



The Complete Guide to

JOB BREAKDOWN SHEETS

History · Purpose · Design · Delivery · Maintenance

The Foundation of Effective Training in Manufacturing, Healthcare,
and Every Industry Where Consistent Work Matters

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Why Job Breakdown Sheets Are the Backbone of Skilled Training

Consider what happens when an experienced worker retires without any formal knowledge transfer. The organization loses not just a person, but an accumulated library of technique — the precise angle of a weld that produces penetration without burn-through, the feel of a torque that tells you a fitting is seated without stripping it, the visual cue that separates a properly mixed adhesive from one that will fail in the field. None of this knowledge was ever written down. It lived in hands and eyes and memory, and now it is gone.

This knowledge transfer problem is one of the most persistent and costly in all of industry. A 2022 study by Deloitte and the Manufacturing Institute projected that over 2.1 million U.S. manufacturing jobs could go unfilled by 2030, with the skills gap as a primary driver. Organizations routinely underestimate the complexity of the practical knowledge their experienced workers carry — and vastly underestimate the time and structure required to transfer it.

The Job Breakdown Sheet (JBS) — also called a Job Instruction Breakdown Sheet, Training Breakdown Sheet, or simply a Breakdown Sheet — is the primary tool for solving this problem. A Job Breakdown Sheet is a structured training document that breaks a defined work task into its major steps, identifies the key points within each step that are most critical to quality, safety, and technique, and explains the reason behind each key point. When constructed well and used with the systematic Job Instruction training method, a Job Breakdown Sheet is the most reliable mechanism available for transferring practical, tacit work knowledge from one person to another.

The Job Breakdown Sheet is deceptively simple in structure. It has three columns. It fits on one or two pages. A new practitioner can learn its format in an hour. Yet this simplicity is the product of enormous sophistication — decades of iterative refinement by industrial psychologists, training specialists, and front-line practitioners across every major industry. The three-column structure is not arbitrary; it encodes a specific theory of how adults learn manual skills most effectively and how knowledge can be organized to survive the transition from expert practitioner to written document to novice learner.

This guide is comprehensive by design. It covers the full intellectual history of the Job Breakdown Sheet, explains exactly what each element is intended to accomplish, provides detailed guidance on how to construct a JBS that actually works, explains how to use it within the Job Instruction training method, and describes how to maintain a library of JBS documents as a living organizational asset. Whether you are implementing a training system from scratch, improving an existing one, or simply trying to understand why a particular training approach works the way it does, this guide provides both the theory and the practice.

📄 A Note on Terminology: "Job Breakdown Sheet," "Job Instruction Sheet," "Training Breakdown Sheet," and "Job Breakdown" are all terms in common use for substantially the same document. This guide uses "Job Breakdown Sheet" (JBS) as the primary term, consistent with the Training Within Industry (TWI) tradition from which the tool originates. Where other terms are in common use in specific industries or contexts, they are noted.

Section 1: The History of Job Breakdown Sheets

The Job Breakdown Sheet did not emerge from academic theory. It was forged in wartime necessity, refined through industrial practice, and validated across six decades of application in every major industry and every developed economy. Its history is a story of practical problem-solving under pressure — and of a deceptively simple idea that turned out to be profoundly, durably right.

The Pre-History: Apprenticeship and Its Limitations

For most of human history, skilled work was transmitted through apprenticeship. A young person was bound to an experienced practitioner, worked alongside them for years, observed their technique, imitated it, received correction, and gradually developed competence. The process worked — slowly. A traditional guild apprenticeship lasted seven years. The knowledge it transmitted was genuine, deep, and durable.

The industrial revolution disrupted this system. Work moved from craft shops into factories. The scale of production required workers to be trained not over years, but over weeks or months. The master craftsman model was simply incompatible with the pace and volume of industrial employment. Various systems of "foremanship" emerged, in which experienced workers were designated as informal trainers for newer ones. The results were inconsistent at best. The informal trainer might be technically skilled but completely without training ability. They might teach their personal idiosyncrasies as if they were universal best practice. They might lack the patience or the time to train well while also meeting their own production requirements.

Frederick Winslow Taylor's scientific management movement (1880s–1910s) attempted to address this through work study and standardization — identifying the "one best method" for each task and writing it down. But Taylor's documentation was primarily aimed at engineers and managers, not at training workers. The instructions were often too abstract or too voluminous to function as practical training tools. They described what to do without adequately conveying how to do it or why the how mattered.

Charles Allen and the Four-Step Training Method (1919)

The intellectual ancestor of the Job Breakdown Sheet is Charles R. Allen's 1919 book *The Foreman and His Job*, which described a four-step method for teaching workers in the shipbuilding industry during World War I. Allen, working with the Emergency Fleet Corporation to rapidly train thousands of shipyard workers, identified four phases of effective skill training: Preparation, Presentation, Application, and Testing.

Allen's contribution was not merely the four steps, but the insight underlying them: effective skill training requires a deliberate, structured sequence in which the trainer first demonstrates while explaining, then watches the learner practice while explaining back. Allen recognized that passive observation — watching someone do something — was insufficient for skill acquisition, and that having the learner articulate what they were doing while doing it dramatically accelerated learning and revealed misunderstandings that silent observation would have hidden.

Allen also introduced the concept of breaking complex jobs into teachable components — "job parts" — that could be taught in sequence and combined into a complete skill. This decomposition of complex work into teachable units is the direct conceptual ancestor of the "steps" column in a modern Job Breakdown Sheet.

Training Within Industry: The Wartime Crucible (1940–1945)

The decisive moment in the history of the Job Breakdown Sheet came with the United States' entry into World War II. The challenge facing American industry in 1941 was almost incomprehensible in scale. Factories that had never produced military equipment were being converted overnight to produce tanks, aircraft, and munitions. The existing skilled workforce was being rapidly depleted by military conscription. Millions of replacement workers — women, recent immigrants, workers from entirely different industries — needed to be trained rapidly to produce precision military equipment to exacting quality standards. Lives depended on the quality of that production.

The War Manpower Commission established the Training Within Industry (TWI) Service in 1940 to address this crisis. TWI's mandate was to develop training methods that could be used by any foreman, in any industry, to train any worker to perform any defined task to an acceptable quality standard — quickly. The TWI team, led by Channing Dooley and drawing on Allen's earlier work, developed three interconnected programs: Job Instruction (how to train workers), Job Methods (how to improve work methods), and Job Relations (how to manage people effectively). A fourth program, Job Safety, was added later.

Job Instruction (JI) — the module directly relevant to Job Breakdown Sheets — was built around a four-step training sequence that refined and systematized Allen's earlier framework: Prepare the Worker, Present the Operation, Try Out Performance, Follow Up. But the critical innovation that made Job Instruction work was not the four-step sequence itself. It was the preparatory tool that trainers were required to complete before they could train: the Job Breakdown Sheet.

