



Colorado Cleantech

Building Apprenticeship Kits

With AI

Clean Energy/Climate/Advanced Manufacturing



Apprenticeship Kit Portfolio

- Multi-part packages containing complete guidance and support for designing, developing, and implementing full-scale OJT-driven training.
- Designed for maximum flexibility, kits support any level of implementation from Registered Apprenticeship to single-skill upskilling.
- All kits are built to the same design, with common formats, features, policies, and processes.
- Each kit comes with seven documents:
 - Program Design Work Process
 - Program Management Guide
 - Program Logistics Guide
 - Trainers' Guide
 - OJT Competency Verification Checklists
 - OJT/RTI Unit Snapshots
 - Apprentice & Family Guide



Apprenticeship Kit Portfolio

Design Features

- **Flexibility/Customizability** – Kits provide complete customization guidance. All kits are delivered as unprotected Word documents to facilitate easy configuration.
- **Internal Consistency** – All kits share the same structure, formats, and procedures, making it easier to develop and deliver multiple programs.
- **Modularity** – OJT and RTI units can stand alone to teach specific skill areas, combine to build certificate programs, or work in total for a full training program or Registered Apprenticeship.
- **Completeness** – Designs and resources are significantly more complete and detailed than typical off-the-shelf training for the trades.
- **360° Coverage** – Kits provide guidance, resources, forms, and templates for all stakeholders at all stages of the process.



Apprenticeship Kit Development – AI Considerations

Four Fundamental Questions:

What are we building?

Define the user, purpose, requirements, and architecture.

How should the human and AI work together?

Establish context, divide responsibilities, and work iteratively.

How do we know the result is trustworthy?

Control sources, test consistency, and use human validation.

How do we make the process repeatable?

Capture templates, decisions, standards, and lessons learned.



Apprenticeship Kit Development – AI Considerations

First Things First

- Building with AI is not primarily a prompting exercise. It is a product-development process in which:
 - Human provides purpose, architecture, judgment, and accountability,
 - AI accelerates research, drafting, analysis, comparison, and revision.
- Know your product and audience
- Focus your work where you have experience
- If you're doing work that will repeat, developing a process is at least as important as the product.



Apprenticeship Kit Development – AI Considerations

Building a Process

- Building a product (and a repeatable process) is different from generating a document or an email
- The development process using AI is not as different as you think. Just like working with a development team, you need artifacts:
 - A common product architecture
 - Prompt or instruction library
 - Reusable templates
 - Defined terminology
 - Design conventions
 - A validation method
 - A quality-review process
- Know your role and your AI's role
 - Your AI will learn from you
 - You must learn from your AI
 - AI is better at some things than others



Apprenticeship Kit Development – AI Considerations

Understand How the AI Works

AI is especially good at:

- Organizing large amounts of material
- Finding patterns and gaps
- Generating structured first drafts
- Comparing related components
- Maintaining parallel structures
- Creating alternatives
- Revising language quickly
- Tracing relationships across a complex product

The human remains responsible for:

- Purpose and priorities
- Real-world context
- Judgment about what matters
- Decisions among competing alternatives
- Occupational and organizational authenticity
- Risk, ethics, and consequences
- Final approval



Apprenticeship Kit Development – AI Considerations

AI's greatest strength is also a source of risk

AI works on pattern-recognition and probability. That allows it to infer what usually belongs in a document, identify likely relationships, and create remarkably coherent structures.

But it can also substitute **what normally belongs there** for **what is actually in your source material**.

That produces several characteristic problems:

- Plausible but unsupported content
- Generic language that loses occupational specificity
- False precision
- Version drift
- Contamination from a similar earlier product
- Confident reconciliation of things that should not be reconciled

Errors tend to be plausible; that's what makes it dangerous.



Apprenticeship Kit Development – AI Considerations

The human effort changes; it does not disappear

AI can reduce the time required for blank-page drafting, reorganizing, comparison, and revision. But the work saved there is partly replaced by higher-value work:

- Making design decisions
- Examining alternatives
- Fine-tuning formats and layouts
- Detecting subtle weaknesses
- Maintaining consistency
- Validating against reality
- Improving the usefulness of the finished product

AI frees you up to spend more of your time on consequential thinking and less on mechanical production.



Apprenticeship Kit Development – AI Considerations

Give AI context, not merely instructions

People often look for a magical prompt. But context is usually more important than clever wording.

Effective context includes:

- The purpose of the project
- The intended audience
- Source documents and occupational standards
- Definitions of recurring terms
- Examples of previously accepted work
- Formatting and style conventions
- Decisions already made
- Things that must not be changed

A good prompt tells AI what to do. A good working environment also tells it **what world it is operating in.**



Apprenticeship Kit Development – AI Considerations

Control the source of truth

For a sustained project, there must be a clearly designated canonical version of each component.

Useful disciplines include:

- Naming the authoritative document
- Using explicit version numbers
- Reloading the current document when precision matters
- Directing the AI to refer to source documents, not memory
- Recording important decisions
- Locking approved terminology
- Distinguishing proposed language from accepted language
- Performing periodic whole-product reviews

AI can remember a great deal, but it should not be treated as the permanent system of record. The documents and decision register should hold that role.



Apprenticeship Kit Development – AI Considerations

Build in stages

Decompose large products into manageable units. A sensible sequence is:

1. Define the architecture.
2. Establish standards and conventions.
3. Develop one representative component.
4. Refine it until it sets the pattern.
5. Produce the remaining components in bounded groups.
6. Integrate and cross-check the complete product.
7. Validate it with intended users and subject-matter experts.



Apprenticeship Kit Development – AI Considerations

Iteration is where much of the value appears

The first output is rarely the product. It is material for discussion.

The strongest work often emerges through a sequence such as:

- Generate a first formulation.
- Identify what is generic, missing, overstated, or misplaced.
- Explain the underlying issue.
- Generate alternatives.
- Select or combine them.
- Test the result against related sections.
- Tighten the language only after the substance is right.

This is not evidence that AI “failed” on the first attempt. It is the normal process of design. AI makes iteration inexpensive enough that you can explore possibilities before committing.

Apprenticeship Kit Development – AI Considerations



Quality assurance and validation are different

Quality assurance asks:

- Is the material complete?
- Is it internally consistent?
- Does it follow the specified structure?
- Do the objectives, instruction, and evaluation align?
- Are terms used consistently?
- Are there gaps or duplications?

AI can contribute substantially to all of those.

Validation asks:

- Is this how the work is really performed?
- Is the sequence realistic?
- Is the expected proficiency appropriate?
- Would successful completion demonstrate occupational competence?
- Could the material create a safety or performance problem?

Those questions require practitioners, employers, instructors, and intended users. AI can help prepare for validation, but it cannot confer occupational legitimacy on its own.

AI-assisted does not mean AI-approved.



Apprenticeship Kit Development – AI Considerations

Three things to remember

1. **AI magnifies the quality of the process surrounding it.** Weak specifications produce polished but weak material.
2. **You must retain judgment and accountability.** AI can research, propose, analyze, and critique; it cannot determine whether a training product is professionally legitimate.
3. **The lasting value is not the first output—it is the repeatable production system.**

Apprenticeship Kit Development – AI Considerations



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