

TEACHING WITH AI IN RURAL COMMUNITY COLLEGES: A PRACTICAL GUIDE FOR WORKFORCE EDUCATION AND CAREER- TECHNICAL PROGRAMS



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Teaching With AI in Rural Community Colleges: A Practical Guide for Workforce Education and Career-technical Programs

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About This Guide

College of the Siskiyous, AI-FAST Initiative. A California Community Colleges Learning Lab Project.

This guide documents what happened when a small rural community college spent a year taking generative AI seriously. It grew out of the recurring question a handful of overcommitted faculty kept asking each other in hallways and over email: what is this thing actually doing to our students, and what, if anything, should we do about it?

AI showed up the way most things show up at a college our size: in screenshots and worried emails, not in a strategic plan. We had no instructional design team to hand it to, no center for teaching excellence, no task force appointed from above. So a cross-disciplinary group of us (faculty from the humanities, STEM, CTE, and the library) started meeting to work it out together. This guide is what we have to show for that year: the good experiments, the failed ones, the policies we landed on, and the tools that helped.

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Who This Guide Is For

We wrote this for people whose jobs look like ours: faculty and administrators at rural-serving and career-technical institutions, where one person teaches several sections a semester while chairing committees and advising a club, where the broadband cuts out in bad weather, and where decisions about AI tend to get made in reaction to a crisis rather than ahead of one.

We wrote it because many of the resources we found were built for other places. Research universities with instructional design teams or even urban California community colleges face different challenges than ours. The questions their resources answered were not always our questions, and the solutions they proposed were not always possible at our scale. If you have ever read AI guidance that assumed reliable campus wifi, a dedicated support office, and a teaching load with room for professional development, and thought “that is not my college,” this guide is for you.

A note on how to use it: the first two parts and the last give you our experience, including the context, the workshop year, what we learned and would do differently. The middle (Parts Two through Four) is reference material, organized so you can open straight to your discipline or to the policy language and take what you need. Read the narrative for the why. Consult the chapters for the how. Adapt all of it freely for your own context, which is the whole point.

This guide is not a sales pitch for AI. Some of us came into the year convinced AI is mostly a threat to the kind of thinking we are paid to teach, and those colleagues did not change their minds so much as sharpen everyone else's. Where the evidence is thin or comes from a vendor, we say so. Where AI does not belong, we say that too, at length. The measure we kept coming back to was not whether something is innovative but whether it solves a real problem for a student who is driving forty minutes each way and studying at midnight.

Why Rural and CTE Programs Need Their Own Approach

Rural community colleges serve as workforce development hubs in ways larger institutions often do not. A September 2025 opinion piece in *The Hechinger Report*, written by Bonita Robertson-Hardy and Josh Wyner of the Aspen Institute's College Excellence Program, argues that rural colleges can function as rural development hubs that bridge economic, social, and civic sectors to address regional challenges. Our programs prepare students for jobs. They also shape whether those jobs exist in our communities at all.

Career and Technical Education sits at the center of that mission. By estimates from Jobs for the Future based on federal data, CTE programs graduate more than 1.3 million people a year with industry-aligned skills, and an Advance CTE national survey found that 93% of employers who recruit from CTE programs report a positive impact on their bottom line. But CTE also faces its own AI questions. How do you integrate AI into welding instruction when the real skill is reading a puddle? How do you use AI in paramedic training without eroding the split-second judgment that saves lives? How do you prepare nursing students for AI-assisted diagnostics while making sure they can function when the system fails?

This guide takes on those questions directly, drawing on our faculty's experience and the research specific to workforce education.

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What You Will Find Here

The guide moves from context to practice to discipline-specific guidance:

- **Part One** describes the rural context and the constraints that shape AI decisions at institutions like ours.
- **Part Two** covers AI applications for rural-specific problems: prompting and AI literacy, around-the-clock tutoring for students who cannot make office hours, simulations for programs with limited clinical sites, and support services for first-generation students navigating financial aid.
- **Part Three** offers concrete guidance for CTE programs: welding, nursing, paramedic, fire technology, automotive, agriculture, and other fields where AI meets hands-on skill.
- **Part Four** addresses policy development, ethics, and Universal Design for Learning in resource-constrained settings.
- **Part Five** shares what we learned in our first year and what we would do differently.

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1: THE RURAL CONTEXT

1.1: Place Matters

1.2: The Workforce Mission

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1.1: Place Matters

Siskiyou County sits at California's far northern edge, closer to Oregon than to Sacramento. Mount Shasta dominates the landscape. Towns spread along the I-5 corridor and a network of two-lane roads that close several times each winter. The county is larger than some Eastern states and home to fewer than 45,000 people.

The economy reflects that geography. Logging and milling shaped the region for most of the twentieth century, and those jobs have long since contracted. Public-sector work now carries much of the load: education, healthcare, firefighting, corrections, social services. Trucking, retail, tourism, small agriculture, forestry, and ranching fill in the rest.

This is not unusual. By one count, rural communities make up roughly a fifth of the U.S. population but receive only about 7% of philanthropic funding. A 2025 National Bureau of Economic Research working paper (Acton, Cortes, Miller, and Morales, *Distance to Degrees*, WP 33337), using Texas administrative data, found something more specific than a simple distance penalty. When students live thirty or more minutes from a community college, white, Asian, and higher-income students tend to substitute toward four-year colleges and actually complete bachelor's degrees at higher rates. Black, Hispanic, and lower-income students respond by forgoing college altogether. The distance does not just slow some students down. It sorts them, and the sorting falls hardest on the students our colleges exist to serve.

Those numbers describe the students in our classrooms. People with limited options, who need credentials that translate directly into work, and who face obstacles (transportation, childcare, internet access, work schedules) that make traditional college attendance genuinely hard.

The Infrastructure Reality

Broadband has improved but stays uneven. Students talk about hotspots cutting out mid-assignment, dead zones a few miles outside town, crowded homes where several people share one device, and forty-minute drives that make quick tech support anything but quick. These are the conditions under which many of our students learn. Any AI plan that assumes reliable high-speed internet, personal laptops, and easy campus access will fail a large share of them.