TWI's Job Breakdown Sheet required the trainer to analyze the job before training, not during it. The trainer had to identify every major step in the sequence of work, determine for each step the key points that made the difference between acceptable and unacceptable performance, and then — most critically — articulate the reason why each key point mattered. This preparation requirement served multiple functions simultaneously: it forced the trainer to think carefully about what they actually knew and how it was organized, it surfaced tacit knowledge

that had never been made explicit, and it produced a structured document that could be used consistently across multiple training sessions by multiple trainers.

The Three-Column Structure: Why Steps, Key Points, and Reasons

The specific three-column structure of the TWI Job Breakdown Sheet — Steps, Key Points, Reasons — was not arbitrary. It reflected the TWI team's careful analysis of why industrial training so frequently failed to produce competent workers.

The most common failure mode was what the TWI team called "telling without teaching" — giving workers a list of instructions without conveying the knowledge required to execute those instructions correctly. A trainer who said "apply the adhesive evenly to the surface" was providing a step but not a key point. How evenly? What does "evenly" look like? How is it achieved with this particular adhesive and this particular applicator tool? The key point makes the step actionable in the real world.

The reason column addressed a second failure mode: workers who understood what to do but not why, and therefore could not adapt when conditions changed. A worker who knew that the adhesive must be applied within 60 seconds of mixing, but did not know that this was because the adhesive began to polymerize after 60 seconds and would not bond properly, could not make an intelligent judgment when a batch was mixed 45 seconds ago and an interruption occurred. With the reason, the worker understood the underlying principle. Without it, they were following a rule they did not understand — and rules without understanding fail at the boundaries.

The three-column structure thus encoded a specific theory of practical knowledge: complete skill requires knowing what to do (the step), how to do it correctly (the key point), and why the how matters (the reason). A training document that captured all three levels was a training document that actually transferred skill, not merely instruction.

TWI's Impact: The American Home Front

The results of the TWI program during World War II were dramatic by any measure. Between 1940 and 1945, TWI trained over 1.6 million supervisors in more than 16,500 plants across the United States. Industries that implemented Job Instruction consistently reported significant reductions in training time (35–70% reductions were commonly documented), reductions in scrap and rework, reductions in accidents, and reductions in grievances. The Ordnance Department of the U.S. Army reported that plants using TWI methods were producing more complex ordnance to tighter tolerances with less experienced workers than would have been thought possible before the program.

The performance of American industrial production during World War II — often described as the "Arsenal of Democracy" — was one of the decisive factors in Allied victory. TWI's contribution to that performance, while rarely acknowledged in popular histories, was substantial. The Job Breakdown Sheet, as the foundational preparatory tool of Job Instruction, was at the center of it.

TWI Goes to Japan: The Postwar Transformation (1945–1960s)

The most consequential chapter in the history of the Job Breakdown Sheet is one that most Western practitioners are unaware of: the systematic introduction of TWI methodology to postwar Japan.

As part of the American occupation's industrial reconstruction program, TWI was introduced to Japanese industry beginning in 1950. The Japanese Ministry of Labor and the Civil Communications Section of the occupation authority arranged for TWI trainers to teach the complete program — Job Instruction, Job Methods, and Job Relations — to Japanese industrial supervisors. The reception was immediate and enthusiastic. Japanese industrial leaders, grappling with the challenge of rebuilding an industrial economy from near-total devastation, recognized in TWI a systematic approach to training and work improvement that addressed their most pressing practical problems.

Toyota, in particular, adopted Job Instruction and the Job Breakdown Sheet as foundational elements of what would become the Toyota Production System. Taiichi Ohno's famous insistence that "without a standard, there can be no Kaizen" is directly compatible with the JBS principle that the current best method must be documented before it can be improved. Toyota's concept of "Standard Work" — the documented best current method for any operation — incorporates the JBS framework at its core: every Toyota work instruction describes steps, identifies key points within each step, and specifies the reason for each key point.

Japan's adoption of TWI contributed to the industrial quality revolution that made Japanese manufacturing a global benchmark by the 1970s and 1980s. The quality and training methods that Western business learned from Japan in the 1980s under the "Lean" label were, in substantial part, the American TWI methods of the 1940s, refined and perfected through decades of rigorous Japanese application. The Job Breakdown Sheet had made a forty-year round trip.

The Rediscovery of TWI in the West (1990s–Present)

As Lean manufacturing spread through Western industry in the 1990s, practitioners began to trace its roots back through the Toyota Production System to its sources. The rediscovery of TWI by Western Lean practitioners — documented in detail in Patrick Graupp and Robert Wrona's 2006 book *The TWI Workbook* — revealed that many of the "Japanese" training

methods that Western companies were trying to emulate had originated in the United States sixty years earlier.

This rediscovery triggered a significant revival of TWI practice in Western industry. The TWI Institute was established to train Job Instruction trainers, and TWI programs spread from manufacturing into healthcare, construction, food service, financial services, and other industries. The Job Breakdown Sheet — unchanged in its essential three-column structure from its 1940s formulation — proved as applicable to healthcare clinical training as it was to welding instruction, as useful for training food service workers as for training aerospace machinists.

Today, the Job Breakdown Sheet is recognized as one of the most durable and transferable tools in the knowledge transfer toolkit. Its application has expanded well beyond the factory floor. Hospitals use Job Breakdown Sheets to standardize clinical procedures. Construction companies use them to train tradespersons. Software companies use them to document complex technical procedures. Wherever work is complex enough to require skill, variable enough to cause errors, and important enough to require consistency, the Job Breakdown Sheet is the appropriate tool for capturing and transferring that knowledge.

Era	Development	Significance to JBS
Pre-1900	Guild apprenticeship as the primary skill transfer model	Seven-year informal transmission; no documentation; knowledge lost when masters died
1880s–1910s	Taylor's Scientific Management; time-and-motion study	First systematic analysis of work; documented steps, but lacked key points and reasons; missed tacit knowledge
1917–1919	Charles Allen's four-step shipyard training method	First structured decomposition of jobs into teachable components; ancestor of JBS step structure
1940–1945	TWI Service — Job Instruction program with Job Breakdown Sheet	Definitive formulation of three-column JBS: Steps, Key Points, Reasons; validated across 16,500 U.S. plants
1945–1960s	TWI introduced to postwar Japan; adopted by Toyota and Japanese Ministry of Labor	Toyota Production System builds Standard Work and Job Instruction on JBS foundation; JBS refined through intense application
1970s–1980s	Japanese manufacturing quality revolution; Lean concepts reach the West	JBS-based training contributes to Japanese quality supremacy; Western practitioners begin studying Japanese training methods
1990s–2006	TWI rediscovered by Western Lean practitioners; TWI Workbook published	JBS recognized as origin of many Lean training practices; revival of formal TWI programs in Western industry
2006–present	TWI Institute established; JBS spreads across industries worldwide	JBS applied in healthcare, construction, services, technology; validated as universal skill transfer tool

Section 2: The Purpose of Job Breakdown Sheets

The Job Breakdown Sheet serves several distinct and interrelated purposes. Understanding each of them separately is important, because practitioners who understand only one or two tend to use the JBS in limited ways that capture only a fraction of its potential value.

