

Cognitive Skills Training

**Practical ways to develop
worker thinking on the job.**

A practical set of coaching tools
for making thinking visible,
strengthening judgment, and
developing adaptability
during everyday work.



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**COGNITIVE SKILLS TRAINING:
PRACTICAL WAYS TO DEVELOP
WORKER THINKING ON THE JOB**

What is cognitive skills training?

Traditional training often focuses on what workers need to do by teaching procedures, standards, and safe work practices. Cognitive skills training goes one step further by helping workers understand how to think about the job. It develops skills such as recognizing what cues are important, interpreting changing conditions, anticipating problems, making sound decisions, and adapting when situations don't unfold exactly as expected.

The good news is that cognitive skills training doesn't require expensive simulations or lengthy classroom sessions. Many supervisors already use elements of it during everyday work. The opportunity is to make those coaching conversations more intentional.

FOUR PRACTICAL COACHING TOOLS:

These field guides introduce four techniques supervisors can use to strengthen worker thinking during everyday interactions.

1.0 Using storytelling
to build competence

Share meaningful experiences that reveal what happened, how you recognized the situation, made decisions, and what you learned. Stories help workers develop judgment.

2.0 Eliciting stories to
develop worker thinking

Encourage workers to share their own experiences and explore the thinking behind them. Story discussions surface lessons and make reasoning visible.

3.0 Surfacing the shadows

Use questions, think-alouds, diagnostic questions, and realistic hypotheticals to uncover what workers know, how they are reasoning, and whether their understanding transfers when conditions change.

4.0 Providing
effective feedback

Go beyond right/wrong; help workers understand why outcomes occurred, evaluate their own performance, and prepare to apply lessons in new situations.

These techniques are not intended to replace existing training or supervision. They are practical ways to make everyday interactions more effective by helping workers build the understanding, judgment, and adaptability needed to perform safely in complex and changing work environments.

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1.0 USING STORYTELLING TO BUILD COMPETENCE

Purpose

Put procedures into practice.

Stories provide the context, judgment, and boundary conditions that procedures alone often cannot capture.

Learn from experiences they have not yet had.

A well-told story exposes workers to insights and lessons learned without waiting for them to experience those events firsthand.

Understand how experienced workers think.

Stories reveal what experts noticed, what assumptions they changed, and how they adapted to changing conditions.

How to tell better stories

Think about a time you were challenged and learned something new. Include these five key elements when you share it with others.

01 The situation

Set the stage with time and place markers. This helps the audience visualize the situation and understand the conditions in which the events unfolded.

02 The challenge

Describe what made this difficult or unusual. This helps others grasp why the problem mattered and gets them thinking about how they would respond.

03 What you noticed

Include important cues, warning signs, and changes that caught your attention. This allows the audience to see the world through your eyes and build a mental picture of the environment.

04 What you thought

Explain how you interpreted the situation, the assumptions you made, the options you weighed, and how you decided. This makes your thinking visible and helps others see why you acted as you did.

05 The lesson

Highlight the key takeaways. Explain what you learned from the experience and how it can be applied to relevant situations for your audience.

Avoid these pitfalls

- Only describe what happened without explaining your thinking.
- Are too long and/or include unnecessary details.
- Fail to connect back to the current task or lesson you want workers to remember.
- End without a takeaway that workers can apply in the future.

When to use it

Preparing for work

- Explain why procedures matter using stories.
- Include what to watch for and common pitfalls.

During work

- Help workers understand how experts recognize problems and make decisions.
- Use stories to reinforce good judgment.

After work

- After a task or near miss, discuss what happened and the major lessons learned.
- Explore how lessons can be applied next time.

In practice

I remember one time when I saw embers coming up through the floor of a reformer. We had responded to a pressure trip, and once the emergency response was over, we started isolating the problem so we could get the unit back online.

We thought it was just a routine equipment trip, but we didn't realize an earlier wiring error on a critical valve had created a much more dangerous situation.

