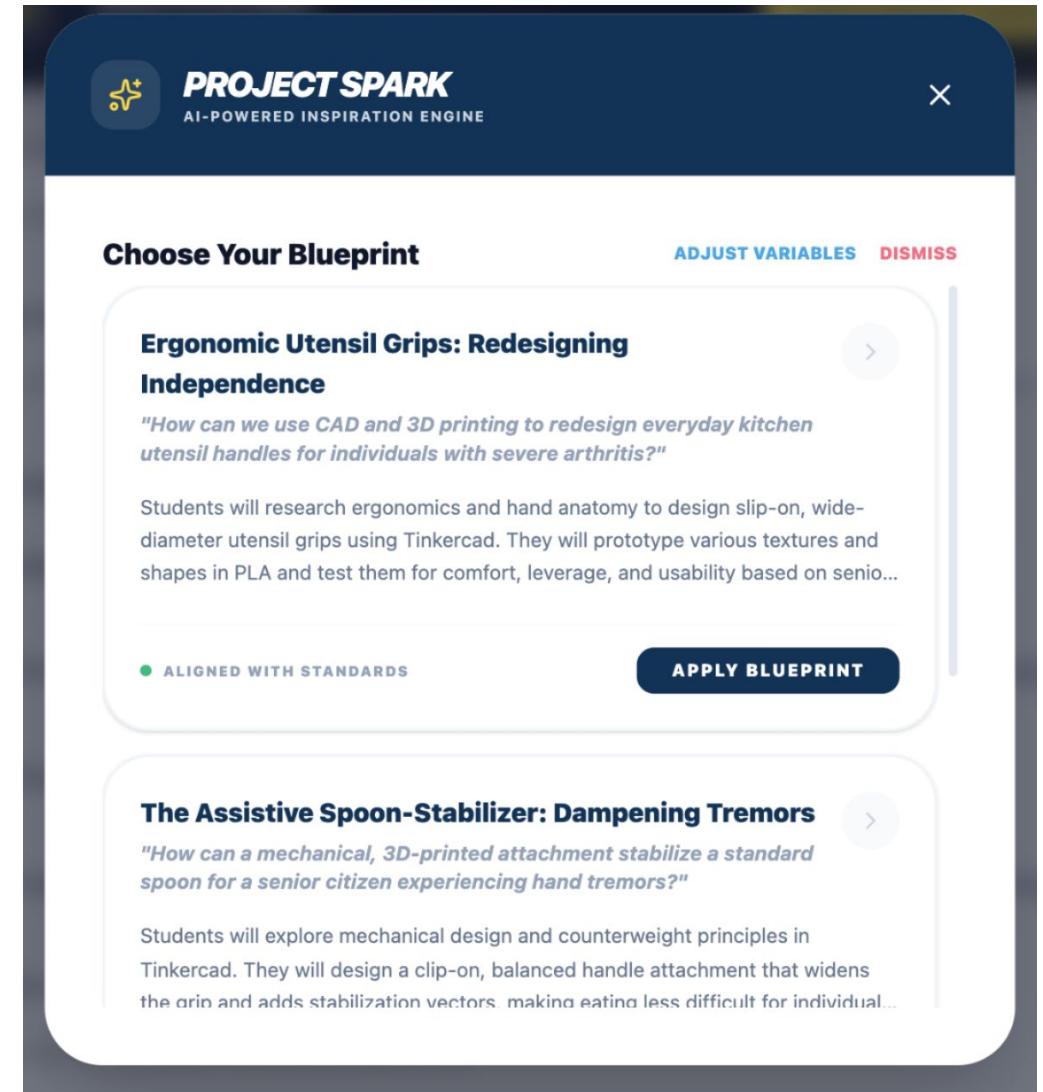


From Shop Project... to Smart Project

AI-Assisted Project Programming for CTE

Michael Mino: AI Education Development Specialist
Gary Kaplan, Executive Director, JFYNetWorks



My Perspective...

- Michael Mino, AI Education Specialist, Makerspace Teacher/Director, Consultant
- Over 40 years of K–16 CTE and Ed-Tech experience in public & private education as a teacher, specialist, & consultant
- From early PCs to today's AI-powered tools and robots
- My goal for today: Inform and Inspire...