Purpose 1: Forcing the Analysis of Tacit Knowledge

The most profound function of the Job Breakdown Sheet — and the one most frequently underestimated — is not what it produces but what it requires. Creating a JBS requires the author to make tacit knowledge explicit.

Tacit knowledge is the knowledge that experts have but cannot easily articulate. An experienced welder knows what a good weld sounds and looks like. An experienced machinist knows when a cut is going well by the feel of the vibration through the tool. A skilled nurse knows when a patient's color is subtly wrong in a way that a vital signs monitor will not yet catch. None of these practitioners may have ever articulated that knowledge in words, because they have never been required to. The knowledge is there, but it is pre-verbal — embedded in perception and muscle memory rather than in language.

Completing the key points and reasons columns of a JBS requires the practitioner to do something difficult: to reflect on their own practice deeply enough to identify what they are actually doing and why, and to express it in words clear enough for a novice to understand. This process — sometimes called "knowledge elicitation" in cognitive science — is cognitively demanding. It often requires the practitioner to perform the task slowly and deliberately while narrating their own actions, to notice things they normally do automatically without awareness, and to discover that what they thought was a simple task actually contains subtle complexities they had never consciously examined.

The discipline of writing a JBS is, for many experienced practitioners, a process of self-discovery. They learn things about their own practice that they did not know they knew. That extracted knowledge, once made explicit in the JBS document, becomes available to the organization — permanently, and independent of whether that individual remains employed there.

Purpose 2: Structuring the Training Delivery

The Job Breakdown Sheet is a training delivery script. It tells the trainer exactly what to say and what to demonstrate at each point in the training sequence, in the correct order, at the appropriate level of detail. Without a JBS, trainers must improvise — and improvised training is inconsistent training. Different trainers emphasize different things. Critical key points are omitted

in some sessions and over-emphasized in others. The sequence of presentation varies, creating confusion in the learner. Steps are combined in ways that obscure the underlying structure of the task.

The JBS ensures that every training session for a given task is structurally identical: the same steps, presented in the same sequence, with the same key points, and the same reasons. This consistency is essential for quality in training. If fifty operators need to be trained on the same operation, the fiftieth operator trained should receive instruction of equal quality to the first — regardless of which trainer delivers the session, on which shift, on which day of the week.

Purpose 3: Supporting the Learner During and After Training

During training, the JBS functions as the learner's reference document. When a trainer using the Job Instruction method asks the learner to try out the operation while narrating the steps and key points, the learner can refer to the JBS if memory fails. This is not cheating — it is scaffolding. The JBS reduces the cognitive load on the learner during the early stages of skill acquisition, allowing them to focus mental resources on the physical execution of the task rather than on the effort of memorization.

After training, the JBS serves as a reference for the learner during the early period of independent work performance. When a recently trained worker encounters a moment of uncertainty — "Was I supposed to do this before or after that?" or "What was the key point for this step?" — they can consult the posted JBS rather than interrupting a supervisor or, worse, guessing. This reference function reduces errors during the critical transition from supervised training to independent performance.

Purpose 4: Establishing the Quality and Safety Baseline

A Job Breakdown Sheet is, among other things, a quality document. The key points are the specific actions, characteristics, and conditions that determine whether the work output meets quality requirements. When a key point is identified — "torque to 18–22 ft-lbs, not less, not more" — it is because deviation from that key point produces a quality failure. The key points are not arbitrary requirements; they are the distilled result of quality analysis: what must be true of the work method in order for the output to meet specifications?

This quality baseline function makes the JBS valuable beyond its training role. The key points define the criteria for quality inspection of the process itself: supervisors performing process audits can verify that operators are performing the defined key points. If a quality escape occurs, the JBS provides the baseline against which to determine whether the failure resulted from a training deficiency (the operator was not taught the correct key point), an adherence failure (the operator knew the key point but did not follow it), or a standard deficiency (the key point itself was incorrect or incomplete).

Similarly, safety-critical actions appear as key points with reasons that explicitly state the safety consequence of deviation. "Lock out and tag out before opening the guard" is a key point; "failure to lock out risks contact with rotating machinery during the maintenance cycle" is its reason. The JBS makes safety requirements inseparable from the work method — not an overlay of safety rules, but an integrated part of how the skilled practitioner performs the task.

Purpose 5: Preserving Institutional Knowledge

Every Job Breakdown Sheet is an act of institutional memory creation. The knowledge it captures — the steps, the key points, the reasons — is knowledge that, without the JBS, exists only in the minds of the practitioners who currently hold it. When those practitioners retire, transfer, or leave, the knowledge leaves with them. With the JBS, the knowledge persists. It can be retrieved, updated, and taught again.

This preservation function becomes critically important in industries with aging workforces, high turnover, or long training cycles. A manufacturer that employs skilled machinists with 20 years of experience who will retire in the next five years faces a succession crisis. If the knowledge those machinists carry can be captured in well-constructed Job Breakdown Sheets, the crisis can be managed. The knowledge does not disappear with the individual — it becomes organizational property.

Purpose 6: Enabling Continuous Improvement

A Job Breakdown Sheet is a baseline, not a permanent record. When a process is improved — when a better technique is discovered, a common error source is eliminated, or a new material requires a modified approach — the JBS must be updated to reflect the improvement. This update cycle makes the JBS the living record of the current best practice.

More fundamentally, the existence of a JBS enables continuous improvement in a way that undocumented practice does not. If there is no defined standard, every improvement proposal is debated in the abstract: "I think doing it this way is better." When there is a JBS, the current method is defined concretely, and proposed improvements can be evaluated against that defined baseline. "The current key point requires X. Here is evidence that Y produces better quality with less effort. Here is a proposed update to the JBS." This is how improvement becomes systematic rather than anecdotal.

