

PROFESSIONAL DEVELOPMENT DAY · AUGUST 2026

AI Tools for Curriculum and Instruction

First: what AI is doing to the jobs our students are aiming at. Then: what it can do for your Monday.

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Co-Principal Investigator, NSF AI in Education

Highland School of Technology, Class of 2010 — Network Administration Administration



HELLO

About Me

Network Administration pathway, graduated 2010. These days I work with community college faculty on what these tools are actually good for — and what they are not.

Two promises: nothing today that you can't open on your own laptop, and no pretending this technology is better than it is.



THEN

Highland Tech Class of 2010

NOW

Department Chair @ Central Piedmont
Co-PI, NSF AI in Education

AGENDA

Fifty minutes, two halves

01	What AI is doing to the Gaston County jobs your students want	12 min
02	How schools, districts and the state are responding	11 min
03	Ground rules for student data, and the three tools you have	5 min
04	The four parts of a prompt that works	5 min
05	Six demos: rubrics, feedback, families, assessment, scenarios, internships	13 min
06	One thing to try before next week	4 min

PART ONE

Why this matters here

AI is already restructuring the Gaston County jobs your students are training for.

A structural transformation on the order of the industrial revolution or the arrival of the internet

Not a new software category.

A change in what work exists.

It is already landing in Gaston County, first through manufacturing, logistics and logistics and healthcare.

THE LOCAL PICTURE

Gaston County’s workforce today

81,310

people in the active workforce

Manufacturing	19.6%	15,984 workers
Healthcare	15.4%	12,555 workers
Retail trade	12.5%	10,227 workers

Eleven German firms operate here — Daimler Trucks, KNOLL, FAIST ChemTec — alongside companies from Japan, the Netherlands, South Africa, Italy and Switzerland.

THE REGIONAL ENGINE

The Charlotte MSA is where the new jobs are

300K+

new jobs statewide by 2028

1 / 3

of North Carolina's new jobs
land in the Charlotte MSA

11%

of annual openings pay \$100,000 or
more

Over half of net new jobs will require advanced skills at median wages of \$50,000 or more. Demand for senior technical talent is accelerating while traditional entry-level roles are automated away.

MANUFACTURING

The factory floor of 2030

15,984

county residents work in manufacturing, making it the the largest economic multiplier and one of the the largest sources of aggregate wages

WHAT WILL DRIVE IT

Industrial Internet of Things sensor networks

Computer vision and edge computing

Machine learning algorithms on process data

AI-driven predictive maintenance

Albemarle: lithium processing at data scale

49,719

data tags mapped

20.4M

event frames generated

586

automated statistical models

\$50M

saved annually, globally

The Kings Mountain lithium deposit was selected as the first North Carolina project for FAST-41 accelerated federal permitting. This is not a pilot — it is a build.

Daimler Truck North America and Torc Robotics

7,000

workers across five
NC sites

Driverless tests are complete at 65 mph on multi-lane closed courses in Texas. Fifth-generation Freightliner Cascadia platforms are now running public freight corridors.

2027

target launch, Level 4
autonomy

\$3B

projected revenue by
2030, on \$1B EBIT

NEW WORKFORCE REQUIREMENTS

Embedded software systems

LiDAR, radar and camera calibration

High-voltage electrical safety

IT network administration

AI diagnostic capability

CaroMont Health: AI in the exam room

Ambient AI scribes

AI listens to the encounter and drafts structured clinical notes straight into the record, in 28 or more languages. Physicians look at patients instead of screens.

Predictive diagnostics

Models flag early-stage lung cancer, post-surgical deterioration, sepsis and suicide risk, recommend targeted drug therapy, and optimize OR scheduling.

\$15M pipeline

The CaroMont Cares campaign funds scholarships and career development to build caregivers from this community.