45
YEARS

ILLUSTRATED TIMELINE OF MAJOR COMPUTER DEVELOPMENTS

45 YEARS OF TECHNOLOGICAL EVOLUTION

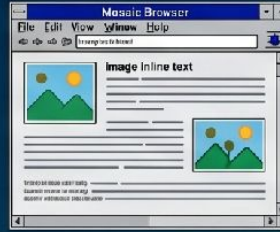


1981:
THE BIRTH OF THE PC STANDARD

IBM PC & MS-DOS:
A standardized hardware/software platform.



1990:
THE WEB PROPOSAL & WINDOWS 3.0



1993:
MOSAIC BROWSER



1995:
WINDOWS 95 & INTERNET EXPLORER
The Internet Mainstreamed



1998:
GOOGLE SEARCH



2004:
FACEBOOK & WEB 2.0



2025:
UBIQUITOUS AI AGENTS
Seamless intelligence across a full ecosystem. Enhanced reasoning, memory, and proactive actions.

1980

EARLY INTERNET

THE POST-PC ERA



2007:
MOBILE REVOLUTION BEGINS



2010:
iPAD & INSTAGRAM



2016: AlphaGo & POKÉMON GO

2017 - 2024:
THE AI AWAKENING & CHAT GPT-4



2017:
TRANSFORMER ARCHITECTURE



2022:
ChatGPT (GPT-3.5)



2024:
GPT-4o (OMNI) EMERGENCE

ERA OF UBIQUITOUS
Beyond Multimodality to Integrated Agency.

FROM TOOLS THAT FOLLOW INSTRUCTIONS TO AI THAT UNDERSTANDS INTENT

Old Tech vs. LLM AI

 FEATURE	 OLD TECH: CALCULATOR ERA	 LLM AI: BRAIN ERA
1 HOW IT WORKS	 Follows rules written by humans	 Learns patterns from massive amounts of data
2 RESPONSE STYLE	 Fixed and predictable	 Flexible, creative, and adaptive
3 UNDERSTANDING	 Literal; depends on exact commands or keywords	 Contextual; understands meaning, tone, and intent
4 PROBLEM SOLVING	 Designed for one specific task	 Can handle many types of tasks across subjects
5 INTERACTION	 Uses menus, buttons, and commands	 Uses natural conversation
6 ROLE	 Passive tool waiting for instructions	 Active assistant that can plan, generate, and complete tasks

Skills for the Future...

The winning profile is not “human or AI.” It is humans working well with AI, and with one another.

AI Literacy

Use AI to Learn AI in collaboration with both people and machines.

Analytical Thinking

Ask better questions, evaluate outputs, and make evidence-based decisions.

Creativity & Problem Solving

Use AI to generate ideas and co-create with both people and machines.

Collaboration

Explain ideas clearly, work in teams, and co-create with both people and machines.

Ethics + Judgment

Check bias, privacy, safety, and the real-world impact of decisions.

Lifelong Learning

Keep adapting as tools, industries, and roles continue to evolve.



1) Use AI effectively, 2) Verify & improve the work, 3) Apply it to real-world problems

U.S. Department of Labor's AI Literacy Framework

Foundational Content Areas of AI Literacy

1

Understand AI Principles

Understanding AI's core concepts, capabilities, and limitations, creating the foundation for effective use

2

Explore AI Uses

Directly exploring different AI tools and relevant use cases, and how AI can complement human expertise

3

Direct AI Effectively

Understanding how to provide the right context to AI and how to create clear prompts that produce effective outputs