Purpose	Primary Beneficiary	Without a JBS, This Gap Looks Like...
Forcing tacit knowledge to be explicit	Organization (knowledge retention)	Knowledge that retires with experienced workers; inability to replicate expert performance

Purpose	Primary Beneficiary	Without a JBS, This Gap Looks Like...
Structuring training delivery	Trainers and learners	Inconsistent training quality; critical points omitted; training quality depends on trainer's individual skill
Supporting learner during/after training	New operators	Higher error rates during early independent performance; excessive supervisor interruptions
Establishing quality and safety baseline	Quality, Safety, Operations	Quality failures with unclear root cause; safety incidents from method inconsistency
Preserving institutional knowledge	Organization (long-term)	Productivity decline after retirements or turnover; repeated rework of knowledge that was once known
Enabling continuous improvement	CI Teams, Operations	Improvements that are not sustained; inability to determine whether changes actually help

Section 3: The Anatomy of a Job Breakdown Sheet

Before discussing how to create a JBS, it is essential to understand exactly what each element is, what it is not, and why it is designed the way it is. Errors in JBS construction almost always stem from misunderstanding the definition of one or more of the three core elements. Practitioners who understand the definitions deeply produce JBS documents that actually work; those who do not produce documents that fail in predictable ways.

🔗 The Fundamental Structure: Every Job Breakdown Sheet is organized into three columns — Steps, Key Points, and Reasons for Key Points. These three columns are not interchangeable, and the discipline of keeping them distinct is what makes the JBS work. Conflating them — putting key points in the steps column, or omitting reasons — produces a document that looks like a JBS but functions like an ordinary procedure sheet.

The Header Block

Before the three columns, every JBS includes a header block that provides the administrative context required to identify and manage the document. A complete JBS header includes:

- **Job/Operation Name:** The specific, unambiguous name of the task or operation being trained. "Assemble" is too vague; "Final Assembly — Door Panel Installation, Station 7" is correct.
- **Department / Work Area:** Where the operation is performed. Relevant for physical context and for management routing.
- **Parts / Materials:** The specific parts, materials, tools, and equipment required to perform the operation. This information ensures that training sessions are set up correctly.
- **Safety Equipment Required:** Personal protective equipment and safety precautions specific to this operation. Listed explicitly so they cannot be overlooked during training setup.
- **Quality Standard / Specification Reference:** Any relevant specification numbers, drawing numbers, or quality standards that govern this operation. Provides traceability to the quality system.
- **Trainer Name and Date Created:** Who created the JBS and when. Essential for managing updates and version control.
- **Revision History:** A log of changes made to the JBS, with dates and the nature of each change. Enables users to understand how the document has evolved and why.

Column 1: Steps

A step is a logical segment of the operation — a discrete action that moves the work forward in a meaningful way. Steps answer the question: "What do I do?"

The defining characteristic of a step is that if it were left out, or performed in the wrong sequence, the task would either not be completed or would be completed incorrectly. Steps are the major segments of the work; they are not the micro-details of how each segment is executed. Those details belong in the key points column.

The number of steps in a JBS should reflect the natural structure of the task, not an arbitrary decomposition. Most well-structured JBS documents have between four and twelve steps for a single-operator task with a cycle time of under thirty minutes. Fewer than four steps may indicate that the task has been insufficiently analyzed; more than twelve may indicate that the scope is too broad (the task should be broken into multiple JBS documents) or that micro-details have been incorrectly placed in the steps column.

Common errors in the steps column:

- Combining multiple distinct actions into a single step, making the step too complex to teach or remember
- Including key point information in the step description ("Apply adhesive evenly to the full surface" — "evenly to the full surface" is a key point, not part of the step name)
- Using vague verbs that do not clearly describe the action ("Handle the part" versus "Pick up the assembly and position it in the fixture")
- Including safety instructions as steps (safety requirements belong in the key points column, flagged with the appropriate safety notation)

Column 2: Key Points

A key point is anything about a step that could make or break the job, injure the worker, or make the work easier to do. This definition — drawn directly from the TWI Job Instruction manual — is precise and important.

"Make or break the job" means: if this point is not followed correctly, the output will not meet quality requirements. "Injure the worker" means: if this point is not followed correctly, the performer is at risk of injury. "Make the work easier to do" means: this point represents the technique that experienced practitioners use to achieve the step with less effort, greater speed, or greater reliability than novices would discover on their own.

The last category — "makes the work easier to do" — is the most frequently overlooked and arguably the most valuable. This is where the genuine craft knowledge lives. The tip that a master machinist has internalized over twenty years that allows them to hold a tolerance that

novices consistently miss. The body positioning that allows a nurse to perform a particular procedure without back strain. The sequence within a step that prevents a common assembly error. These are not quality requirements in the formal sense; they are practical wisdom. The JBS is the mechanism by which practical wisdom is made transmissible.

Key points have specific characteristics that distinguish them from steps:

- They are specific and actionable. "Carefully" is not a key point. "Maintain a 15-degree angle to the work surface throughout the stroke" is a key point.
- They describe the critical aspect of the step, not the entire step. One step may have multiple key points; the key points collectively describe all the ways in which the step can go wrong or be done sub-optimally.
- They are observable. An observer watching the operation should be able to determine whether each key point is being followed.
- They can be categorized: quality-critical key points (affect output conformance), safety-critical key points (affect worker safety), and technique key points (affect ease and reliability of execution).

Common errors in the key points column:

- Restating the step rather than identifying the critical aspect of the step ("Apply the adhesive" is a step, not a key point for the step "Apply adhesive")
- Writing key points too vaguely to be actionable ("Do it correctly," "Be careful," "Make sure it is right")
- Omitting key points because they seem obvious to the experienced practitioner — what is obvious to an expert is frequently invisible to a novice
- Including too many key points, burying the critical ones in a list of marginal details — a key point list of fifteen items for a single step is almost certainly miscategorized

Column 3: Reasons for Key Points

The reasons column is where most JBS documents — including many created by otherwise competent practitioners — fail most severely. It is the most demanding column to complete, because it requires the author not only to know the key point but to understand why the key point matters at the level of underlying principle.

The reason for a key point answers the question: "What happens if I do not follow this key point?" or equivalently, "Why is this the correct way to perform this step?" The reason must be specific enough to convey understanding, not merely restate the key point in different words.

Weak reasons (almost always unacceptable):

- "Because it is the correct way to do it" — tautological; conveys no understanding
- "To ensure quality" — too vague to convey what quality consequence follows from deviation
- "Required by specification" — authoritative but provides no understanding; a worker who knows the specification number but not why the requirement exists cannot adapt intelligently

Strong reasons (the target):

- "If the torque is below 18 ft-lbs, the joint will not achieve the required clamping force and may loosen under vibration load, causing field failure"
- "If the adhesive is not applied within 60 seconds of mixing, the polymerization process will have begun and the adhesive will not achieve full bond strength, causing delamination in service"
- "Positioning your elbow at this angle distributes the force across the shoulder rather than the wrist, preventing cumulative strain injury over a full shift"


The reason transforms the key point from a rule into knowledge. A worker who knows only the rule will follow it when conditions are exactly as the rule anticipates — and will not know what to do when conditions vary. A worker who understands the reason can apply judgment at the boundary: they know what principle is at stake, and they can make an intelligent decision when circumstances are imperfect.

