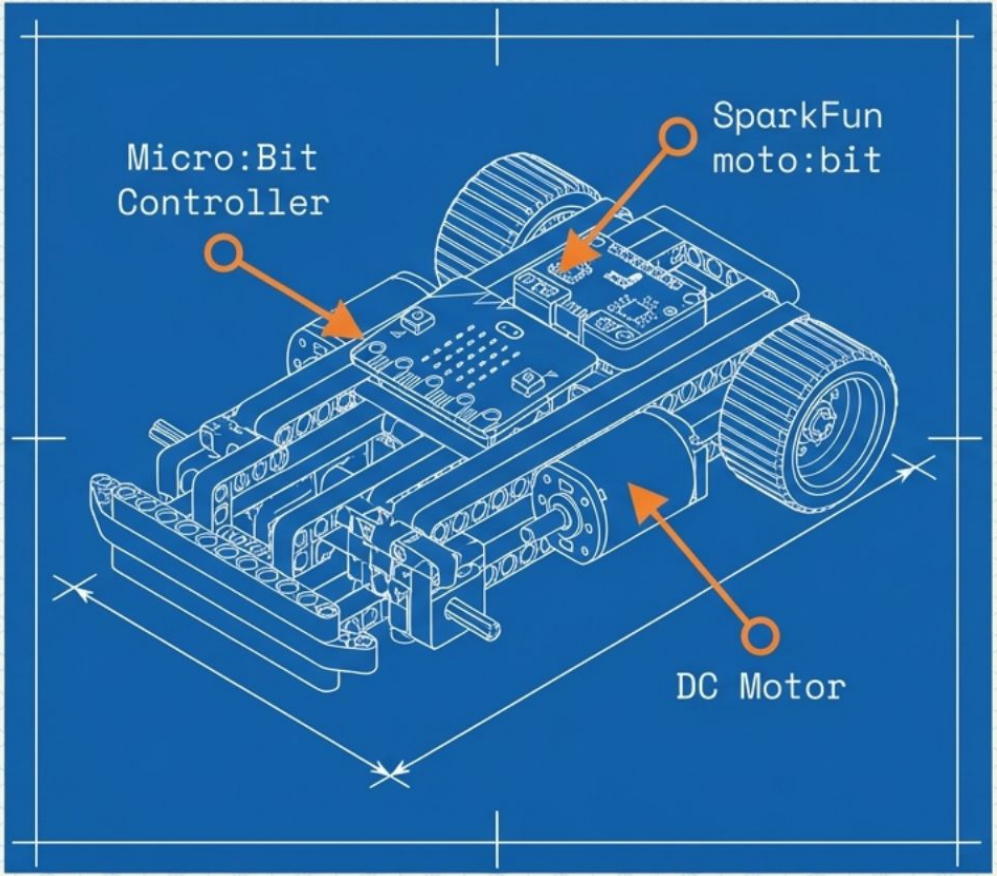

25.90
2
Menu
A
B

Part Three

Applying Engineering and Design to Real-World Creations

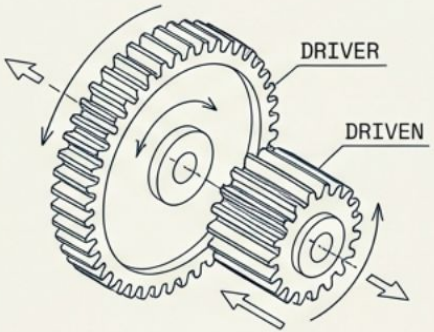


RETRO-MEK: APPLIED ENGINEERING & ROBOTICS



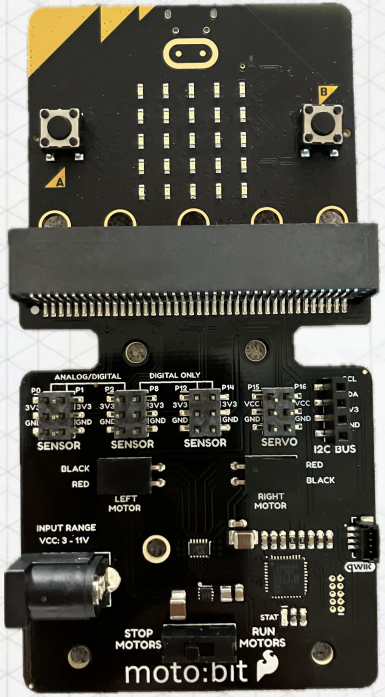
ENGINEERING CHALLENGES

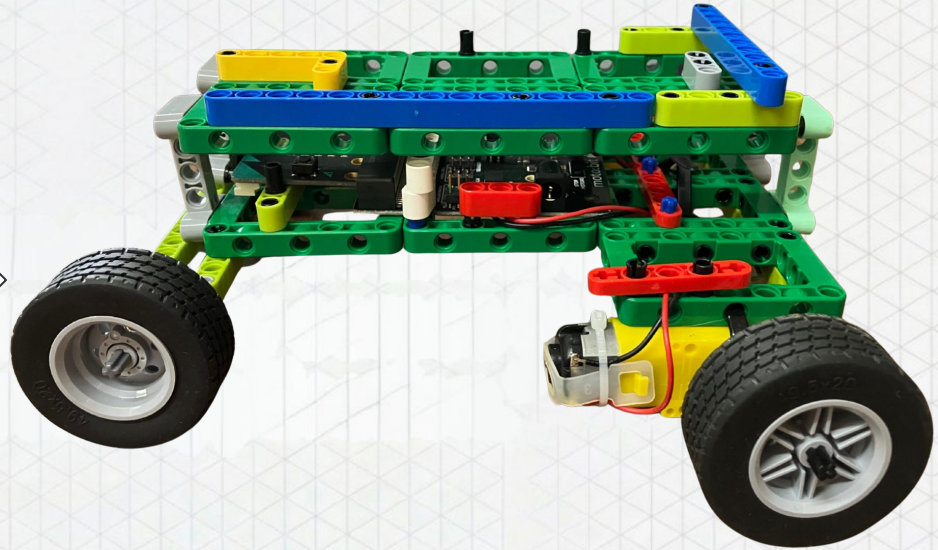
1. Obstacle Speed Course (Optimization: Agility)
2. Tug-of-War Torque Challenge (Optimization: Traction)



Gear Ratio Principles