College of the Siskiyous

The college is one of California's few rural, residential community colleges. The main campus is in Weed, with an instructional site in Yreka. We draw local students from Siskiyou County and neighboring districts, plus athletes and others from small towns across the West who want a campus experience without the anonymity of a large institution.

Residence halls, athletics, and close contact with instructors define the place. So do small departments, faculty who wear several hats, and limited central infrastructure for instructional design. We have no dedicated teaching and learning center. We have no AI task force appointed from above. Decisions about AI (policies, assignments, support structures) get made by people who are also teaching, advising, running programs, and serving on committees.

That constrains what is possible. It also creates an opening. At a college this size, a handful of committed faculty can shift the culture in ways that would take years at a larger institution.

1.2: The Workforce Mission

Rural community colleges can be the primary infrastructure for rural workforce development. Where geographic isolation, limited broadband, and thin public services restrict access to opportunity, the college often functions as the whole workforce system.

The same Hechinger piece put the stakes plainly: in rural areas, the place close to home where people can learn and build a better future is often the community college. The authors also warned that rural colleges are under threat from enrollment declines, funding pressure, and growing skepticism about higher education in communities where working-class jobs have long dominated. It is worth noting this is an opinion essay, not a research report, though it draws on Aspen's rural college research.

What High-Performing Rural Colleges Do

Research from the Aspen Institute's College Excellence Program points to a few patterns among rural colleges that produce strong outcomes and stay tied to their local economies.

They align programs with real opportunity. Successful rural colleges pay attention to regional labor markets and build programs around jobs that exist. In practice that means asking hard questions before launching anything: Are there enough local employers to hire graduates? Will the credential lead to stable work within commuting distance? Programs that cannot answer clearly get reconsidered.

They partner deeply with employers. Local industries help shape curriculum, provide equipment, offer internships, sometimes contribute funding to launch a program. The partnership keeps training aligned with real workplace needs and lowers cost for students.

They think regionally, not just locally. Small populations spread across large areas mean the strongest programs serve a region rather than a single town, often in healthcare, public safety, agriculture, transportation, or tourism.

They connect with K-12. Strong rural colleges build dual-enrollment pathways with nearby high schools so students start career-technical coursework early, which also strengthens the regional pipeline.

The CTE Landscape

Career and Technical Education has always changed alongside industry. New tools, materials, and technologies reshape what students must learn. AI is the latest of those shifts. Across healthcare, manufacturing, public safety, transportation, and digital technology, AI systems are starting to appear in the tools professionals use daily, sometimes for diagnostics or analysis, sometimes to automate routine tasks. The pace and shape of adoption vary widely, but the presence of AI in many industries keeps increasing.

For CTE faculty, the question is not whether AI exists in the workplace but how it should appear in the learning. Programs have to draw clear lines between uses that support learning and uses that bypass the skills the work requires. Students need to understand and evaluate the AI tools they will meet professionally while still building the hands-on competence and judgment their fields demand.

Take welding. A student who uses AI-assisted feedback to analyze bead quality or review technique is working with tools that increasingly show up in modern manufacturing, and that feedback can speed up learning by surfacing patterns and errors faster. A student who uses AI to generate procedure documentation without understanding the welding process has gained nothing. The goal is to make sure technology reinforces real skill rather than replacing it.

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2: AI APPLICATIONS FOR RURAL CONTEXTS

2.1: Teaching Prompting and AI Literacy

2.2: Solving the Access Problem

2.3: Simulations and Clinical Training

2.4: Accessibility Without Dedicated Staff

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2.1: Teaching Prompting and AI Literacy

How you ask matters as much as what you ask. That was one of the first things we learned. Students assume AI tools work like search engines: type a quick question, get a quick answer. In practice the quality of the response depends heavily on the quality of the prompt. Teaching students to prompt well is not a minor technical skill. It is a form of digital literacy and critical thinking.

In workforce programs it matters even more. Students heading into healthcare, public safety, or the trades will meet AI-supported tools on the job. Knowing how to work with those systems (asking clear questions, verifying answers, recognizing limits) is part of professional judgment. We already teach students to read technical manuals and interpret diagnostic equipment. This is the same kind of work.

A useful prompt gives the system enough context to produce something useful. The most effective ones include three things: context, task, and constraints. Context tells the AI who you are and what you are working on. Task tells it what you want. Constraints set the level, format, or limits of the response.

Weak prompt: *Explain fire behavior.*

Stronger prompt: *I'm studying for Firefighter I certification. Explain how wind influences wildland fire behavior, and give one example where a wind shift changes the firefighting strategy.*

The second version provides context and purpose, so the answer is more relevant to what the student is trying to learn. The same principle holds across disciplines.

EMS, weak: *What is shock?*

EMS, stronger: *I'm studying for a paramedic exam. Explain the difference between hypovolemic and distributive shock, including key assessment signs for each.*

Welding, weak: *What is MIG welding?*

Welding, stronger: *I'm learning MIG welding. Explain how voltage and wire speed affect the weld puddle and bead shape.*

Better prompts reflect clearer thinking. The student has to figure out what they are trying to learn before they can ask for it. Faculty can model this in class: show how a vague prompt produces a generic answer and a specific one produces something focused. Students get the point when they see the contrast for themselves.

Encourage students to use AI for practice and explanation rather than answers. When they treat it as a tutor instead of a shortcut, the interaction gets far more productive. Prompts that keep the work with the student include:

- Explain this concept in simpler language.
- Give me three practice questions on this topic.
- Ask me quiz questions and check my answers.
- Give me an example scenario I could analyze.

It matters just as much to teach students to evaluate what comes back. AI tools produce wrong or oversimplified information, especially in specialized technical fields, so students should verify against course materials, textbooks, and professional guidelines. One reflection question does a lot of work here: What did the AI get right, and what did it miss?

Assignments can build the habit on purpose. An EMS example:

1. Use AI to generate an explanation of how epinephrine works in treating anaphylaxis.
2. Compare the explanation with the pharmacology textbook.
3. Identify any inaccuracies or missing information.
4. Write a corrected explanation in your own words.