A Complete JBS in Action: Annotated Example

The following example illustrates the three-column structure for a manufacturing operation — installing a gasket in a hydraulic assembly. Each element is chosen to demonstrate correct JBS construction at each level.

STEP	KEY POINT	REASON FOR KEY POINT
1. Inspect gasket before installation	Verify gasket is correct part number; check for cuts, tears, or compression deformation on sealing lip	Wrong gasket or damaged sealing surface will not achieve hydraulic seal; pressurized system will leak immediately or develop leak under thermal cycling
2. Clean mating surfaces	Wipe both mating surfaces with lint-free cloth; no residual oil, chips, or debris; dry completely before continuing	Any contamination between mating surfaces prevents even compression of the gasket; creates leak paths; even

STEP	KEY POINT	REASON FOR KEY POINT
		small metal chips can cut the gasket sealing lip during torquing
3. Position gasket on lower surface	Place gasket with "this side up" marking facing upward; all bolt holes aligned before releasing; do not drag or slide gasket once placed	Reversed gasket has incorrect sealing profile for this application; misaligned holes require repositioning that risks folding sealing lip; dragging can introduce microscopic debris into sealing interface
4. Install and hand-tighten all fasteners	Install all fasteners before tightening any; hand-tighten to contact only — do not begin torquing until all fasteners are in place	Torquing any fastener before all are installed creates uneven compression, distorting gasket and creating preferential leak paths; hand-tight only ensures all holes align properly before load is applied
5. Torque fasteners in cross pattern	Use calibrated torque wrench; apply torque in two passes — 50% of final value first pass, 100% second pass; cross pattern sequence; 22–28 ft-lbs final torque	Cross pattern distributes compression evenly across full gasket surface; two-pass torquing prevents gasket distortion from one-sided loading; below 22 ft-lbs: insufficient sealing pressure; above 28 ft-lbs: risk of gasket extrusion and housing distortion
6. Verify installation and record	Visually confirm no gasket visible beyond housing perimeter; no fastener below flush with surface; record torque value and date in build record	Gasket visible beyond perimeter indicates misalignment or wrong gasket; below-flush fastener indicates cross-threading; traceability record enables field failure analysis and warranty resolution

 *Notice in this example: Steps are major actions (Inspect, Clean, Position, Install, Torque, Verify). Key points are specific, measurable, and observable. Reasons are mechanistic — they explain the physical or process consequence of deviation, not simply restate the requirement. A worker trained from this JBS understands not just what to do and how to do it, but what will fail and why if they deviate. That understanding enables intelligent judgment at the boundary of the standard.*

Section 4: How to Create a Job Breakdown Sheet

Creating a Job Breakdown Sheet is a disciplined process that requires preparation, observation, analysis, and iteration. A JBS cannot be written from memory, from a desk, or from a procedure document alone. It must be created at the point of work, in close collaboration with the people who perform it. The process described here reflects best practice as developed and refined by TWI practitioners over eight decades.

Step 1: Select the Right Job for a JBS

Not every task requires a formal Job Breakdown Sheet. The investment in creating a high-quality JBS is substantial, and it should be directed at tasks where the payoff is greatest. Prioritize tasks that meet one or more of the following criteria:

- Critical quality impact: Tasks where incorrect performance frequently produces defects, rework, or field failures.
- Critical safety impact: Tasks where incorrect performance creates injury risk for the performer or others.
- High training frequency: Tasks that new employees are trained on frequently, making the quality of the training document high-leverage.
- Knowledge concentration risk: Tasks currently performed by only one or a few practitioners, creating significant organizational risk if those practitioners leave.
- High variability: Tasks where significant variation in outcome is currently observed between operators, suggesting that the correct method is not well-defined or well-understood.
- Complex tacit knowledge: Tasks that appear simple but that experienced practitioners perform significantly better than novices, suggesting that important implicit knowledge is involved.

Step 2: Gather the Right People

The people involved in creating a JBS determine its quality more than any other factor. The minimum team for JBS creation includes:

- The Subject Matter Expert (SME): The most experienced and competent practitioner of the task. This person is the primary source of tacit knowledge — they know how the task is done correctly. In many cases, two or three experienced practitioners should be involved to capture the full range of expert knowledge and to identify whether there are multiple valid approaches or a genuine "one best method."

- The JBS Author / Facilitator: The person responsible for drafting the document. This may be a training specialist, a process engineer, a supervisor, or the SME themselves. The author must have good analytical skills and the discipline to probe the SME with probing questions ("What happens if you skip that? How do you know when it's right?").
- A Quality Representative (for quality-critical tasks): Ensures that the quality requirements embedded in the key points are accurate and consistent with the formal quality specification.
- A Safety Representative (for safety-critical tasks): Ensures that all safety-critical key points are identified, that the reason clearly communicates the safety consequence, and that the JBS is consistent with the formal safety requirements for the task.

Involving new or recently trained employees in JBS creation is also valuable. They remember what confused them during their own training, what questions they had that went unanswered, and what aspects of the task they found most difficult. This perspective is invisible to experts who have long since internalized the task.

Step 3: Observe the Task at the Point of Work

A Job Breakdown Sheet cannot be written from memory, from a procedure manual, or from a desk. It must be created through direct observation of the task being performed, at the actual workstation, with the actual materials, tools, and equipment.

Before the observation session:

- Set up the workstation exactly as it would be for production — with the correct tools, materials, fixtures, and specifications.
- Explain to the SME what you are trying to accomplish: "I want to understand how you perform this task so that I can create a training document that captures your knowledge. I am going to ask a lot of questions as you work."
- Have a blank JBS form and a way to take notes or record observations. Video recording (with the SME's consent) is extremely valuable because it allows review of details that cannot be captured at the moment of observation.

During the observation:

- Ask the SME to perform the task at normal pace while narrating what they are doing. Narration is important — it forces the SME to verbalize knowledge they might otherwise execute silently, and the verbalization often surfaces tacit knowledge.
- Do not interrupt the flow of the operation with questions that could disrupt the SME's concentration. Note the questions and ask them at natural breaks or after the complete cycle.

- Observe multiple complete cycles. The first cycle is often atypical — the SME is self-conscious about being observed. Subsequent cycles are more representative of normal practice.
- Note any points where the SME hesitates, adjusts their technique, rechecks something, or makes a quality judgment. These moments are where the most important tacit knowledge is concentrated.
- Note any differences between cycles. If the SME performs a step differently on the third cycle than on the first, ask why. The difference may reveal important contextual knowledge about how the correct technique adapts to varying conditions.

Step 4: Identify and Sequence the Steps

After the observation sessions, work with the SME to identify the major steps in the correct sequence. This is a collaborative analysis — the JBS author structures the analysis, the SME provides the content.

