

# **Pilot Proposal: Inkplate GT Unit**

## **Inkplate 2 Pod Unit**

### **GT Digital Display Lab: Coding & Creativity with Inkplate**

#### **Overview**

Gifted students need more than acceleration, they also need opportunities to wrestle with complex problems, build technical skills, and develop grit. This pilot introduces middle school GT students to coding, hardware design, and independent problem-solving using the Inkplate 2 e-ink display and Arduino IDE.

#### **Target Demographic**

Grades 6–8, GT-identified students, no prior coding experience required. Designed to meet the needs of academically advanced learners who lack access to high-rigor tech electives.

#### **Timeline**

Begins September 2025. Students meet in rotating GT pods (4 different day groups per week) during the regular school day.

#### **Core Goals**

- Introduce foundational coding concepts using visual hardware
- Reinforce perseverance and independent thinking
- Develop understanding of coordinate systems, logic, and user interface planning
- Scaffold skill building into personal design projects

#### **Equipment Request**

- 4× Inkplate 2 displays (student use)
- 4× Raspberry Pi (to support Arduino IDE and serial upload)
- 1× Inkplate 10 (classroom model display)

#### **Instructional Flow**

- **Weeks 1–2:** What Is a Display? What Is Code? Intro to binary, pixels, and coordinate systems
- **Weeks 3–5:** Drawing shapes, using fonts, importing images, debugging QR and clock display
- **Weeks 6–7:** Personal GUI design using grid planning and layout principles
- **Week 8+:** Begin experimenting with Inkplate 10 layout design

## Learning Environment

Students will work in a low-stakes, high-support environment where they’re encouraged to fail forward. All sketches are visually checked by the teacher; troubleshooting is part of the grading rubric.

## Differentiation

All lessons are taught with built-in entry points and challenges. Early finishers extend designs to the Inkplate 10. Students choose icons, layout, and display logic based on personal themes.

## Standards Alignment

NAGC Standard	Description	Lesson Example	Why It Aligns
1.1.1	Students demonstrate growth in multiple content areas through challenging learning opportunities.	<i>Intro to Inkplate + “What Is Code?”</i>	Foundational lecture series introduces students to e-ink, binary, and hardware logic, pushing beyond grade-level science and tech standards.
1.1.3	Students identify and solve authentic problems.	<i>Custom Layout Badge Project</i>	Students design a digital ID using coordinates and logic. They troubleshoot real layout and display constraints (e.g., pixel limits).
1.2.2	Students use technology to solve real-world problems.	<i>QR Code Badge with Time Display</i>	Students upload a QR image and NTP-connected clock sketch to the Inkplate 2, integrating internet-connected hardware design.

<b>2.2.1</b>	Educators use differentiated instructional practices to address the learning needs of gifted students.	<i>Bitmap Redesign Challenge</i>	Students critique pixel art designs (like the star) and improve them, offering multiple levels of visual and technical entry.
<b>2.4.2</b>	Educators model use of advanced technologies.	<i>All Wi-Fi Enabled Lessons</i>	Lessons explicitly model WiFi setup, image rendering via URL, and hardware-software coordination.
<b>3.1.1</b>	Students develop perseverance and resilience when faced with challenge.	<i>Debugging QR + Clock Display</i>	Students encounter and overcome issues (like screen cutoff, wrong time zones), fostering grit and logical reasoning.
<b>3.2.1</b>	Students explore independently and develop self-direction.	<i>Extension: Personalized GUI Project</i>	Students create a layout from scratch, choosing text, images, and functions. No template, high autonomy.
<b>4.1.1</b>	Learning environments are intellectually and emotionally safe.	<i>Lesson 0: What Is a Display?</i>	Sets norms for experimentation, making mistakes, and exploring unfamiliar hardware in a safe GT environment.

## Outcomes

Students will leave this unit with:

- A working knowledge of how coding translates into visual output
- A sense of confidence with new technology
- A personalized e-ink project they designed themselves

## Contact

Proposal authored by Dr. Harvey Morris, GT Educator. Contact information available upon request.