The learning happens in the verification.

Faculty benefit from the same skills. AI can generate practice scenarios, study guides, and exam-question variants. A fire technology instructor might ask for three incident command scenarios (a wind-driven fire, a multi-story building, a rural water-supply problem). An EMS instructor might ask for two respiratory-distress scenarios for students to analyze. These produce teaching material fast, and the instructor still reviews and refines before using it.

The principle for students and faculty alike is simple: AI should support thinking, not replace it. In courses where judgment and safety are critical, students have to show they can perform essential tasks without AI. Learning to work with AI tools is becoming part of professional competence too. Teaching prompting serves both goals at once.

2.2: Solving the Access Problem

The rural access problem is, underneath, a timing problem. When a student working the late shift needs help with anatomy at 11 PM, there is no tutor. When a fire technology student has three hours between calls to study hazmat protocols, the library is closed. When finals week arrives and the one math tutor is booked solid, students without transportation have nowhere to turn.

By EAB's count, roughly 670,000 students attend rural community colleges, where they drive long distances, work full-time, and fit coursework into margins larger institutions never have to think about. Lower population density also means less access to high-speed internet, fewer transportation options, and scarcer job-training resources. AI tools that address timing and access can offer real value here, as practical ways to extend limited human resources.

Around-the-Clock Tutoring and Academic Support

In October 2025 the California Community Colleges Chancellor's Office announced a systemwide partnership with Nectir to make FERPA-compliant AI learning assistants available across all 116 campuses, following a 2024–2025 pilot. The system lets faculty upload course materials (syllabi, lecture notes, textbooks) and train an assistant on that content. Instructors set the parameters, including instructions like *Do not ever give the student the answer* or *Use the Socratic method when responding*.

Early pilot results are encouraging, with the usual caveat. A Nectir pilot at Los Angeles Pacific University reported a 20% jump in GPA, a 13% rise in final scores, and a 36% boost in intrinsic motivation after a full term. The researchers themselves were careful: the results are statistically significant but do not establish causation, and self-selection is a real possibility, since students who choose to use a tutoring tool may already be the more motivated ones. A later, larger LAPU study across more than 2,000 course enrollments found a more modest GPA gain of about 7.5%. Treat the big pilot numbers as a promising signal, not proof. The University of Hawai'i system rolled out proactive chatbots across all ten campuses by the end of fall 2025, with opt-in rates of roughly 93% at Mānoa and 98% at Hilo (about 94% systemwide).

PlayLab drew strong interest among faculty at our fall AI-FAST session. We ran a hands-on workshop introducing it as a platform for building simple, course-specific assistants students can use for practice and feedback. Unlike a general chatbot, PlayLab lets instructors design guided activities, set guardrails, and shape how the AI responds. Several faculty left planning to build bots that help students review terminology, practice explaining concepts, or work through examples outside class, which matters most for students studying outside business hours.

What This Looks Like: Chemistry at Midnight

A chemistry professor uploads her course materials and sets the rules: explain concepts, work similar problems, ask guiding questions, never solve the assigned problems. A student stuck on stoichiometry at midnight types “I don't understand how to convert grams to moles” and gets an explanation built on the professor's own lecture notes, in the same terms used in class. It does not replace the professor. When the student makes it to office hours (on a day the forty-minute drive is feasible), they arrive with sharper questions, having already worked through the basics.

Student Support Services

Financial aid is the single biggest completion barrier for many rural students, and one of the most confusing processes to navigate. First-generation students often have no one at home who can help with the FAFSA. The financial aid office may be two people serving three thousand students.

AI chatbots have shown real impact, though the strongest numbers come from vendor case studies and deserve that grain of salt. Forsyth Technical Community College, working with Element451, reported that its assistant handled 79% of student inquiries independently and cut incoming calls by about 24%, freeing staff for complex cases. Forsyth also saw enrollment gains over this period, though some of that growth predates the chatbot and should not be attributed to it. The Virginia Community College System deployed chatbots across all its colleges (built by Intrasee, using a blend of traditional and generative AI), and Tidewater Community College reported a 60% drop in email volume and a 30% drop in phone volume, according to the Online Virginia Network.

Newer systems do more than answer FAQs. The University of Hawai'i's chatbots start conversations at key moments (*How are you feeling about the start of the semester?*). Student responses trigger tailored follow-ups that help surface struggles with financial aid, housing, or time management and connect students to the right resource.

What This Looks Like: Financial Aid at 10 PM

A student opens the college website at 10 PM trying to figure out why her aid has not disbursed. The chatbot asks for her student ID, explains that her file is missing verification documents, and walks her through which forms she needs and how to submit them. She finishes that night instead of waiting for the office to open, by which point her rent would have been late.

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2.3: Simulations and Clinical Training

Rural healthcare education faces a structural problem urban programs often do not: limited clinical placement sites. A rural county may have one hospital and a handful of clinics, long-term care facilities, or ambulance services able to host students. Rotations are limited and tightly scheduled, even though students need repeated practice to build competence.

At the same time, healthcare is often one of the largest and most stable employers in a rural community. Local hospitals, clinics, ambulance services, and fire departments depend on regional programs to prepare the next generation. When training capacity is limited, workforce shortages follow fast.

Healthcare programs have long used simulation and scenario-based learning to supplement clinical experience. AI can extend that by helping instructors generate additional scenarios, explanations, and practice questions for students to work through outside lab time. It should not replace simulation labs or clinical training. It can add structured practice, especially for students studying on their own schedule.

Using AI to Generate Practice Scenarios

One of the most useful applications is generating patient scenarios for students to analyze, in individual study, on discussion boards, or in class.

Paramedic / EMS scenario prompt

I am studying for a paramedic exam. Create a patient scenario involving respiratory distress. Include the patient's age, symptoms, vital signs, and a short description of the situation. Do not give the diagnosis. Let me analyze it.

Students work through the scenario by identifying possible causes, assessment priorities, and treatment steps, then ask the AI to compare its reasoning with theirs. The AI acts as a scenario generator; the diagnostic reasoning stays with the student.