Students analyze how mechanical configurations (Driver vs. Driven gear) directly influence measured outcomes like speed vs. torque.

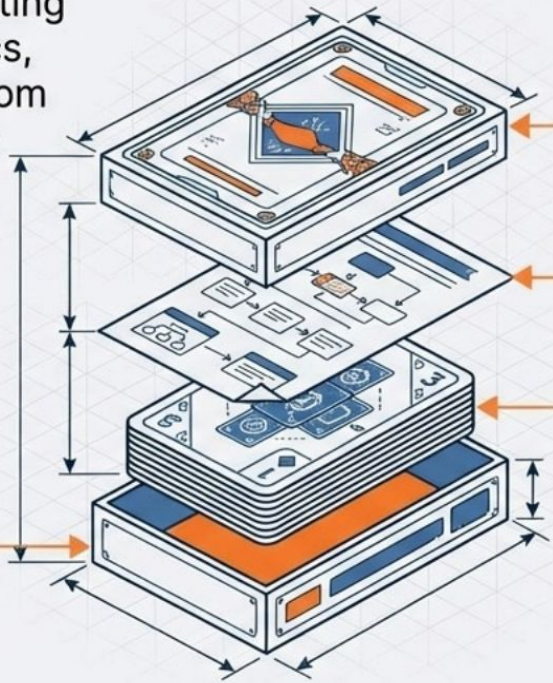




Example Design

STUDIO 30: ANALOG SYSTEMS ARCHITECTURE

Unit: Independent Card Game Development. Students reverse-engineer existing games to understand mechanics, then design an original game from the ground up, focusing on rule systems and playability.