4

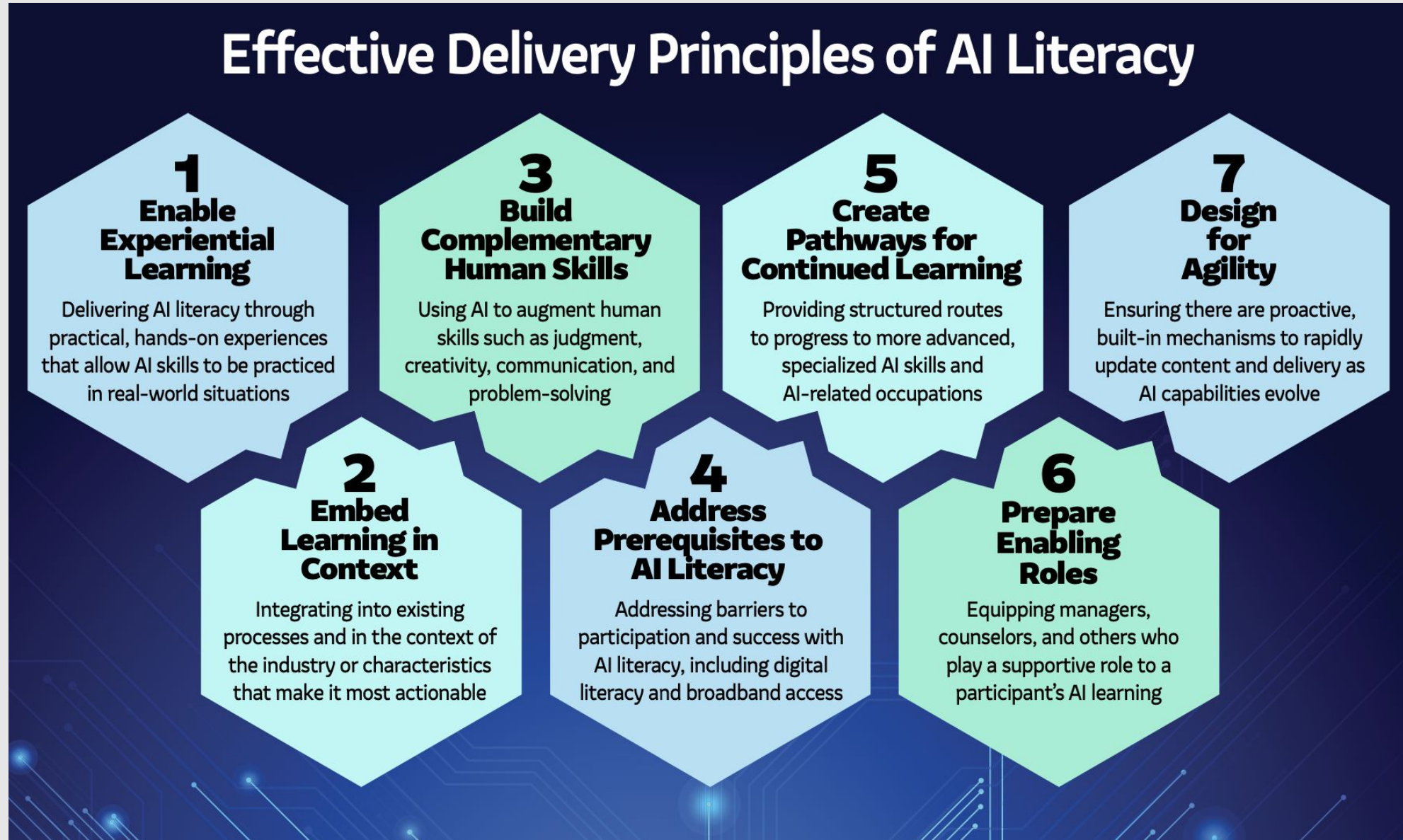
Evaluate AI Outputs

Assessing AI-generated results for accuracy and relevance, and understanding how to iterate on AI outputs

5

Use AI Responsibly

Using AI in ethical and secure ways, protecting critical information, and ensuring accountability for outcomes



Two Related Goals, One Practical Destination



AI Literacy: **Understanding**

- What AI is and how it works
- Where it is useful — and where it fails
- Accuracy, bias, privacy, and limits
- The vocabulary to talk about it



AI Fluency: **Doing**

- Using AI responsibly in authentic work
- Planning, projects, troubleshooting, writing
- Iterating, verifying, and refining output
- Keeping a human in the loop — every time

Literacy is knowing. Fluency is using. The destination is fluency.

THE CORE IDEA

Learning to Learn AI — with AI

The fastest way to build AI fluency is to use AI as the partner that helps you learn it.

THE OLD MINDSET

AI gives me the answer

I have to know everything first

Using AI is cheating

One perfect prompt



THE MIND SHIFT

AI is a partner I think and build with

I learn by doing, alongside AI

I am responsible for judgment & quality

It's An iterative conversation, literally

JFYNET.AI Build Lab



“Design · Build · Share · Repeat” loop
Students move through an iterative build cycle.



12 Chapter 74 Trade Areas
Automotive, Health Assisting, Carpentry, Electrical, Plumbing, Culinary, Biotech, IT, and more.