Medication review prompt

I am studying EMS pharmacology. Explain how epinephrine works in treating anaphylaxis, including its effects on the cardiovascular and respiratory systems. Then give me two quiz questions to test my understanding.

Students compare the explanation with their textbook or protocol manual and flag anything incomplete or wrong.

Clinical reasoning practice

Create a short EMS patient scenario involving possible hypovolemic shock. Include symptoms and vital signs but do not identify the condition. Ask me questions about what I would assess and treat first.

This kind of prompt pushes active reasoning rather than passive reading.

Practicing Communication and Patient Interaction

AI can also help students rehearse patient communication, a critical clinical skill.

Pretend you are a patient experiencing chest pain. I am a paramedic student assessing you. Answer my questions realistically based on the symptoms.

Students practice asking assessment questions, then reflect on what they gathered and what they missed. This helps the students who are nervous about their first clinical interactions.

Simulating Rural Healthcare Conditions

AI-generated scenarios can reflect situations common in rural practice: long transport times, limited resources, patients far from a hospital, communication with people unfamiliar with medical terms, telehealth consults with distant physicians.

Create a rural EMS scenario where the nearest hospital is 45 minutes away and the patient has signs of stroke. Describe the patient's symptoms and vital signs.

Students then discuss treatment priorities, transport decisions, and communication with medical control.

What Simulation Cannot Replace

Simulation and AI-generated practice cannot replace real clinical experience. Students still need hands-on training with real equipment, real patients, and real consequences. The physical work (lifting patients, operating equipment, reading subtle physical signs, managing the emotional weight of an emergency) cannot be fully reproduced in simulation.

So treat AI-supported practice as preparation, not substitution. The point is to help students arrive at clinical rotations better prepared, with stronger conceptual understanding and more reps thinking through scenarios. Where clinical opportunities are scarce and travel is long, that extra practice helps students get more out of the clinical hours they do have.

2.4: Accessibility Without Dedicated Staff

Rural colleges may have no dedicated disability services staff, or one person covering several roles. Students with disabilities may wait weeks for accommodation letters or struggle to access specialized software. A few AI applications help right away, without institutional infrastructure.

Text-to-speech and speech-to-text tools have improved. The Speech Accessibility Project at the University of Illinois Urbana-Champaign (funded by a consortium that includes Amazon, Apple, Google, Meta, and Microsoft) collects speech data from people with conditions like Parkinson's, cerebral palsy, ALS, Down syndrome, and stroke. Using that data, Microsoft reported accuracy gains in its Azure AI Speech recognition ranging from about 18% to 60%, depending on the speaker's disability. For students with visual impairments, AI-enhanced screen readers now handle complex layouts that previously could not be parsed.

For students with learning disabilities, AI tools can differentiate materials on demand. Diffit can take a complex reading and produce versions at different reading levels while keeping the core content. A student with dyslexia can reach the same concepts as peers through materials matched to their reading level, without waiting for an office to process the request.

Augmentative and Alternative Communication devices with AI features can recognize non-standard speech and cut down on word-by-word typing. By building a vocabulary tailored to each learner and adding predictive text, they let students with severe disabilities write longer, more complex thoughts and take fuller part in discussion.

What This Looks Like: Differentiated Materials in Minutes

A biology instructor needs to teach cellular respiration to a class that includes advanced students, students with strong conceptual understanding but weak reading skills, and English language learners. She gives the AI her learning objectives and asks for three versions of the reading: original, simplified vocabulary with the same concepts, and a version with Spanish glosses for key terms. She reviews and adjusts each in thirty minutes, work that used to take an afternoon.

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3: AI IN CAREER-TECHNICAL EDUCATION

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3.1: Principles for CTE Programs

CTE faces AI questions transfer programs often do not. When a student turns in an AI-generated English essay, the worry is about learning to write. When a paramedic student uses AI to generate a patient care report, the worry is whether they can assess a patient under pressure. When a welding student leans on AI to read their bead quality, the worry is whether they can read a puddle when the camera fails.

The stakes in CTE are often immediate and physical. A nursing student who misunderstands medication interactions can harm a patient. A fire technology student who cannot read smoke can die. An automotive student who misses a brake failure can kill someone on the road. That reality shapes how AI should enter these programs: carefully, with clear boundaries, always in service of building human judgment rather than replacing it.

Core Principles Across CTE Disciplines

Keep safety-critical judgment human. AI can propose options or generate information, but evaluation in high-stakes situations belongs to the student. The learning lives in the judgment, and the job requires it.

Make AI critique part of the outcome. Checking AI output against professional standards is valuable practice. Students who can name what AI gets wrong about their field are building the expertise employers need.

Tie AI use to real professional workflows. Students should see how AI actually shows up in their future work, and where it cannot replace hands-on skill or ethical judgment.

Require reflection on process. Asking students to describe how they used AI builds metacognitive awareness and surfaces misuse before it becomes habit.

Build in non-AI checkpoints. Some assessments have to verify that students can perform essential skills with no technological help, because technology fails and lives depend on human capability.

3.2: Emergency Medical Services

Our paramedic program developed the most thorough discipline-specific AI policy, and it works as a model for other high-stakes CTE fields. The policy opens by naming what the program protects:

In this program we emphasize developing the critical thinking ability necessary for problem solving in emergency medicine. This includes the ability to assess patients, create differential diagnoses, and develop appropriate treatment plans under pressure, many times with incomplete information.

It separates permitted from prohibited uses with unusual specificity, because the cost of getting it wrong includes patient deaths.

Permitted Uses

- **Concept clarification and background research:** exploring foundational concepts before class, with all AI-generated medical information verified against approved textbooks and protocols.
- **Study aid and organization:** study schedules, flashcards, and practice scenarios for self-study.
- **Writing assistance for non-assessed work.**

Prohibited Uses

- **Any graded assessment:** written exams, patient care reports, case-study analyses, clinical reflections.
- **Clinical decision-making:** using AI to determine assessment findings or treatment decisions during simulations or rotations.
- **Patient care documentation.**

Sample Assignment: AI-Generated Content with Critical Verification

A pattern that works: students use AI to generate explanatory content, then systematically verify and correct it against authoritative sources. They choose an emergency medication, generate an explanation of its mechanism and effects, fact-check everything against the pharmacology text and protocols, write a one-page summary in their own words, and reflect on what the AI got right and wrong. The learning happens in the verification, and students discover that AI makes errors that could kill patients.