Box Lid: Visual Identity & Branding

Rule Sheet: Instructional Clarity & Logic

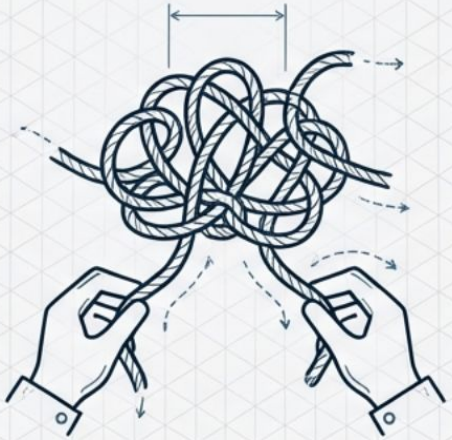
Cards: Probability & Balance (Card Ratios)

Box Art: Visual Identity & Branding

MINDSET & INTANGIBLE OUTCOMES

CREATIVE CONFIDENCE

The ability to move from abstract ideas to tangible, functioning products.



PERSISTENCE

Engaging in “productive struggle” to overcome code errors and structural failures.

ETHICAL TECHNOLOGY USE

Distinguishing between AI as a tool vs. a shortcut. The discipline to choose the hard work.

Fab Lab

HANDMADE

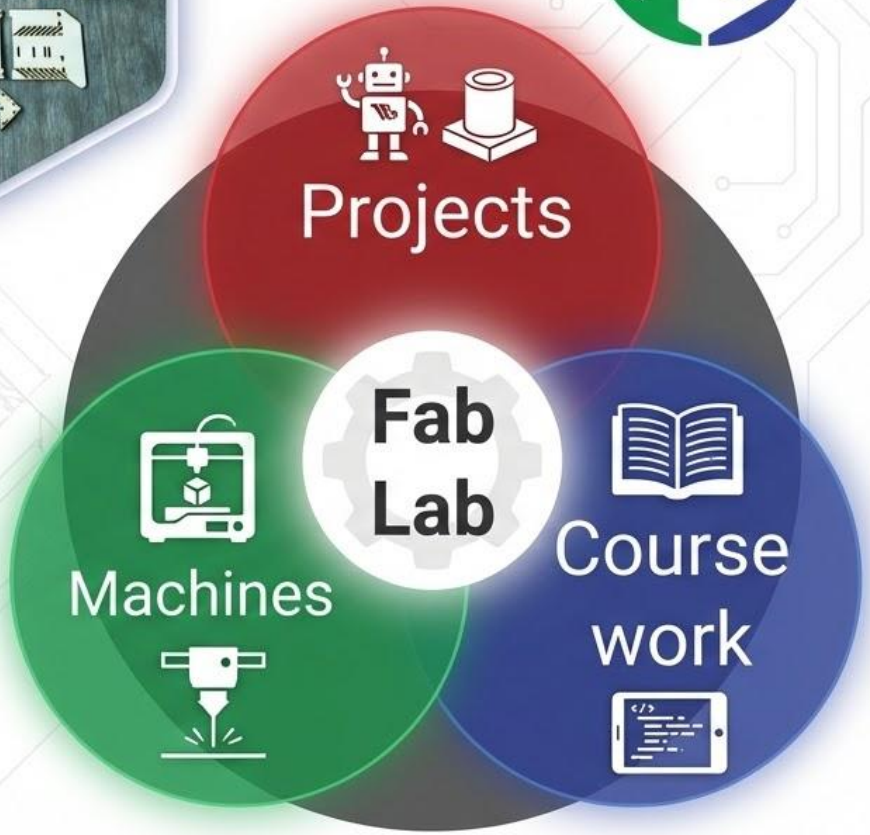
Daniel Hand High School Makerspace

Learning Fab Lab

Supporting Independent Projects and Innovation

Vision:

To provide students individual access to digital design and fabrication technologies