A useful test for step identification: read the proposed step description aloud and ask: "If I skipped this step entirely, what would happen?" If the answer is "the task would not be completed" or "the output would definitely fail," it is a step. If the answer is "the output might fail, depending on how I do the previous step," the information probably belongs as a key point for the previous step rather than as a separate step.

Verify the sequence by performing or talking through the complete operation with the SME, following only the steps as described. Does the sequence flow logically? Is each step clearly bounded — with a clear start and end — so that the learner will know when they have completed the step and are ready to move to the next one?

Step 5: Identify Key Points for Each Step

With the steps identified and sequenced, work through each step with the SME to identify all the key points. Use the three-category framework to systematically probe each step:

Quality Key Points

For each step, ask: "What must be true about how this step is performed in order for the output to meet quality requirements? What are the specific conditions, tolerances, measurements, or characteristics that determine whether this step is done correctly?"

Probe further: "Have you ever seen this step done wrong? What happened? What was the worker doing differently?" Failure modes are the clearest guide to key points — the condition that produces the failure is the key point whose violation causes the failure.

Safety Key Points

For each step, ask: "Is there any way that performing this step incorrectly could injure the worker? Are there specific body positions, tool orientations, or force application directions that create injury risk if wrong?"

Safety key points should also include any required PPE that must be in place before this step, any lockout/tagout requirements, and any ergonomic considerations that affect long-term health rather than immediate injury.

Technique Key Points

For each step, ask: "Is there something about how you do this step that you discovered through experience that makes it easier, faster, or more reliable? What do you do differently from how you did it when you first learned? What tip would you give a new person to help them do this step successfully?"

These are often the hardest key points to elicit because experienced practitioners have forgotten that these techniques are not obvious. Useful probes: "How long did it take you to get comfortable with this step when you first learned it? What was difficult about it at first?" The answer often reveals the technique that the novice will struggle to discover without help.

A critical caution in identifying key points: do not include every detail. Include only the key points — the ones that make or break the job, injure the worker, or make the work easier. A step with fifteen key points is almost certainly miscategorized: some of those "key points" are actually parts of adjacent steps, or they are minor variations that do not significantly affect outcome. The discipline of limiting key points to the genuinely critical ones is what makes the JBS usable as a training tool rather than an overwhelming technical specification.

Step 6: Write the Reasons

With key points identified, the author must write the reason for each one. This is frequently the most time-consuming step in JBS creation, and the one most frequently skipped or handled superficially. Skipping it is a serious error. The reasons are what transform the JBS from an instruction sheet into a knowledge transfer document.

For each key point, ask: "What happens if the operator does not follow this key point?" Then follow the chain of consequences: not just the immediate effect, but the downstream quality, safety, or operational consequence. Write the reason at the level of the downstream consequence, not the immediate one.

For technical key points where the reason involves chemistry, physics, or engineering principles, do not oversimplify. A reason that says "the adhesive won't work" is less useful than "the adhesive will have begun polymerizing, reducing bond strength by 30–40% and causing delamination under shear load." Precision in the reason is what enables the worker to make intelligent judgments when conditions are imperfect.

For safety key points, the reason should state the specific injury mechanism, not merely "it is dangerous." "Risk of musculoskeletal injury" is weak. "Repeated wrist flexion beyond 45 degrees from neutral in this orientation causes cumulative strain in the flexor tendons, leading to carpal tunnel syndrome over months of repeated exposure" is strong.

When a reason is not fully known — when the SME follows the key point because they were told to, or because experience has shown that violating it causes problems, but neither the SME nor the JBS author understands the underlying mechanism — say so explicitly, and flag the item for engineering or quality review. An honest "Reason unknown — under investigation" is better than a fabricated or imprecise reason, because it signals to the user that this item requires caution and invites investigation.

Step 7: Add Supporting Visual Documentation

A well-written JBS should be supplemented with visual documentation — photographs or diagrams — for any step where the correct appearance, position, or configuration is not fully conveyed by words alone. Visual documentation is particularly important for:

- Correct hand position, body position, or tool orientation that is difficult to describe in words
- The correct visual appearance of a completed step — what "right" looks like
- Common failure modes — what "wrong" looks like, when knowing the failure appearance helps the worker detect and correct errors
- Equipment configurations, fixture positions, or material orientations that must be precisely established before beginning the step

Photographs should be taken at the point of work, from the operator's perspective — the angle from which the actual operator views the task, not from a supervisor's observation point. Annotate photographs with callouts that identify the specific features referenced in the key points. Keep photographs current: a photograph showing obsolete equipment, a superseded part, or a deprecated tool configuration is actively misleading.

Step 8: Review, Verify, and Validate

A draft JBS should never be used for training without review and validation. The validation process should include:

- **SME review:** The subject matter expert who contributed to the JBS creation reads the draft carefully and verifies that the steps, key points, and reasons accurately reflect how the task is performed and why. Any inaccuracies, omissions, or misleading descriptions are corrected.
- **Blind performance test:** A practitioner who did not participate in the JBS creation — ideally someone who knows the task but has not been involved in the documentation process — follows the JBS exactly as written and attempts to perform the task. Do not allow them to ask questions; they can only do what the JBS says. Any point where they perform the task incorrectly, or where they cannot proceed because the JBS is unclear, is a deficiency that must be corrected before the JBS is used for training.
- **Quality review:** A quality representative confirms that all key points related to quality specifications are accurate and complete, and that the reasons correctly explain the quality consequence of deviation.
- **Safety review:** A safety representative confirms that all safety-critical key points are identified, that required PPE is listed in the header, and that the reasons correctly state the injury mechanism.
- **Novice training test:** Use the validated JBS to train at least one new learner before finalizing the document. The learner's questions, confusions, and errors during training are the clearest indicators of JBS deficiencies. Any point where multiple trainees ask the same question or make the same error is a deficiency in the JBS, not a deficiency in the trainees.