3.3: Fire Technology

Fire technology shares the high-stakes reality of EMS and adds physical performance that cannot be simulated. Reading smoke, managing hose lines under stress, operating in zero visibility: these need hands-on training no AI can replace. But AI can support the substantial academic side: hazmat identification, building construction analysis, fire behavior, incident command. The work is drawing clear lines.

Where AI Helps

- Generating practice scenarios for tabletop exercises
- Creating flashcards for hazmat placard identification
- Explaining building construction principles with examples
- Producing study guides for certification exams
- Helping students organize incident command documentation practice

Where AI Does Not Belong

- Actual incident documentation that becomes part of the legal record
- Real-time tactical decision-making practice (simulation must involve human judgment under pressure)
- Skills assessments that verify hands-on capability
- Anything that shortcuts the physical conditioning and stress inoculation firefighters need

Sample Assignment: Pre-Incident Planning

Students pick a building in the community and build a pre-incident plan. They may use AI to research construction types and common hazards, but they must physically visit the building, photograph access points, identify water supply, and document what they find. The AI-assisted research is clearly separated from the field observation, and both are required.

3.4: Welding and Manufacturing

AI applications in welding have advanced. Industry, academic, and education sources now describe training setups where students work with robotic welding arms and sensors that teach technique and adapt in real time, giving precision feedback. AI-powered welding cameras detect anomalies and track geometric features across multi-pass welds, so students can adjust technique on the spot instead of finding errors after the fact.

This is AI in its most appropriate CTE form: augmenting human skill rather than replacing it. The student still holds the torch. The student still reads the puddle. They just get faster, more precise feedback than an instructor watching several students at once could give.

The Limits

AI cannot assess everything that matters in welding. The feel of the puddle through the torch, the sound of a proper arc, the positioning that prevents fatigue: these stay human. Students have to show capability without AI before certification. Welding procedure specifications and documentation raise the same ghostwriting concern as other fields. Students should understand what they are signing, not hand in AI-generated paperwork they have not verified.

Manufacturing Crossover: Generative Design

Fusion 360's generative design tools let drafting students create optimized components that machine-shop students then use to program CNC machines with AI-generated toolpaths. This mirrors actual industry practice, where manufacturers use AI to optimize designs within set constraints. The teaching opportunity: students learn to specify constraints accurately (human judgment) and evaluate whether the AI-generated design actually meets requirements (also human judgment). The AI handles computation that would take humans days; humans verify the result.

3.5: Nursing and Allied Health

Nursing programs feel the simulation challenge most sharply, because clinical placements are scarce, patients are vulnerable, and the required competencies are vast. A 2025 systematic review in *Clinical Simulation in Nursing* reported that AI-enhanced simulations improved communication, clinical reasoning, knowledge acquisition, self-efficacy, and empathy in nursing students.

Platforms like VRpatients offer web-based patient simulations that run on standard computers, not just VR headsets, which matters for students without headsets or reliable high-speed connections.

The Documentation Challenge

Nursing documentation is increasingly AI-assisted in practice, which creates a teaching dilemma. Should students learn the AI documentation tools they will meet professionally, or first show they can document without them? The answer is probably both, sequenced. Early on, students document without AI to build understanding of what documentation captures and why. Later, they learn the AI tools while keeping the critical eye to catch errors, because AI documentation errors can harm patients.

Sample Policy Language

AI tools may be used for concept clarification and study support. All AI-generated medical information must be verified against course textbooks and current clinical guidelines before being trusted. AI may not be used during patient interactions, for clinical documentation, or for any assessment that evaluates your ability to make clinical judgments independently. These restrictions exist because your future patients need you to be capable when technology fails.

3.6: Agriculture and Natural Resources

Agriculture sits at an interesting intersection: AI tools are reshaping professional practice (precision agriculture, drone crop monitoring, AI-assisted soil analysis) while the work itself stays physical and seasonal.

Southwest Wisconsin Technical College offers a model. When the college learned that agriculture students could meet employer needs by learning to operate drones and GPS-guided tractors, it overhauled the curriculum. The AI tools students learn are not academic exercises. They are the actual equipment on modern farms.

Rural-Specific Applications

- **Precision agriculture:** GPS-guided equipment, variable-rate application, yield mapping, skills employers specifically request.
- **Drone operation for crop monitoring:** including AI-assisted image analysis for pest and disease detection.
- **Soil and water management:** AI-enhanced sensors for irrigation optimization.
- **Livestock monitoring.**

The Human Foundation

AI tools in agriculture work best when the operator understands the underlying biology and ecology. A student who follows AI recommendations without understanding soil science will make poor decisions the moment the AI hits conditions outside its training data. Human knowledge is the foundation; AI extends it.

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3.7: Automotive Technology

Modern automotive diagnosis increasingly uses AI-based systems that interface with vehicles to predict component failure and identify problems. Students trained on these systems troubleshoot faster than those using traditional methods alone, but they still have to understand what they are looking at.

The risk is producing technicians who can follow an AI recommendation but cannot diagnose when the AI is wrong or the system fails. Vehicles in rural areas often travel long distances before reaching service, so a misdiagnosis that sends someone back on the road with an unresolved problem can have serious consequences.

Balancing AI and Foundational Skills

A reasonable sequence: students first learn traditional diagnostic methods (what systems do, how to test them manually, how to read physical symptoms). Then they learn AI-assisted diagnosis, with emphasis on when to question a recommendation. Finally they practice scenarios where the AI is wrong and must be overridden by human judgment.

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3.8: Administration of Justice

Criminal justice programs face their own AI questions around surveillance, bias, and civil liberties. Students need to understand both the capabilities and the dangers of AI in law enforcement.