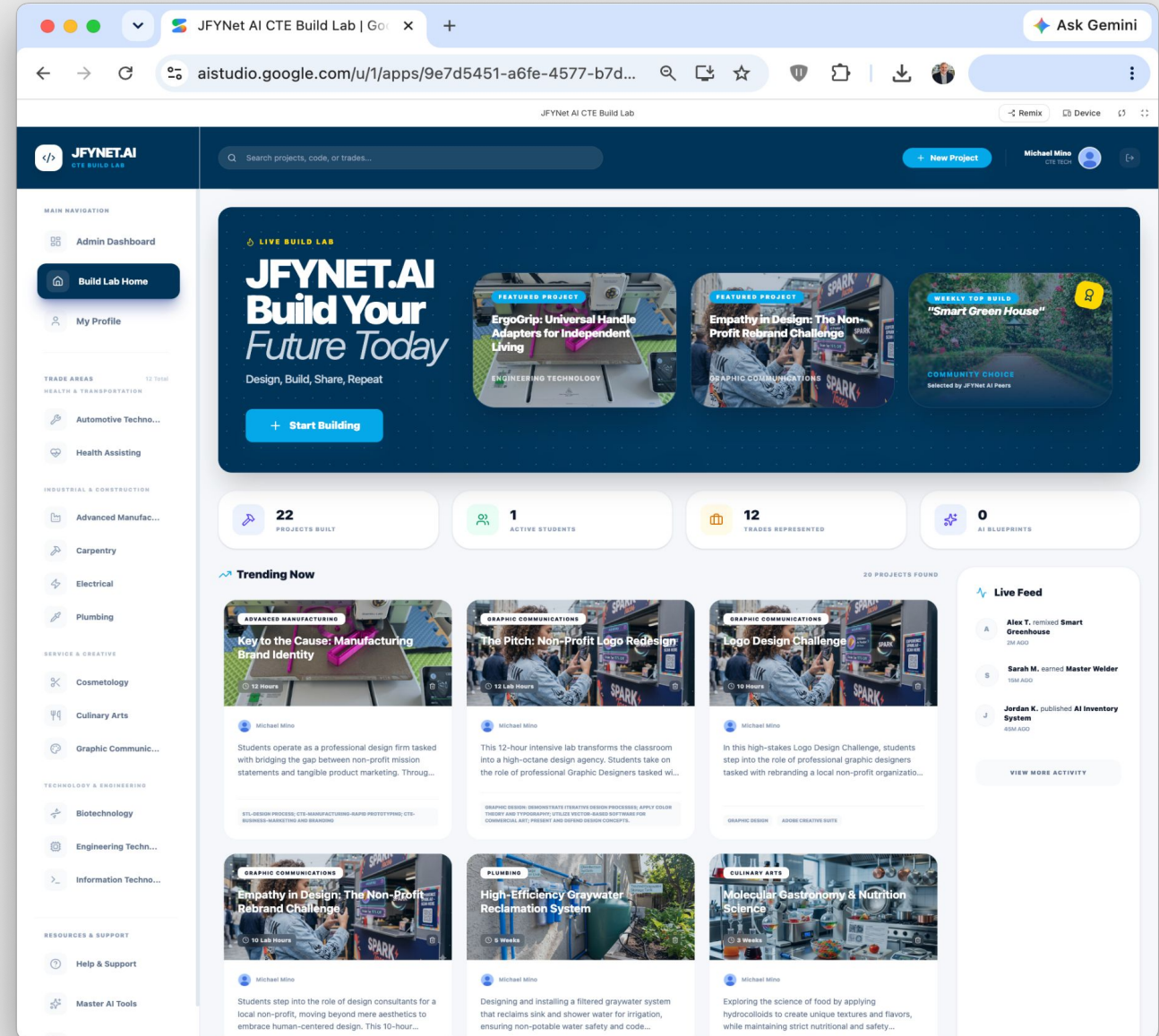
Authentic, Career-connected Projects
Project briefs mapped to CTE competencies & connected to local businesses and non-profit orgs.



AI as a Build Partner
Integrated AI tools and “AI Blueprints” help students plan, prototype, document & troubleshoot.