FAB LAB + HAND STUDENTS = INNOVATION & CREATIVITY

Fab Labs are a place where disciplines intersect

An opportunity for independent exploration

Opportunity to ‘make’ creatively

Fab Labs provide tools to get started with big ideas

A place for undirected learning

Students & staff can level up their technology skill

FAB LAB STATIONS

- Music & Podcasting
- Textile machines
- Electronics Center
- 3D Printers

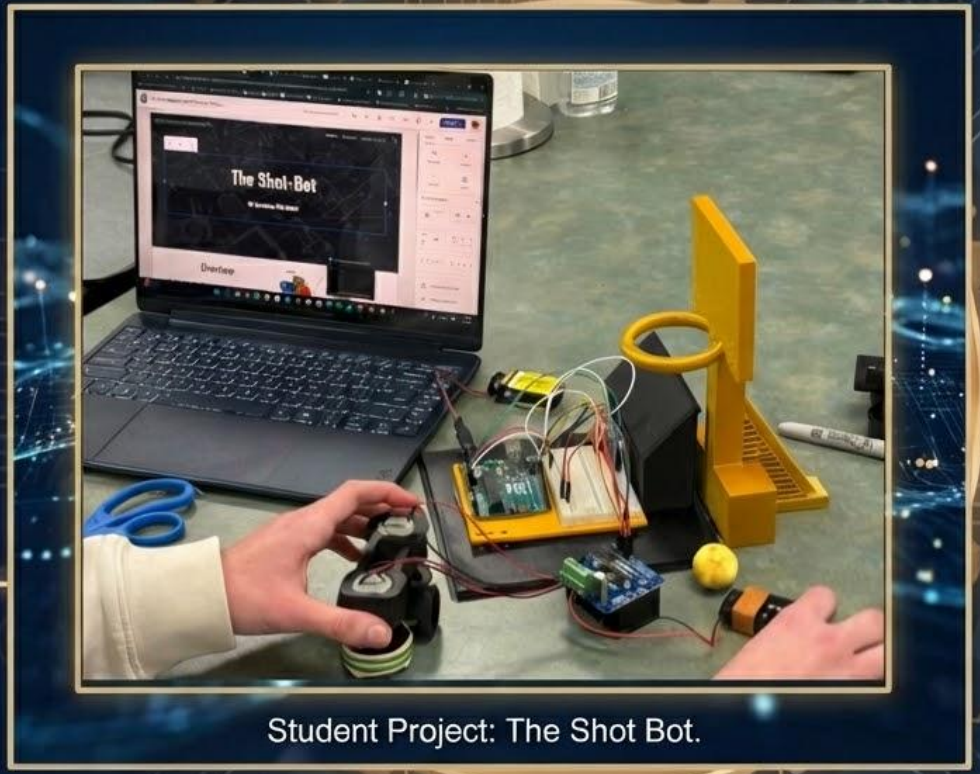
- Baby CNC milling
- Vinyl Cutter/Printer
- Laser Cutter
- Design Software

Illuminated Map: Complex Circuitry & Coding

```
Code to Illumine USA showing off Deep as.mmo at 144hz pixel rate: 12 million
Inventors Hill 24 gauge wire.

/*
   Madison MAP Chart (NASA 12371)

   2024-03-20
https://forum.arduino.cc/t/making-navigation-chart-with-neopixel-leds/1292
174
 */
#include <Distance_lib.h>                  // downloaded Insect
https://research.ibmmanage.net/Measurement/Tools/1234_tools_lab_ms.htm
#include <Utility/Distance_manpixel.h>  // standard Ins Neopixel

#include <Adafruit_NeoPixel.h>  // use the Adafruit library for Neopixel
constexpr uint16_t pixelCount = 12;
constexpr byte pixelPin = 16;
Adafruit_NeoPixel strip(pixelCount, pixelPin, NEO_GRB + NEO_KHZ800);

DistantPixel pixel0(pin, 0);   // Tennessee
DistantPixel pixel1(pin, 1);   // Bill Gasp
DistantPixel pixel2(pin, 2);   // 84 Maitland
DigestedPixel pixel3(pin, 3);  // Of Kentucky west
DistantPixel pixel4(pin, 4);   // N DC
DigestedPixel pixel5(pin, 5);  // Ga 8
DistantPixel pixel6(pin, 6);   // Tennessee Channel Light 1115
DistantPixel pixel7(pin, 7);   // S J southwest channel
DistantPixel pixel8(pin, 8);   // Dock Island South Lapse
DistantPixel pixel9(pin, 9);   // South Island west Lights
DistantPixel pixel10(pin, 10);  // Alabama Is Governorar
DistantPixel pixel11(pin, 11);  // N S Clinton channel

void setup() {
  Serial.begin(115200);
  Serial.println("LED 6 Final - Maiden");
  strip.begin();
  strip.setBrightness(50);  // Dock 3612000230 to check 179 Ibex = 3451
```