Common JBS Construction Errors and How to Avoid Them

Error	What It Looks Like	Why It Fails	Correct Approach
Steps are too granular	A 10-minute task has 25 steps; some steps are single hand motions	Overwhelms learner; obscures the structure of the task; makes the document unusable as a reference	Combine micro-actions into meaningful work segments; aim for 4–12 steps for most tasks under 30 minutes
Steps are too broad	A complex, multi-phase task is described in 2–3 steps	Insufficient structure for the learner; forces all detail into key points, making them unwieldy	Decompose broad steps into sub-steps, or consider whether the scope should be split into multiple JBS documents
Key points describe procedures, not critical aspects	"Pick up the part with both hands and carry it to the fixture" is listed as a key point	Describes the action (which should be a step) rather than the critical aspect of performing that action correctly	Identify what aspect of the step can go wrong and what is the specific condition that prevents it from going wrong

Error	What It Looks Like	Why It Fails	Correct Approach
Reasons are tautological	"Apply within 60 seconds because applying after 60 seconds is incorrect"	Conveys no understanding; worker who follows this reason knows only the rule, not the principle	State the physical, chemical, or process consequence of deviation: "polymerization begins after 60 seconds, reducing bond strength by 30–40%"
Reasons are omitted	Third column is blank, or filled with "per specification" or "see drawing"	Transforms the JBS into a procedure sheet; eliminates the knowledge transfer function; workers cannot adapt at boundaries of the standard	Invest the time to elicit and articulate genuine reasons for every key point; flag unknown reasons for investigation rather than omitting
JBS written from memory or procedure document alone	JBS is created at a desk without observation; contains only what is in the formal procedure	Fails to capture tacit knowledge; formal procedures typically contain only the "what," rarely the "how" or "why" at the level of skill	Always create JBS at the point of work, through direct observation of expert practitioners
Too many key points per step	A single step has 10–15 key points	Critical key points are buried in a list of marginal details; learner cannot identify what matters most	Apply ruthless discipline: include only key points that make or break the job, injure the worker, or make it easier. If in doubt, test whether deviation actually causes a significant consequence.

Section 5: How to Use a Job Breakdown Sheet — The Job Instruction Method

A Job Breakdown Sheet is the essential preparatory tool for the Job Instruction (JI) training method. A JBS that exists but is not used within the Job Instruction framework — that sits in a binder and is handed to a learner to read — captures only a fraction of its potential value. The full value is realized only when a trained Job Instruction practitioner uses the JBS to deliver training according to the four-step method.

⚠ The Most Common Misuse: Handing a learner a JBS and telling them to "read this" before beginning work is not Job Instruction. Reading a document is not the same as being trained. The JBS is a trainer's tool, not a self-instruction guide. Using it as a substitute for structured training defeats its purpose and typically produces learners who have read about the task but cannot actually perform it correctly.

The Four Steps of Job Instruction

The Job Instruction method structures the training session into four sequential steps. Each step has a defined purpose, and each builds on the previous one. The JBS is used actively throughout all four steps.

Step 1: Prepare the Worker

Purpose: Establish the conditions for effective learning by setting the learner at ease, assessing their prior knowledge, motivating them to learn, and positioning them correctly to observe the demonstration.

Before this step, the trainer must:

- Set up the workstation exactly as it will be for production, with all tools, materials, and equipment in their correct positions.
- Review their own JBS to refresh memory of steps, key points, and reasons. The trainer should be able to teach from memory, using the JBS as a verification tool, not as a script to read from.
- Plan the training session: how many steps will be covered in this session? How many repetitions will the learner need before independent performance? What is the follow-up plan?

During Step 1 with the learner:

- Put the learner at ease. The anxiety of learning a new task in front of an evaluator inhibits performance. Establish a low-pressure tone.
- Establish what the learner already knows. Have they performed any related tasks? Seen this operation before? Their prior knowledge shapes how much context needs to be established.
- Explain the importance of the job: why does it matter? How does it fit into the larger production system? What happens downstream if it is not done correctly? Motivated learners learn faster and remember more.
- Position the learner correctly: they should be able to see exactly what the trainer will demonstrate, from the same perspective as if they were performing the task themselves. If the learner cannot see the demonstration from the operator's perspective, they are positioned incorrectly.

Step 2: Present the Operation

Purpose: Demonstrate the correct performance of the operation in a structured, multi-pass sequence that builds the learner's understanding incrementally.

The Job Instruction method specifies three presentations — three complete demonstrations of the operation:

First presentation: The trainer performs the complete operation at normal pace with no narration. This gives the learner an initial gestalt of what the complete task looks like — the overall shape and rhythm of the operation before any analytical decomposition.

Second presentation: The trainer performs the complete operation again, this time narrating each step by name as they begin it. The learner hears the structure of the task. Nothing more is explained yet — only the step names, in sequence.

Third presentation: The trainer performs the operation once more, this time narrating the step, the key points within each step, and the reason for each key point. This is the full presentation — the complete transfer of the JBS content through demonstration and narration simultaneously. The learner sees the physical execution and hears the explanation, both simultaneously, at the moment when the physical action makes the explanation meaningful.

This three-pass structure is not arbitrary. Adult learners build understanding through progressive elaboration: the first pass establishes the whole; the second pass reveals the structure; the third pass provides the detailed content. Presenting all the detail in a single pass overwhelms the learner's working memory. Building it up in three passes allows each layer of complexity to be assimilated before the next is added.

The trainer should never perform more than one task, tell more than can be mastered, or assume the learner understands without verification. If the task is too complex to present in three passes without overwhelming the learner, it should be broken into smaller teaching units, each with its own JBS.

Step 3: Try Out Performance

Purpose: Have the learner perform the operation while narrating their own actions, enabling the trainer to verify understanding and correct errors immediately at the moment they occur.

First try-out: The learner performs the operation while the trainer observes. The trainer corrects errors immediately — not after the complete cycle, but at the moment of error. Delayed correction allows the incorrect action to begin to become established in motor memory.

Second try-out: The learner performs the operation again, this time narrating the step names as they perform each step. The trainer verifies that the learner's narration is synchronized with their performance — that they name each step at the moment they begin it, not before or after. Narration that is out of sync with performance indicates that the learner is performing from habit or guessing rather than from understanding.

Third try-out: The learner performs the operation, narrating steps, key points, and reasons. This is the critical verification: if the learner can perform the operation while narrating all three levels of the JBS simultaneously, they have achieved a level of understanding that mere physical performance cannot confirm. The narration test is the gold standard of understanding in Job Instruction.

Fourth try-out (as needed): If the learner's performance and narration are not yet correct and confident after three try-outs, continue with additional repetitions. Determine whether the problem is with specific steps (in which case re-present only those steps) or with the overall flow (in which case return to a full presentation).

Throughout Step 3, the trainer must resist the temptation to take over and demonstrate again when the learner makes an error. The error is information — it tells the trainer exactly where the learner's understanding is incomplete and where additional presentation is needed. Taking over and repeating the demonstration is sometimes necessary, but it is a return to Step 2, not a substitute for allowing the learner to attempt and fail safely.

Step 4: Follow Up

Purpose: Establish the learner in independent performance with appropriate support, and gradually reduce that support as competence develops.

Immediately after the training session:

- Designate a responsible check-up resource — the specific person the learner should go to with questions or problems. This should not be "anyone on the shift" but a named person who has committed to being available.
- Encourage questions: establish explicitly that questions are welcome and expected. A learner who is afraid to ask questions will make errors silently rather than seek help.
- Check the learner frequently at first: in the first hours and days of independent performance, the trainer or supervisor should observe the learner regularly and briefly, looking for deviations from the JBS that have developed from fatigue, confusion, or the influence of nearby operators using different methods.