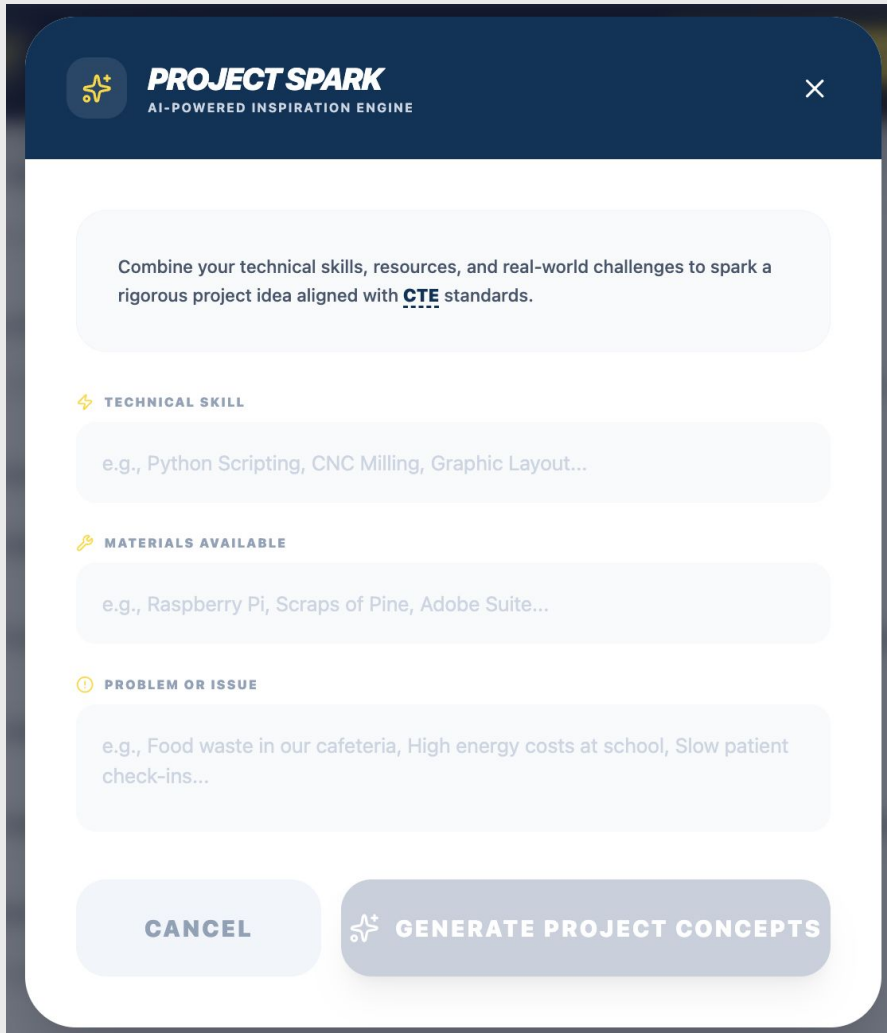


Share, Remix, and Earn Recognition
A live activity feed, Community picks, badges, & remixing turn the shop into a maker community.



VALIDATING THE OUTPUT

Project Spark: Prompt to a Standards-Aligned Project



The screenshot shows the Project Spark interface, which is a dark blue header with the logo and a close button. Below the header is a white form with a blue border. The form contains a prompt: "Combine your technical skills, resources, and real-world challenges to spark a rigorous project idea aligned with **CTE** standards." Below the prompt are four input fields: "TECHNICAL SKILL" (e.g., Python Scripting, CNC Milling, Graphic Layout...), "MATERIALS AVAILABLE" (e.g., Raspberry Pi, Scraps of Pine, Adobe Suite...), "PROBLEM OR ISSUE" (e.g., Food waste in our cafeteria, High energy costs at school, Slow patient check-ins...), and a "GENERATE PROJECT CONCEPTS" button. There is also a "CANCEL" button.

Anatomy of a generated concept...



Project title & framing

A memorable, career-relevant title and a clear project premise.



Essential Question

An open inquiry question that anchors the entire project.



Authentic role & deliverable

A real-world scenario, a professional role, and a concrete deliverable.



Standards-aligned objectives

Measurable competencies tagged to CTE expectations, not vague goals.

Project Spark: Turning Skills + a Problem into a Project Idea



STEP 1

The Spark · Skills & Tools

Students list the technical skills they're building and the materials and software they actually have on hand.