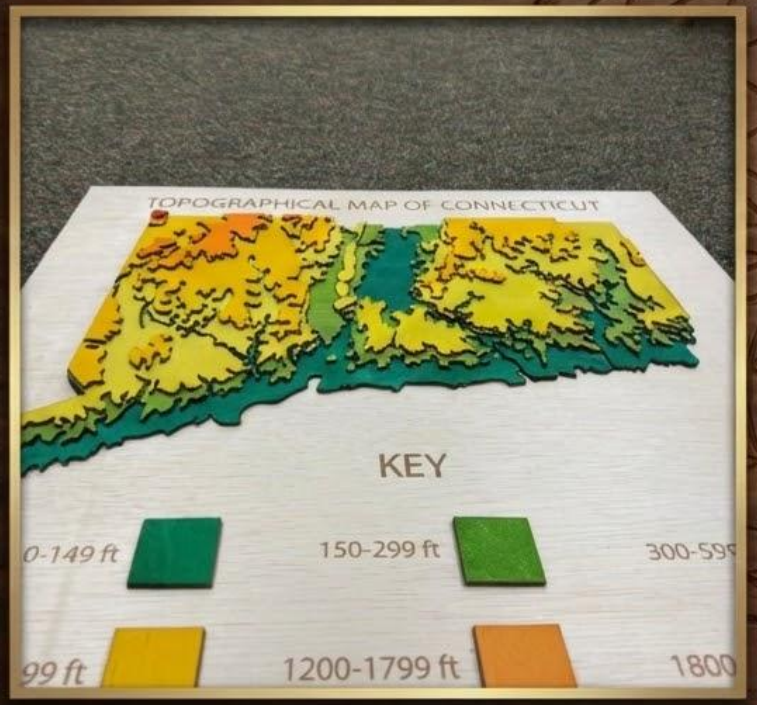
The Shot Bot: Complex Circuitry & Coding

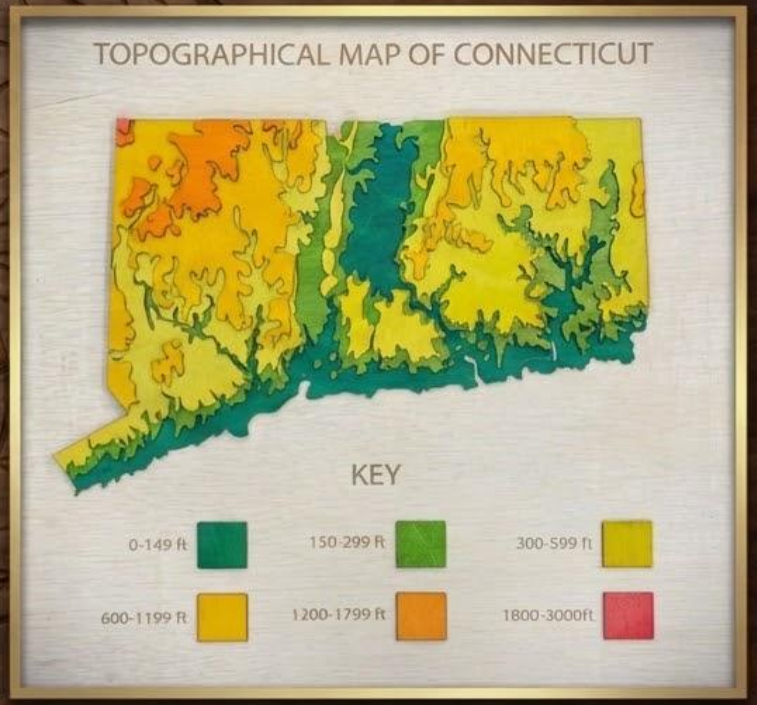
- Stepper motors attached to wheels launch a ball into a hoop
- Distance sensors determine the variable speed of the motors
- Motors and sensors are wired to a breadboard and an Arduino microcontroller
- Arduino microcontroller is coded to connect everything together
- The hoop, ball and launcher housing are 3D printed



Student Project: The Shot Bot.