As soon as I entered the reformer, I knew something wasn't right. The heat was far more intense than I expected, and then I saw the embers coming through the floor. Up until that point, we had been focused on getting the unit running again, but those warning signs completely changed how I saw the situation.

I called off the work, and we got everyone out of the heater immediately. That experience taught me not to let the pressure to restart operations keep you from stepping back and reassessing the problem. When something doesn't match your expectations, stop, reassess, and figure out what's really going on before moving forward.

2.0 ELICITING STORIES TO DEVELOP WORKER THINKING

Purpose:

Experienced workers carry years of knowledge that often goes unshared. Stories help share experience, surface how workers think, and help the entire team learn from one another's experiences. Story sharing depends on trust and psychological safety, where workers feel comfortable discussing both successes and mistakes without fear of blame.

How to elicit more stories

01 Choose a story theme

Choose a theme that is relevant to your team or the work (safety, troubleshooting, equipment failures, unexpected situations) then build a broad story prompt, such as:

"Can you recall a time when you were surprised on shift?"

02 Explore the story

As they tell their story, use follow-up questions to explore the cues they noticed, their priorities, the tradeoffs they faced, and the lessons they learned.

Questions to Ask	What It Surfaces
When did you first realize something wasn't right?	Cue recognition, situational awareness
What made this seem unusual?	Expectations, mental models
What were you thinking before you took that action?	Initial assumptions
What changed your mind?	Adapting to new information
Did you consider doing anything differently? Why or why not?	Decision making, tradeoffs
What would have happened if you hadn't taken that action?	Risk perception, consequence awareness
How has that experience changed the way you approach similar situations today?	Learning and transfer

03 Expand the learning

Facilitate a discussion around the story. Invite others to reflect, connect, and expand on what was learned.

Question	Purpose / Activity
What is significant about this story?	Draw meaning from the experience as a group
Have you seen anything like this?	Share similar incidents and connect lessons to the team
Is there something here we can do?	Identify ways to apply the lesson
Anyone want to run with this?	Assign someone to follow through

Avoid these pitfalls

- Asking questions that can be answered with "yes" or "no"
- Correcting or judging the storyteller
- Letting discussions drift away from the intended topic
- Ending the conversation without discussing what can be learned or applied

When to use it

- Start or end regular standups (e.G., Toolbox talks) with a brief story from the previous shift
- Invite a different team member to share a recent experience each week
- Explore creative methods, like newsletters or message boards, to collect and share lessons learned
- Incorporate story sharing into mentoring/coaching conversations

3.0 SURFACING THE SHADOWS

Purpose:

Successfully completing a task does not always reveal whether a worker truly understands the work. Good questions uncover hidden assumptions, misconceptions, decision strategies, and gaps in understanding.

How to surface the shadows

01 What are they thinking? (Think-alouds)

Encourage workers to verbalize their thoughts as they perform tasks in training. Hearing their thoughts provides insight into how they interpret and understand the work. If they struggle, prompt them with questions such as "walk me through your thinking," "what are you looking for?," Or "why did you take that action?"

Think-aloud examples

"I predict that..."

"I'm looking for..."

"A question I have is..."

"This reminds me of..."

"I'm confused about..."

"I'm expecting..."

02 Why do they think that? (Diagnostic Questions)

Get inside their head. Be curious and ask questions that uncover the reasoning behind their actions. Their responses may reveal a misunderstanding, an incorrect assumption, or a gap in experience; but they may also uncover problems with procedures, equipment, or organizational practices.

Common worker statements	Questions to deepen the conversation
I knew something was off	What made you realize that? What first caught your attention?
It wasn't what I expected	What were you expecting? Why?
Normally, I would do...	What if that wasn't an option? What would you do instead?
I wasn't sure what was happening	What information did you need? What would it tell you?
I decided to...	What other options did you consider? Why did you choose that one?
I was concerned about	Why was it concerning to you? Were there other risks you balanced?
I just followed the procedure	Why do you think the procedure calls for that step? When might you need to do something different?