STUDENTS WILL NEED	Clinical validation of AI output	Algorithmic bias literacy	HIPAA in the cloud-AI era
		Clinical informatics	

TRANSLATED TO OUR PATHWAYS

What those employers now ask of a graduate

ENGINEERING & GRAPHICS

- Embedded software systems
- LiDAR, radar and camera calibration
- High-voltage electrical safety
- Predictive maintenance analytics
- Sensor network integration

BUSINESS, LEGAL & INFO

- IT network administration
- Securing AI data lakes
- Python and cloud fundamentals
- AI diagnostic tooling
- Legal implications of autonomous decisions

HEALTH SCIENCES

- Clinical validation of AI outputs
- Recognizing algorithmic bias
- HIPAA in the cloud-AI era
- Clinical informatics fundamentals
- Ambient charting workflows

THE HARD PART

The entry-level squeeze

NATIONALLY

AI lets experienced professionals reach much higher output without junior support staff. Entry-level roles — the traditional training ground — are contracting across industries.

The NC Chamber reports employers raising demand for mid-level technical talent while cutting entry-level positions.

HERE

High-wage roles at Daimler, Albemarle and CaroMont increasingly require advanced technical skill.

Lower-skill openings concentrate in service sectors with limited upward mobility.

Students still need the experience entry-level jobs used to provide. It now has to come from somewhere else — and that somewhere is this building.

THE MANDATE

AI literacy is already written into the plan

Gaston County Schools

Strategic Plan 2030 requires all employees and all students to become AI literate.

NCDPI

The fourth state agency in the nation to publish official AI guidance, calling for AI literacy across all grade levels.

382,964

industry credentials earned by North Carolina Carolina CTE students in 2024–25 alone.

RESPONSE ONE

AI is moving into every pathway

HEALTH SCIENCES

- AI charting software
- Ambient listening technology
- Cloud data privacy protocols

MANUFACTURING

- Robotics programming
- Sensor network integration
- Predictive maintenance analytics

DATA SCIENCE CORE

- CS30: Introduction to Data Science
- NC State Academy resources
- Algorithmic thinking across subjects

NCDPI calls for AI literacy infused across all grade levels — not a standalone course, but a thread through existing ones.

RESPONSE TWO

Credentials are shifting toward what AI cannot do

DOMAIN	CERTIFICATIONS	WHY IT HOLDS VALUE
Cybersecurity and network	CompTIA Security+, Cisco networking	Securing AI data lakes demands strategic, nuanced defense
Data and software	Python, AWS Cloud Practitioner	Required to work with ML models and real data structures
Digital media	Adobe Certified Professional	Creative direction and brand storytelling stay human
Advanced trades	NCCER, OSHA 10-Hour	Physical, unstructured work resists near-term automation

RESPONSE THREE

Employers are investing in the K–12 pipeline

Daimler Truck NA

AUTONOMOUS LOGISTICS

Engineers on the Torc platform need technicians trained in LiDAR calibration and embedded systems.

Albemarle

DATA TELEMETRY

The AVEVA PI system aggregates millions of data points, creating demand for AI-literate process operators.

CaroMont Health

CLINICAL INFORMATICS

The Cares campaign is putting \$15M into local workforce development as clinical AI becomes standard.

Youth apprenticeship is expanding across the region, and Highland’s senior internship model is already the shape employers are asking for.

RESPONSE FOUR

Competency and portfolio are replacing seat time

THE SPARKNC MODEL

A state-funded inter-district network, now a standalone nonprofit with General Assembly support.

Physical SparkLab hubs in place of rigid schedules

On-demand modules in AI, ML, cybersecurity, software

Design challenges and hack-a-thons

Showcases with real corporate partners

Digital portfolios as the record of readiness

THE SHIFT UNDERWAY IN CTE

Multiple-choice finals	→	Analyzing real factory datasets
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Rows of desks	→	Innovation labs with collaborative tech
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Abstract textbook theory	→	Real corporate problem-solving
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Annual career fairs	→	Sustained industry partnerships
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Auditing AI is becoming an employability skill

CRITICAL EVALUATION

- Validate AI-generated output
- Recognize hallucination and misreading
- Separate correlation from causation

BIAS AND FAIRNESS

- Identify bias in training data
- Spot representation gaps
- Audit algorithms for equitable outcomes

GOVERNANCE AND LAW

- HIPAA compliance in cloud-AI systems
- Legal weight of autonomous decisions
- Ethical frameworks for deployment

As AI takes on decisions in healthcare, logistics and manufacturing, employers increasingly value workers who can govern these systems responsibly.