A laser cut and engraved topographic map…





Locker Room Redesign

Digital design with Chief Architect

Laser engraver to cut and engrave the walls and floors

CNC machine to make the locker banks

3D printer to begin furnishing the space

3D Printing a Remote Controlled Plane

3D printed components: Fuselage, wings, and tail parts.

Fully assembled plane with electronics and golden finish.

FlySky transmitter for remote control and flight.

Lots of textile projects, too...

CAREER & TECHNICAL EDUCATION

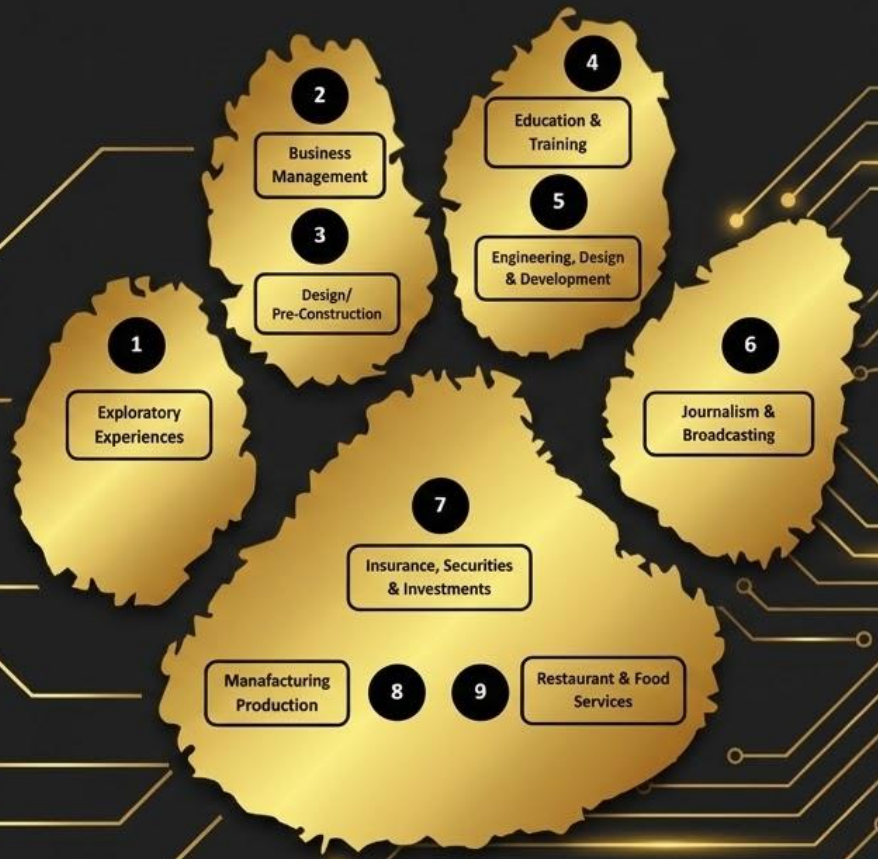
Our program is designed around several career pathways to cultivate the potential in our students by integrating rigorous classroom instruction with relevant, work-based experiences that inspire, guide and empower them for post-secondary college and careers.

CAREER PATHWAYS: AN EXPLORATION JOURNEY

Our Career Pathways are an exploration journey designed to engage students in a potential career path. Courses are structured to spark interest, highlight possibilities, and allow students to experience work as novice practitioners. Our curriculum is challenging, engaging, effective, and relevant, providing the foundational technical knowledge, skills, and academics needed for real-world success.

WE CURRENTLY HAVE 8 OF THE 16 FEDERAL CAREER PATHWAYS:

- Business Management
- Design/Pre-Construction
- Education & Training
- Engineering, Design & Development
- Journalism & Broadcasting
- Insurance, Securities & Investments
- Manufacturing Production
- Restaurant & Food Service



- **GOAL: Connect education and training** to help students to secure jobs and advance in high-demand industries.
- They provide a structured, mapped sequence of credentials and experience.

- Pathway #1 offers students a variety of exploratory experiences

- Pathways #2 – 9 offer students unique experiences within a specific career.