For academic work, the standard concerns apply: students should produce their own analysis of cases, show their own understanding of constitutional principles, and develop their own judgment about appropriate responses. AI-generated case summaries or legal analyses do not build the judgment officers need.

Critical AI Literacy for Justice Programs

Students should understand how AI is used in the justice system (risk assessment tools, facial recognition, predictive policing) and the documented problems with these applications (racial bias, false positives, constitutional concerns). This is not optional content. It is essential professional knowledge for anyone entering the field. An assignment that works: students research a specific AI tool used in criminal justice, weigh the evidence for and against its accuracy and fairness, and develop a position on whether and under what constraints it should be used. The critical thinking that requires cannot be AI-generated.

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4: POLICY AND ETHICS

4.1: Developing AI Policies That Work

4.2: Ethical Considerations

4.3: Universal Design for Learning

4.1: Developing AI Policies That Work

An AI policy is, underneath, a teaching tool. When we write AI guidelines, we name the learning we value, map the acceptable tools, and give students some reassurance in a confusing landscape.

Students get wildly inconsistent messages: some instructors say no AI ever, some quietly ignore it, some encourage experimentation with no guidance. An explicit policy clarifies which tools and uses are appropriate, lowers anxiety by making expectations visible, and shows students you understand the bind they are in.

Core Questions Behind Any Policy

- Will you allow any AI use at all? If not, why? If yes, where and how?
- Which specific uses are acceptable: brainstorming, feedback on clarity, grammar help, tutoring-style dialogue, generating counterarguments?
- What should students do with AI output: critique and verify, or accept at face value?
- How will students document or reflect on AI use?
- What commitments will you make about your own AI use?

A Four-Level Scale

Based on work by Perkins, Furze, Roe, and MacVaugh, adapted by writing pedagogy scholar Anna Mills:

Level 1, No AI: students demonstrate core skills without AI. Proctored in-class writing, timed practical exams, hands-on skill assessments.

Level 2, AI Tutoring-Style Assistance: student ideas, student words. Students use AI to help them think or refine wording but question its suggestions and do the actual work. A useful test: would an ethical human tutor help this way?

Level 3, AI Collaboration: students use some AI ideas and words alongside their own. Significant adaptation and human judgment stay essential.

Level 4, Unlimited AI: students supervise AI output for quality and accuracy but may not change it much. Rare in education, more relevant in some professional workflows.

For most CTE contexts, Levels 1 and 2 serve different purposes. Level 1 verifies that students have the essential skills. Level 2 lets AI support learning without replacing it.

Sample Syllabus Language

For tutoring-style use:

In this course, AI is welcome as support for your thinking, like a tutor, study buddy, or spell-checker, not as a ghostwriter. You can use AI to clarify ideas, generate questions, and get feedback, but the ideas and sentences you submit must be actively shaped by you.

For no-AI assignments:

For this assignment, no AI tools are permitted. This is your chance to demonstrate your own thinking and skills without assistance, which is essential for the capabilities this course is designed to build, and that your future work will require.

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4.2: Ethical Considerations

Beneath the technical details, AI in education raises questions that rural and CTE contexts make especially pressing.

Authorship and Professional Responsibility

When a paramedic student turns in an AI-drafted patient care report, the question is not only academic integrity. It is whether they can document patient care in the field. When a nursing student submits AI-generated clinical reflections, the question is whether they are developing the reflective practice that prevents errors. The professional-responsibility dimension makes AI misuse in CTE more serious than in some academic settings.

Consent and Data Privacy

Many AI tools store prompts and responses, sometimes to train future models. In healthcare programs, entering actual patient information into public AI tools violates HIPAA. In justice programs, case details may be protected. Students may share far more than they realize with companies they know little about. The fix: clear policies about what should never go into an AI system, and institutional tools, where available, that do not send data to outside servers.

Skill Erosion

When students lean on AI to summarize readings or generate polished text, their capacity to wrestle with hard material and produce their own language can weaken. In CTE this extends to professional skills: students who rely on AI diagnostics may never build the judgment to catch the AI's errors. The concern is not nostalgia. It is that deep learning requires struggle, and professionals have to be capable when the technology fails.

Environmental Impact

Generative models consume real computational resources. In a region shaped by fire and drought, colleagues have questioned the ethics of encouraging more use of these systems. That argues for proportionate use: reserve AI for cases where it clearly adds value to learning or access, rather than using it for everything because it is there.

Tribal Data Sovereignty

Institutions serving tribal communities have to consider who controls data generated through AI use. Current models are often trained on Indigenous stories and knowledge without consent. AI policies should state plainly that students are never required to share culturally sensitive information with AI, and low-tech alternatives should always exist for assignments that touch heritage or identity.

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4.3: Universal Design for Learning

Universal Design for Learning emphasizes multiple means of engagement, representation, and action or expression. In rural contexts those principles get intensified by distance, variable broadband, and students' work and caregiving responsibilities. AI does not replace UDL. It gives us more tools to implement it, and a new responsibility to ask who benefits and who might get left further behind.

Where AI Supports UDL

- Generating alternative explanations when the first approach does not click
- Producing plain-language versions of complex instructions
- Drafting captions, alt-text, or summaries that faculty then verify
- Offering on-demand tutoring when office hours are out of reach
- Providing varied practice problems tailored to different interests
- Helping students brainstorm different presentation formats
- Offering language support for multilingual students

Where AI Can Undermine UDL

- When core learning outcomes get outsourced to AI, students lose the chance to build that capacity
- When we assume everyone has reliable devices and broadband, AI-heavy assignments privilege more resourced students
- When AI-generated content is not vetted for bias, it can reinforce barriers rather than remove them

Design Principles

Start with the outcome, then decide where AI belongs. If the outcome is reading a disciplinary text, do not let AI carry the reading. If the outcome is clinical judgment, AI cannot shortcut the judgment.

Use AI to widen the on-ramps, not lower the bar. AI can help students reach the material. It should not reduce what they are expected to learn.

Always offer at least one low-tech path. Students who lack reliable access, or who prefer not to use AI, should still be able to complete assignments and show competence.