THE BENCHMARK

What a fully built pathway looks like

Olympic High School, Charlotte-Mecklenburg

A dedicated Advanced Manufacturing and Technology Center, subsidized by Bosch Rexroth and Siemens. The K–12 business alliance runs clear pathways into apprenticeships and engineering careers.

Students earn industry certifications, secure paid youth apprenticeships, and carry articulated credit into Central Piedmont.

\$40–50K

starting salary out of high school through advanced manufacturing pathways
— debt-free and immediately employable

CMS AI CHAMPION SCHOOLS

Charlotte-Mecklenburg has named a cohort of AI Champion Schools — including Phillip O. Berry Academy — to lead innovation, pilot AI tools under strict data privacy rules, and share what works district-wide.

Gaston County has no equivalent cohort yet. Highland is the obvious candidate.

PART ONE, IN SUMMARY

What educators and employers are converging on

- 01 AI and data science are moving across every CTE pathway and core subject.
- 02 Credentials are shifting toward automation-resistant domains.
- 03 Daimler, Albemarle and CaroMont are investing directly in K–12 pipelines.
- 04 Competency-based, portfolio-driven learning is replacing seat time.
- 05 Ethical AI governance is becoming a core employability skill.

That is the student side of the mandate. The rest of today is your side of it — because you cannot teach students to direct these tools if you have never used them yourself.

YOUR SIDE OF IT

Teachers who use AI weekly get about six weeks back

5.9

hours a week saved by teachers using AI at least weekly

6

weeks of a 37-week school year, returned to you

68%

got no training on these tools at all last year last year

Gallup and the Walton Family Foundation, “Teaching for Tomorrow,” 2025. n = 2,232 U.S. public school teachers.

SETTING EXPECTATIONS

What it is good at, and what it is not

RELIABLY USEFUL

- First drafts of anything structured
- Rewriting the same content for a different reader
- Producing ten variations when you need three
- Summarizing documents you already understand
- Translation and reading-level adjustment

DO NOT RELY ON IT

- Facts you did not give it
- Anything about your actual students
- Current Gaston County or state policy
- Deciding a grade
- Sounding like you without being told how

GROUND RULES

Nothing identifiable goes in the box

- 01 No student names. Say “a tenth grader” instead.
- 02 No IEP or 504 text, health information, or discipline records.
- 03 No rosters, no gradebook exports, no screenshots of either.
- 04 Use your district Google account, not a personal login.
- 05 Strip names from student work before you paste it.
- 06 FERPA does not care that the tool was free.

Describe the situation, not the student. Almost everything useful still works.

WHAT YOU ALREADY HAVE

Three tools, no purchase order required

Google Gemini

Inside the Workspace account you already sign into — Docs, Slides, Gmail, and the standalone app.

Best for: drafting where the document already lives.

Canva Magic Studio

Magic Write for copy, Magic Design for layout. Newsletters, one-pagers, slide decks, signage.

Best for: anything a family or an employer will see.

ChatGPT

Strongest general drafting of the three. Confirm what is approved here before you use it for school work.

Best for: long, messy, open-ended tasks.

Every prompt in this session works in all three. The prompt is the skill; the tool is a preference.

PART TWO

Writing the prompt

Four parts. This is what provides quality in AI.

THE RECIPE

Role, task, context, format

ROLE

Who it should be. “You are a high school Health Sciences teacher.”

TASK

The exact deliverable. “Build a four-level analytic rubric.”

CONTEXT

Everything it cannot know. Grade level, standard, class constraints, reading level, what happened last week.

FORMAT

How you want it back. “Return a table.” “Under 120 words.” “No bullet points.”

When the output is disappointing, the missing part is almost always context.

SAME TOOL, SAME MINUTE

A weak prompt and a working one

WEAK

“Write a rubric for my lab.”

You get a generic four-by-four grid, written for nobody, that you will rewrite from scratch.

WORKING

“You are a high school Health Sciences teacher. Build a four-level level analytic rubric for a sterile technique lab practical. Criteria: hand hygiene, PPE sequence, sterile field maintenance, maintenance, patient communication. Levels: Exemplary, Proficient, Proficient, Developing, Beginning. Descriptors in student-facing facing language at a ninth-grade reading level. Return it as a table.”