STEP 2

The Challenge · Real-World Problem

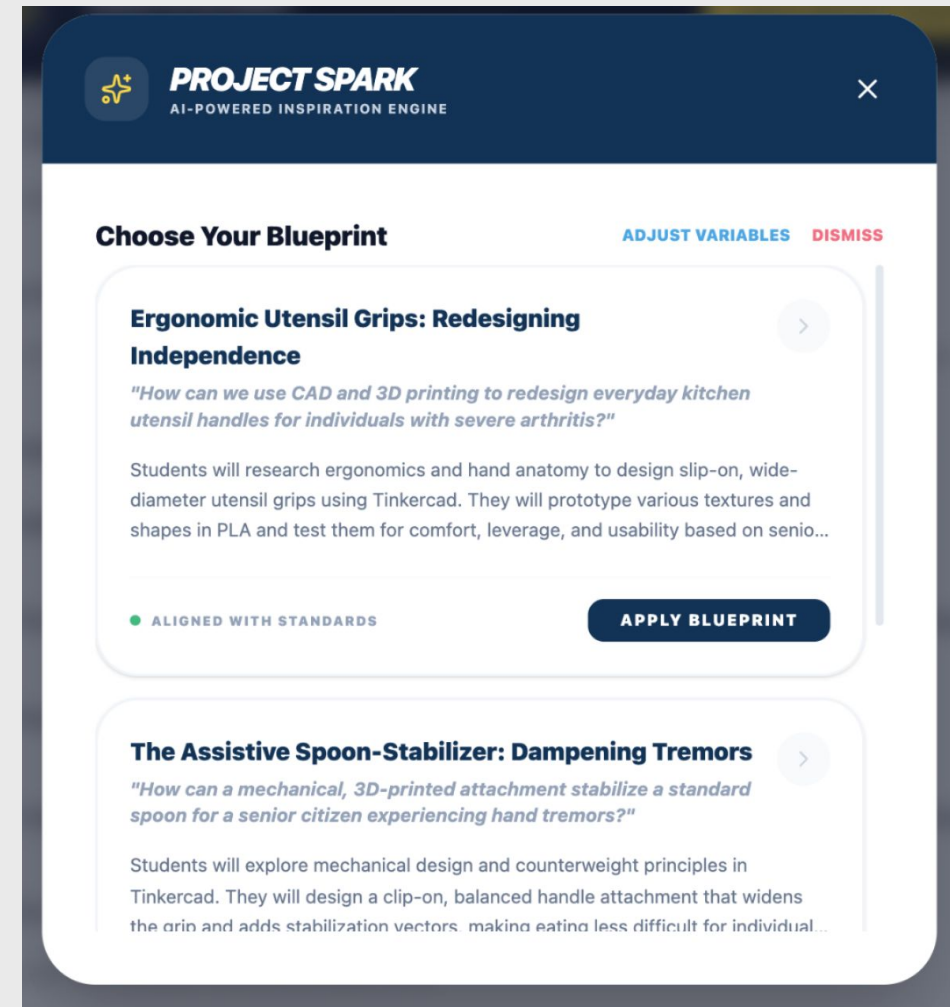
They frame an authentic problem worth solving for a real person or audience.



STEP 3

The Result · AI Concepts

Spark returns several rigorous, CTE-aligned project concepts to choose from — in seconds.