5: PROFESSIONAL DEVELOPMENT AND LESSONS LEARNED

5.1: Building Faculty Capacity

5.2: What We Learned

5.3: Implementation Considerations for Rural Contexts

5.4: What Is Not Ready Yet

5.5: Starting Points

5.6: Ethics in Practice

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5.1: Building Faculty Capacity

Generative AI did not arrive at College of the Siskiyous as a planned initiative. It arrived in screenshots and links, in hallway conversations and worried emails. One moment caught the range of reactions. During an Academic Senate discussion, a senior colleague turned to me and said, “On the moral scale, I rank AI below Satan.” The hyperbole made me laugh. The conviction underneath was serious.

At the same time, I was watching students use AI as a lifeline. Usually late at night, often alone, trying to make sense of assignments they did not feel ready for. That tension, between a genuine threat and a genuine opportunity, shaped how our professional development had to work.

What Did Not Work: Self-Paced Learning Alone

Our first design borrowed from a familiar playbook: self-paced learning plus a tangible product. Faculty would finish an online course over the summer, build AI-aware materials in the fall, and share at the end of the semester. The appeal was obvious. Flexibility, concrete outputs, alignment with patterns we already used.

Three things pushed us to redesign. Faculty time and role overload, since at a small rural college people wear many hats, and a substantial online course read less like an opportunity than an extra unpaid job. Uneven comfort and strong moral positions, since telling a colleague who sees any AI use as compromised to go complete an “AI integration” course alone was never going to move the needle. And rural isolation.

What Worked: Community of Practice

We shifted toward a community of practice. Self-paced learning stayed useful as background, but the center of gravity moved to shared, synchronous, relationship-rich work.

- **Anchor the year in shared sessions.** Live sessions with outside speakers gave faculty a shared experience and concrete examples rooted in our context.
- **Build a standing group, not a workshop series.** Regular meetings focused on what happened when I tried this, not abstract best practices.
- **Ensure cross-disciplinary participation.** We recruited from English, Biology, Paramedic, Fire Technology, Administration of Justice, Library, Early Childhood Education, and more.
- **Tie incentives to engagement, not perfection.**

Ground Rules That Mattered

Psychological safety. People brought half-formed ideas, failed experiments, and open questions to the table. The portfolio-grading script that posted a zero to every student when an API call failed. The assignment redesign that worked in theory and confused everyone in practice. No one got shamed for not knowing, for changing their mind, or for deciding partway through that AI did not belong in their course after all. That permission to fail in front of colleagues is most of what made people willing to try anything.

Honoring skeptics. The colleague who ranked AI below Satan kept coming to meetings. So did others with serious reservations, and we treated their objections as contributions rather than obstacles to manage. They asked the questions the enthusiasts skipped. What happens to a student who never learns to struggle through a hard reading? Who owns the data we are feeding these tools? Is the environmental cost defensible in a region shaped by fire and drought? Faculty who did not plan to use AI at all turned out to be essential to the conversations about policy, equity, and academic integrity. The skeptics made the rest of us more honest.

Shared responsibility. The work was collective. No single instructor or discipline was on the hook for covering AI, and no one was the designated expert. That mattered at a college where most of us were learning this in the margins of an already full week.

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5.2: What We Learned

The first year did not produce sweeping transformation. It produced smaller changes that began to shift the campus climate.

- **Cross-disciplinary conversation.** Faculty who rarely talked about teaching started talking about AI. A paramedic instructor, an English professor, and a librarian comparing notes on student AI use.
- **Distributed leadership.** Participants took on informal roles: circulating resources, mentoring colleagues, presenting at regional events.
- **Clearer policies.** Even cautious faculty revised their syllabus language to be more explicit. Others redesigned at least one assignment.
- **A different tone.** The campus conversation moved from panic and prohibition toward something steadier. Less “how do we stop this” and more “what do we actually want students to be able to do.” Not consensus, we still disagree, but a shared vocabulary for disagreeing well.

What We Would Do Differently

- **Earlier and broader recruitment.** Some faculty who might have joined did not hear about it until it was underway.
- **More dedicated CTE time.** CTE faculty participated throughout, but their concerns deserved more focused attention and discipline-specific sessions.
- **Clearer signals about success.** Some participants were unsure whether their contributions counted.
- **Better documentation of what worked in specific disciplines.**

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5.3: Implementation Considerations for Rural Contexts

Adopting AI tools in rural settings means attending to constraints urban institutions may not face.

Bandwidth and connectivity. Students may reach AI tools over unstable cellular connections. Prioritize tools that work on low bandwidth, offer offline functionality, or work in short sessions. Test under realistic conditions, including on mobile hotspots in weak-signal areas.

Device access. Not everyone has a laptop; many rely on a smartphone. Verify that tools work on mobile before requiring them. Consider device lending for specialized applications.

Training capacity. Rural institutions may lack dedicated IT training staff. Choose tools with strong self-service documentation and responsive support. Plan for faculty to train each other through a community of practice rather than outside trainers.

Sustainability. Free tools may go paid; vendor support may lag. Assess long-term viability and avoid building curriculum around tools that could vanish. Prefer tools that allow data export and do not lock content in proprietary formats.

CTE-specific requirements. Workforce programs may have accreditation or licensure requirements that limit how AI can be used. Verify that your AI policy aligns with professional standards before implementing.

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5.4: What Is Not Ready Yet

Honest assessment means naming the limits. As of early 2026:

- **AI grading of complex work.** AI can give feedback on writing, but having it assign grades on substantive work stays problematic. It struggles with disciplinary nuance and the judgment calls that separate competent from excellent.
- **AI detection.** Tools claiming to detect AI-written work are unreliable, producing both false positives and false negatives. Using them for high-stakes integrity decisions is not advisable.
- **Cultural sensitivity.** AI tools often embed biases from training data, including urban, white, middle-class assumptions. Faculty have to review output for cultural fit.
- **Emotional support.** Chatbots can connect students to resources, but AI is not a substitute for human counseling. For complex issues, human judgment is essential.
- **Replacement of hands-on training.**

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5.5: Starting Points

For rural institutions starting to explore AI, a few entry points have low barriers and clear payoff.