You get something you edit for ten minutes and hand out.

A rubric before the lab, not after it

THE SITUATION

Practical is Thursday. You know what good work looks like; you have not written it down.

Forty-five minutes of drafting becomes ten minutes of editing.

PROMPT

You are a high school Health Sciences teacher. Build a four-level analytic rubric for a sterile technique lab practical. Criteria: hand hygiene, PPE sequence, sterile field maintenance, patient communication. Descriptors in student-facing language at a ninth-grade reading level. Return a table.

Then: cut one criterion, rewrite two descriptors in your own words, and it is yours.

Feedback that still sounds like you at 9pm

THE SITUATION

Ninety responses. The comments on the last thirty are never as good as the first thirty.

Names come off before anything is pasted in.

PROMPT

Here is my rubric and one anonymous student response. Write feedback in my voice: warm, direct, second person. Name two things that are working, one specific revision to make next, and end with a question. Under 120 words. No praise sandwich.

Then: you still assign the grade. It drafts the words; the judgment stays with you.

The parent email you have been putting off

THE SITUATION

Hard news, and you want the tone exactly right. So it sits in drafts for three days.

Same recipe writes the academy newsletter — Magic Write drafts, Magic Design lays it out.

PROMPT

Draft a 150-word email to a parent. Their student has missed three assignments in my Business Law class. Warm, not accusatory. Include what is missing, the make-up window, and two times I am available. Eighth-grade reading level. Then give me a Spanish version.

Then: add the student’s name yourself, in your own email client. Never in the chat window.

Test items, an answer key, and the reasoning

THE SITUATION

You need items that actually separate the students who understand from the ones who memorized.

Ask for the distractor logic and you can spot the bad items in a glance.

PROMPT

Write twelve multiple-choice items on OSHA bloodborne pathogen standards for tenth grade. Four recall, five application, three analysis. Four options each, one clearly best. Give me the key, plus one sentence on why each wrong option is tempting.

Then: verify every standard or code number against the source. It will invent them confidently.

Workplace scenarios for your academy

THE SITUATION

Relevance is the whole promise of a magnet school. Writing fresh scenarios every unit is what breaks.

Swap the setting and the same prompt serves all three academies.

PROMPT

Write a 300-word workplace scenario for eleventh-grade engineering students. A CNC run drifts out of tolerance halfway through a 500-part order. Include the shop’s constraints and three plausible causes. Stop at the decision point. Do not give the answer.

Swap in: a dental office scheduling conflict

A law firm intake desk

A help desk ticket queue

Interview practice a student can run alone

THE SITUATION

Every senior places on site. Most have never been interviewed by an adult they are not related to.

You cannot run thirty mock interviews. This one they one they run themselves.

PROMPT

Act as a hiring manager at a Gastonia physical therapy clinic interviewing a high school senior for a spring internship. Ask one question at a time and wait for my answer. After five questions, score me on professionalism, specificity, and the questions I asked you — then name the one thing to fix.

Then: have them submit the transcript. You read six minutes instead of running thirty interviews.

THE HONEST PART

Where these tools break

It invents things, confidently

Citations, statute numbers, standard codes, dosages. Anything a student could repeat as fact gets checked.

It carries bias

Names, roles and settings in generated scenarios skew in predictable ways. Read before students do.

It writes in beige

Hedged, over-long, agreeable. If you cannot hear your own voice in it, students will not either.

It does not know your students

Growth over a semester, what happened at home, when to push. None of that is in the window.

Draft with it, edit as yourself, own the result. Everything that leaves your classroom still has your name on it.

TAKE WITH YOU

One page, and one task

THE CHEAT SHEET

Every prompt from today, on one page

The four-part recipe, the six prompts, and the data ground rules.
Written to be printed and taped inside a planner.

[\[link to the handout\]](#)

THE TASK

Pick the thing you are dreading this week

Write the prompt with all four parts. Give it ten minutes. If the first output is bad, add one context line and run it once more.

No student names. Not even initials.

Questions

Bring me the task you hate most. We will write the prompt for it together.

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