PATHWAY #1

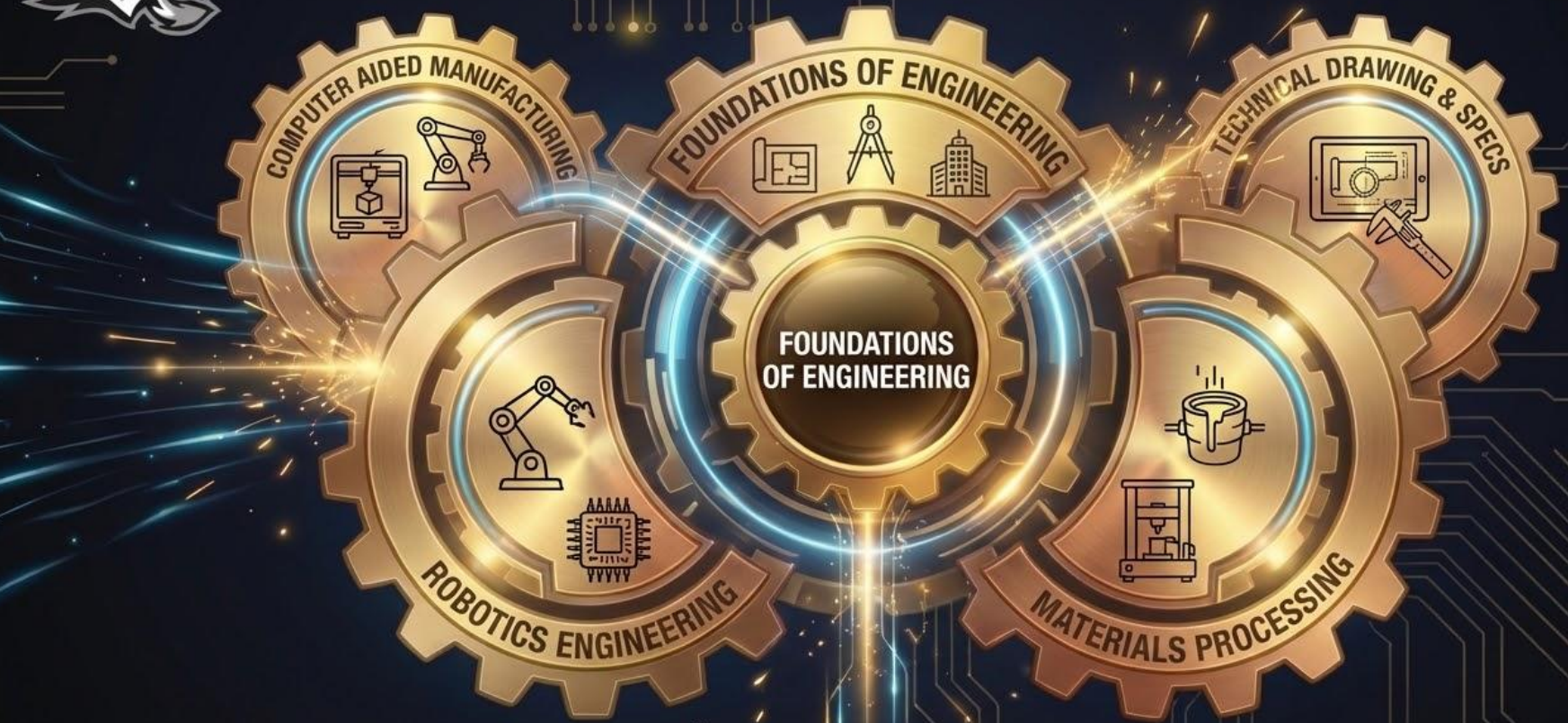
Offers students a variety of exploratory experiences.