- **Student support chatbots.** Work with vendors experienced with community colleges and FERPA compliance. Start with financial aid and registration, high-volume FAQ areas where AI handles routine questions well.
- **Writing feedback tools.** Explore low-cost or nonprofit options, or tools integrated with your LMS. Frame AI feedback as one source among several.
- **Content differentiation.** Use Diffit or similar to generate leveled reading. Start with one course, track results, expand if it works.
- **Accessibility supports.** Make sure students know about the AI features already built into existing tools: dictation, screen readers, immersive readers. Often the technology is already there.
- **CTE simulations.** For healthcare programs, explore web-based simulation platforms that supplement limited clinical placements. Start with communication skills before complex clinical scenarios.
- **Faculty communities of practice.** Provide incentives and a framework for faculty to meet regularly and discuss best practices and new tools. Consider offering webinars or rotating facilitation.

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5.6: Ethics in Practice

The measure of any AI application is whether it solves a real problem for your students. In rural contexts those problems are time, distance, and access. In CTE they are about building human judgment that holds when the technology fails.

AI will not fix inadequate broadband, end workforce shortages, or replace the hands-on training that prepares students for safety-critical work. It can make limited resources stretch further, reaching students at 11 PM and on rural roads and in languages other than English. It can offer practice that limited clinical sites cannot. It can help faculty differentiate instruction without giving up a weekend to it.

That is practical help, put where it is needed most, with clear lines around what stays human. Rural community colleges have always done more with less, built programs that serve communities larger institutions ignore, and graduated students who stay and strengthen the places they came from. AI is one more tool in that work: powerful, imperfect, and only as good as the judgment we bring to it.

6: QUICK REFERENCE MATERIALS

6.1: Sample CTE Policy Language

6.2: Reflection Prompt Options

6.3: Workshop Activity- Map Your Program to the AI Scale

6.4: Key Resources

6.5: About Our Project

This page titled [6: Quick Reference Materials](#) is shared under a [CC BY-NC-SA 4.0](#) license and was authored, remixed, and/or curated by Caroline Scott.

6.1: Sample CTE Policy Language

For healthcare programs:

AI tools may be used for concept clarification and study support. All AI-generated medical information must be verified against course textbooks and current clinical guidelines. AI may not be used during patient interactions, for clinical documentation, or for assessments that evaluate independent clinical judgment. These restrictions exist because your future patients need you to be capable when technology fails.

For public safety programs:

AI may assist with studying protocols, generating practice scenarios, and organizing study materials. AI may not be used for graded assessments, incident documentation, or any evaluation of decision-making under pressure. The judgment you develop in this program must be yours.

For skilled trades:

AI diagnostic and feedback tools may be used during practice to accelerate skill development. All certification assessments must demonstrate capability without AI assistance. Documentation submitted for grading must be your own work, verified against specifications you understand.

6.2: Reflection Prompt Options

- Describe any AI tools you used for this assignment. For each, explain what it contributed and why you accepted or rejected its suggestions.
- Where did you disagree with the AI's output? What does that reveal about your own professional judgment?
- If you chose not to use AI, explain your reasoning.
- What would happen if you relied on this AI tool in the field and it gave you incorrect information? How would you catch the error?

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6.3: Workshop Activity- Map Your Program to the AI Scale

Time: 30 minutes

Purpose: Identify which assessments require unaided demonstration of skill (Level 1), which could benefit from tutoring-style AI support (Level 2), and which might allow collaboration (Level 3).

Process:

- List five to seven major assessments in your program.
- For each, identify: What skill does this assess? What happens if a graduate cannot do this independently?
- Assign a level based on how essential independent capability is.
- Discuss with colleagues: Where do you agree? Where do you disagree?

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6.4: Key Resources

- [Anna Mills, “AI Text Generators and Teaching Writing” \(WAC Clearinghouse\)](#)
- [Association for Career and Technical Education AI guidance](#)
- [California Community Colleges Chancellor’s Office AI resources](#)
- [Aspen Institute College Excellence Program rural college research](#), including *Rural Community College Excellence: A Guide to Delivering Strong Opportunity for Students and Communities*
- [Rural Community College Alliance resources](#)
- [ASCCC, Academic Integrity Policies in the Age of AI \(ASCCC Educational Policies Committee resource document, Spring 2024\)](#)

6.5: About Our Project

This guide was developed through the AI-FAST initiative at College of the Siskiyous, 2024–2026. It documents faculty-led work supported by collaborative sessions with outside experts, including Anna Mills on AI policy and writing pedagogy, and practitioners from Liberal Arts and Sciences and CTE programs across the college and from local high schools.

The community of practice materials are public at sites.google.com/view/aifastsiskiyous/sessions.

A collection of our faculty-developed discipline-specific instructional materials can be accessed through **Canvas Commons** at

<https://lor.instructure.com/resources/3db17c94ce04481f8aec00de86da2f21?shared>

We are sharing this project in the hope that it helps other rural-serving institutions and CTE programs. Adapt freely for your context.

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Mills, Anna. “AI Text Generators: Sources to Stimulate Discussion Among Teachers” and related AI and writing pedagogy resources. WAC Clearinghouse. <https://wac.colostate.edu/repository/collections/ai-text-generators-and-teaching-writing-starting-points-for-inquiry/>.

Tools and Platforms Named in the Guide

PlayLab. <https://www.playlab.ai/>.

Diffit. <https://www.diffit.me/>.

VRpatients. <https://www.vrpatients.com/>.

Autodesk Fusion 360 generative design. <https://www.autodesk.com/products/fusion-360/>.

Additional Key Resources Listed in the Guide

Association for Career and Technical Education (ACTE). AI guidance. <https://www.acteonline.org/>.

California Community Colleges Chancellor’s Office. AI resources. <https://www.cccco.edu/>.

Aspen Institute College Excellence Program. Rural college research. <https://highered.aspeninstitute.org/>.

Rural Community College Alliance. <https://ruralccalliance.org/>.

Academic Senate for California Community Colleges (ASCCC). <https://www.asccc.org/>.

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GLOSSARY

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