Listen for clues about their expectations, assumptions, priorities, and decision-making strategies.

03 What happens if...? (Hypotheticals)

A hallmark of expertise is adaptability. Introduce a small, realistic change to the situation by asking "What if...?" For example, "What if the pressure increased?", "What if the alarm never turned on?", or "What if production wanted you to continue?" Changing one condition reveals whether workers understand the underlying principles of the task and their surroundings or are relying on a single solution that may not fit the new situation.

Reveal

What do they know?

Reveal their understanding

Explore

Why do they think that?

Explore their reasoning

Test

What happened if...?

Does it transfer to new situations

Avoid these pitfalls

- **Reveal:** don't turn think-alouds into a quiz
- **Explore:** resist the urge to correct or explain too soon. Stay curious until you understand their reasoning
- **Test:** keep hypotheticals realistic and relevant; explore if and how they adapt when conditions change

When to use it

- During walkthroughs to explore what workers notice, expect, and prioritize
- While observing work to understand the reasoning behind their actions and decisions
- During story discussions to surface the cues and assumptions behind a worker's experience
- After unusual events or near misses to understand what shaped decisions and identify opportunities for learning

4.0 PROVIDING EFFECTIVE FEEDBACK

Purpose:

Feedback is more than correcting mistakes; it's an opportunity to shape how workers understand the job. Effective feedback is timely and helps workers recognize what matters, refine their understanding, and become more adaptable.

How to provide effective feedback

01 Focus on the process, not the outcome.

Whether the outcome was good or bad, focus feedback on how the worker understood the situation. Less experienced workers often make the right decision for the wrong reasons, or the wrong decision despite noticing the right cues. Effective feedback highlights the cues, relationships, and tradeoffs that shape the outcome. When workers understand why an outcome occurred, they can recognize similar situations and respond effectively next time.

02 Strengthen their understanding.

Feedback should do more than just correct a worker's actions, it should help them understand why something happened. Help the workers see the cause-and-effect relationships behind the job, such as why certain cues matter, why a decision worked or didn't, and how changing conditions impact the outcome. When workers understand these relationships, they are better able to recognize similar situations and adapt as conditions change.

03 Promote reflection and active learning.

The best feedback helps workers become their own coach. Use questions to help workers evaluate their own performance (both process and outcome) and identify opportunities to improve. Ask them what they noticed, what influenced their decisions, what surprised them, and what they learned. Over time, this can help workers become more curious about their own performance and less dependent on external feedback, which is essential because you won't always be present to provide the right answers.

04 Prepare workers for the next situation.

Start with the situation in front of you. Discuss the specific conditions, cues, and decisions that shaped the outcome, so the worker understands why events unfolded the way they did. Then ask, "what if something changed?" Exploring how different conditions might change the situation helps workers carry today's lessons into tomorrow's challenges. In this way feedback develops adaptability as it goes beyond teaching rules; it helps workers understand the relationships that generalize and transfer across situations.

Examples

A worker correctly shuts down a pump after noticing an unusual vibration.

Supervisor: “You made the right decision to shut the pump down. What first caught your attention?”

>>Worker: “The vibrations seemed stronger than normal.”

Supervisor: “Exactly, the vibrations were a signal that something inside the pump had changed. This is an early warning sign, which is good to investigate before it fails. Is there anything else you could have checked?”

>>Worker: “I probably could have looked at the temperature trend sooner.”

Supervisor: “That’s a good takeaway. Imagine if the vibration stayed the same, but the temperature started climbing. Would that change how you approached the situation?”

Avoid these pitfalls

- Focusing only on the outcome
- Correcting actions without improving their understanding
- Doing all the talking
- Treating every situation the same

When to use it

- While observing routine tasks following both good decisions and mistakes
- During walkthroughs and training conversations
- After unusual events, near misses, incidents, and during debriefs



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