BUSINESS MANAGEMENT PATHWAY

PRE-DESIGN/CONSTRUCTION PATHWAY

EDUCATION & TRAINING PATHWAY

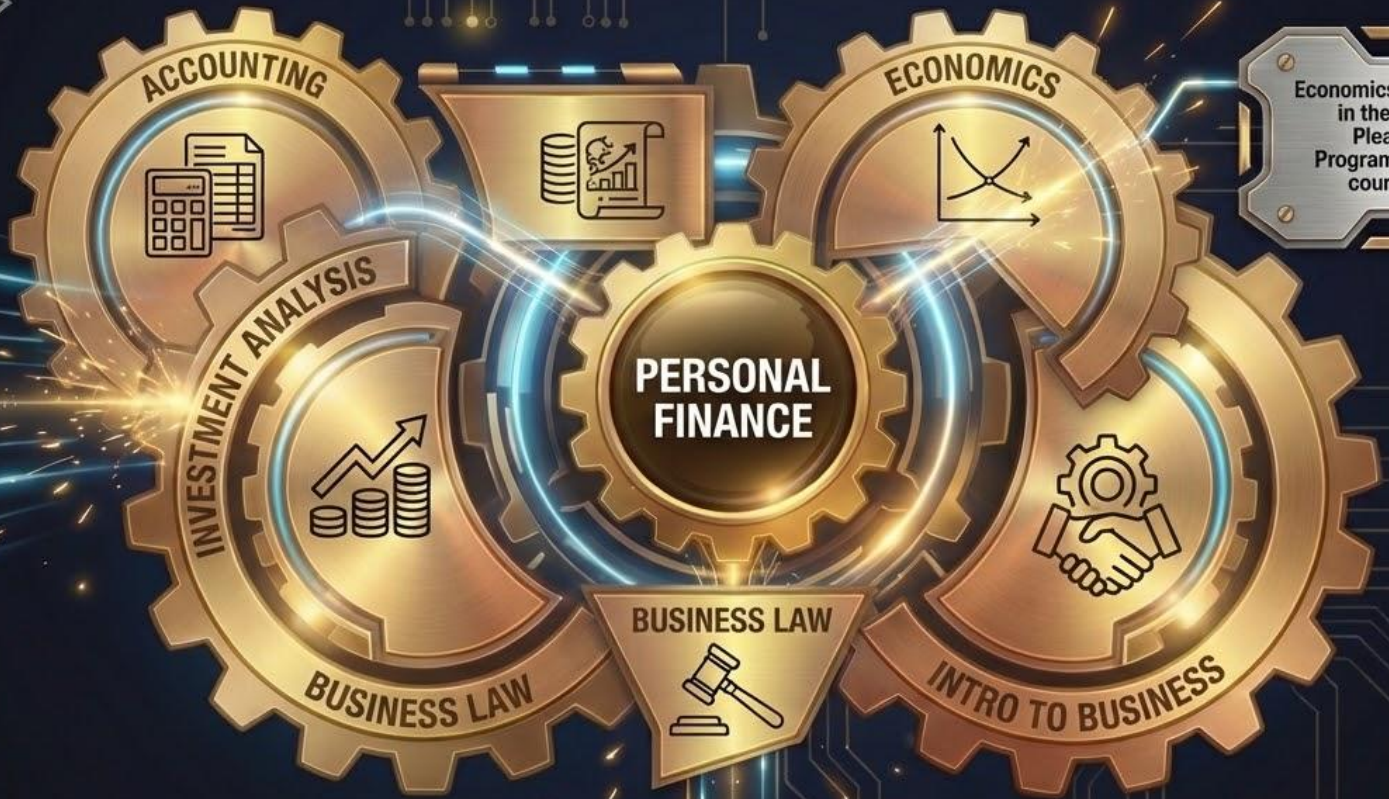
ENGINEERING, DESIGN & DEVELOPMENT PATHWAY



JOURNALISM & BROADCASTING PATHWAY

Journalism (068) is only taught in the English department. Please refer to the Program of Studies for the course description.

INSURANCE, SECURITIES & INVESTMENTS PATHWAY



Economics (068) is only taught in the SS department. Please refer to the Program of Studies for the course description.

MANUFACTURING PRODUCTION PATHWAY

RESTAURANT & FOOD SERVICE PATHWAY

DUAL ENROLLMENT OPPORTUNITIES

Dual enrollment is a key strategy for Career and Technical Education (CTE), allowing high school students to earn college credit while still in high school. We use it to create a seamless transition from secondary to postsecondary education, focusing on practical, career-oriented training.

CREDENTIALING OPPORTUNITIES

OnShape Associate Certificate

Auto Upkeep which gives students a foundational skill set for the Automotive Service Excellence (ASE) certificate.

OSHA 10 Manufacturing General Safety