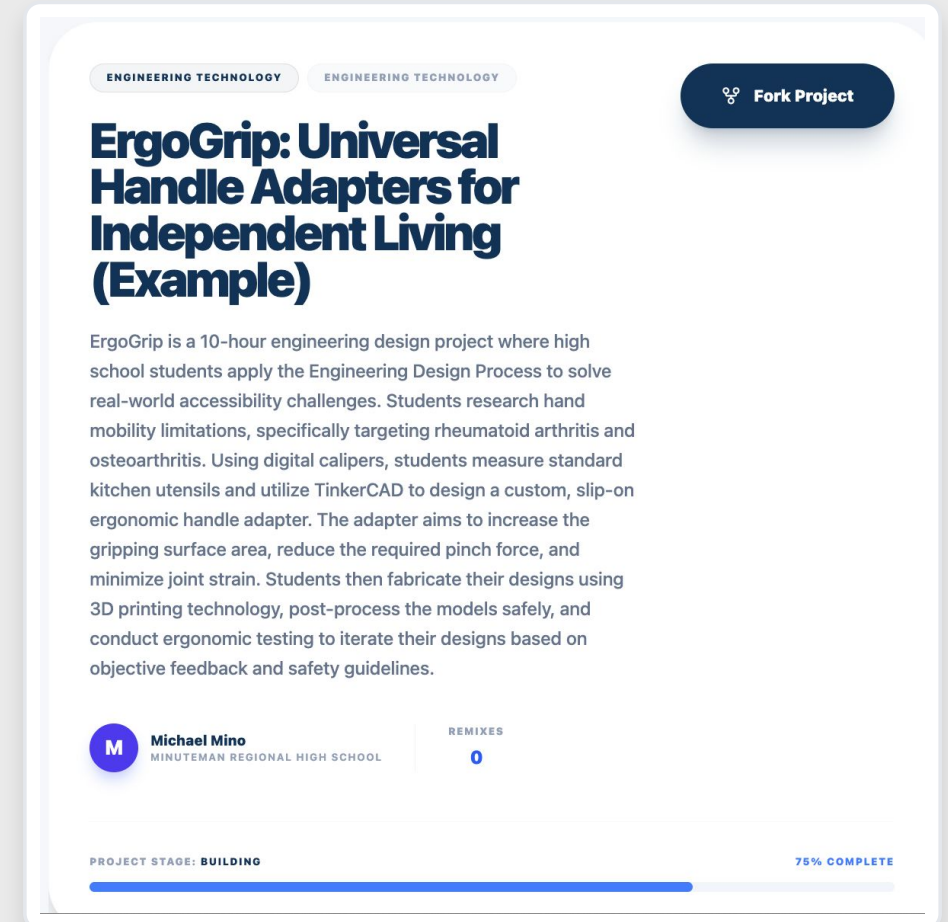


THE PROJECT BLUEPRINT

One Workspace That Holds the Whole Project

Project Spark concept opens into a structured workspace. The Blueprint is the plan that ties each stage of the build together, from idea to finished, documented work.

-  **Overview:** the project at a glance
-  **Blueprint:** the standards-aligned plan
-  **AI Prompt:** the reusable Spark prompt
-  **Build Files:** CAD, code, and design files
-  **Shop Captures:** photos of real, hands-on work
-  **Reflection:** what students learned and would change



Example workspace · ErgoGrip, Engineering Technology

THE PROJECT BLUEPRINT

Two Downloads: One to Read, One to Build On

Every Build Lab project ships with two companion files — a finished brief students read to get started, and an editable portfolio they make their own.



Project Brief

PDF · read-only reference

The finished, ready-to-share version of the project.

- › Essential question, objectives & the real-world problem
- › Materials, safety protocols & the phased build plan
- › Aligned Chapter 74 frameworks and rubric criteria

Use it to: launch the project and brief students, parents, or partners.



Project Portfolio

WORD · editable & expandable

A living template students fill in as they work.

- › Fill-in project info, PPE checklist & build phases
- › Open log section for photos, notes & design iterations
- › Student and instructor sign-off lines for certification

Use it to: turn the brief into the student's own documented evidence.



AI drafts the starting point — the student's documentation makes it real. The brief gets them building; the portfolio captures the judgment, safety, and craft that stay human.

How the Build Lab Maps to the Framework

	Project Brief Builder	Direct AI Effectively: Students give AI the goal, constraints, and shop context before anything is built.
	Vibe Coding Studio	Explore AI Uses: Describe the build in plain language; AI drafts and codes, the student tests and refines.
	AI Agents	Understand strengths & limits: Assign multi-step tasks, then supervise, the student stays the decision-maker.
	Verify & Test	Evaluate AI Outputs: Run it, check it, fix it. Speed is never a substitute for accuracy.
	Source Grounding	Use AI Responsibly: Ground work in real standards, manuals, and shop safety protocols while
	Build Log & Portfolio	Pathways for Learning: Project photos and videos document shop activities while capturing decisions and evidence of employable skills.

Bottom Line: The Build Lab turns a shop project into a documented, AI-assisted smart project, practicing the exact competencies the DOL framework names.

Prepare students to shape the future of work... not just adapt to it!

Three Takeaways for CTE Educators

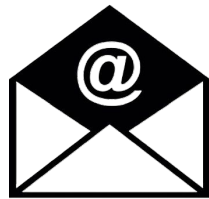
- **Partner, not shortcut** — Teach AI as a partner in thinking and creating, not a way around the work.
- **Direct and Check** — Give students practice directing, checking, & improving AI outputs.
- **Start Small** — Choose one tool, one task, and one classroom pilot to try next.



Challenge to leave with: What is one assignment, workflow, or student product that would become more powerful if AI helped with the first draft or the next revision?



QUESTIONS? COMMENTS? DISCUSSION?
Contact JFY to Schedule a Consultation!



Info@JFYnet.org

SCAN
ME!



**Schedule a
FREE consult.**



617-657-4485

Thank You!