In the following days and weeks:

- Taper the frequency of check-ups as the learner demonstrates consistent performance. The tapering schedule should be deliberate: frequent at first, then progressively less frequent as competence is confirmed.
- Document the completion of training formally: training records should include the date of training, the trainer's name, the specific JBS used, and confirmation that the learner demonstrated correct performance including narration of steps, key points, and reasons.
- Follow up on any questions or difficulties that arise. If multiple learners ask the same question or make the same error, the problem is in the JBS, not in the learners — the JBS must be updated.

The Trainer Preparation Requirement

The Job Instruction method includes one additional requirement that is as important as the four training steps: the trainer must prepare their JBS before every training session. This means reviewing the JBS to refresh memory of all steps, key points, and reasons; setting up the workstation correctly; and being certain they can demonstrate every step correctly and narrate it completely without reading from the document.

The requirement to prepare the JBS in advance is not optional even for experienced trainers who have taught the same operation many times. Human memory is imperfect and subject to drift. An experienced trainer who has not actively reviewed the JBS before training may unconsciously omit key points they have not thought about recently, or incorporate informal variations that have crept into their own practice. The preparation review resets the trainer to the documented standard.

This is why the JBS must always be current. A trainer who prepares from an outdated JBS will teach an outdated standard. The entire value of the training system depends on the currency and accuracy of the JBS documents on which it is based.

Trainer Certification for Job Instruction

The Job Instruction method is simple in concept but requires practice to deliver well. Organizations implementing JI should not assume that trainers can deliver effective instruction simply by reading about the method. Effective JI delivery requires a structured certification process:

1. Trainers attend a Job Instruction training program (the TWI standard is a 10-hour program delivered over 5 sessions of 2 hours each).
2. Trainers practice creating JBS documents for tasks in their own work area, with feedback from a JI coach.
3. Trainers deliver a practice training session using their JBS, with observation and feedback from a certified JI facilitator.
4. Trainers demonstrate competency in both JBS creation and JI delivery before being authorized to train others.
5. Trainers are periodically recertified through observation of their training delivery and review of their JBS documents.

The investment in trainer certification pays dividends through training quality that is reliably high regardless of the individual trainer delivering the session. Without certification, training quality varies with the trainer, and the benefits of the JBS system are only partly realized.

Adapting Job Instruction for Different Contexts

The Job Instruction method and the JBS were developed in a manufacturing context, but both have been successfully adapted to other settings. The adaptation requires preserving the essential structure — Step / Key Point / Reason and the four-step presentation — while adjusting the terminology, examples, and documentation format to fit the context.

Context	JBS Adaptation Notes	JI Method Adaptation Notes
Healthcare / Clinical	Key points reference clinical standards and evidence-based practice; reasons reference patient outcomes and clinical risk; safety key points reference infection control and sharps safety; photography may be restricted by patient privacy regulations	Step 2 presentations may use simulation or task trainers rather than live patients; narration test in Step 3 is particularly valuable for complex clinical procedures
Food Service / Hospitality	Key points reference food safety standards (temperature, time, cross-contamination); reasons reference foodborne illness risk; technique key	Training often delivered during pre-shift prep time; follow-up observation during service rush validates performance under pressure

Context	JBS Adaptation Notes	JI Method Adaptation Notes
	points cover speed and consistency of presentation critical for volume service	
Construction / Trades	Key points reference code compliance and inspection standards; reasons reference structural integrity, fire safety, and weathertightness; technique key points often critical for working efficiently at height or in confined spaces	Workstation setup includes staging of materials and setting up safe working conditions; try-out may require safety supervision from a second person
Office / Administrative	Steps describe process flow rather than physical manipulation; key points identify decision criteria, error-checking steps, and system inputs; reasons explain downstream consequences in process or compliance terms	Demonstration performed at actual workstation on actual system; try-out includes narrating decision rationale, not just physical actions
Software / Technical	Steps describe logical phases of complex technical tasks; key points identify critical configurations, validation checks, and common error-inducing deviations; reasons reference system behavior consequences	Presentation may include annotated screen recordings for demonstration; try-out performed on staging environment to prevent live system impact

Section 6: How to Maintain a Job Breakdown Sheet Library

Creating high-quality Job Breakdown Sheets is the beginning of the work, not the end of it. An organization that creates a library of JBS documents and then stops — treating the documents as permanent — will find that library becoming progressively less accurate, less relevant, and less used over time. JBS documents require systematic maintenance to remain the reliable knowledge repositories they are designed to be.

⚡ The Staleness Problem: A Job Breakdown Sheet that does not reflect the current best method is worse than no JBS at all. It trains workers to a superseded standard. It creates documented evidence of a method that the organization has already determined is inadequate. It creates cognitive dissonance in experienced workers who know the document is wrong. And it destroys credibility in the JBS system as a whole — if workers learn that JBS documents are frequently out of date, they stop consulting them.

Triggers for JBS Review and Update

A JBS should be reviewed and updated whenever any of the following conditions occur:

Trigger	Why It Requires JBS Update	Who Should Initiate
New or modified equipment or tooling	New equipment may require different technique, different key points, or different safety precautions	Engineering / Maintenance
New or modified materials, components, or specifications	Different materials may have different handling characteristics, curing times, or failure modes	Engineering / Quality
Process change or method improvement	If the method has been improved, the JBS must be updated immediately or the improvement will not be sustained through training	CI Team / Operations
Quality escape or repeat defect	Analyze whether the defect resulted from an inadequate key point, an inadequate reason (worker deviated because they did not understand why the key point mattered), or a training failure	Quality / CI Team
Safety incident or near-miss	Any safety event involving a task with a JBS requires immediate review to determine whether the	Safety / EHS / Operations

Trigger	Why It Requires JBS Update	Who Should Initiate
	safety key point was present, accurate, and adequately explained	
Multiple trainees making the same error	Systematic errors in training indicate a JBS deficiency — the step, key point, or reason is unclear, incorrect, or incomplete	Trainer / Training Coordinator
Experienced worker identifies a better method	If an experienced worker demonstrates a reliably better technique, investigate and validate, then update the JBS to capture the improvement	Supervisor / Worker / CI Team
Periodic scheduled review	All JBS documents should be reviewed on a defined schedule regardless of change triggers — typically annually for stable processes, more frequently for high-risk or rapidly evolving ones	Training Coordinator / Operations

The JBS Update Process

When a trigger for JBS update is identified, the update should follow a defined process to ensure accuracy, appropriate approval, and communication to all affected trainers and learners.

6. Identify the need for update and the specific reason. Document this reason — it becomes part of the revision history.
7. Return to the point of work. Review the task as currently performed. If the change involves new equipment or materials, observe the new method being performed by the most experienced practitioner.
8. Revise the draft JBS. Update all affected steps, key points, and reasons. Do not update only the elements that seem directly related to the trigger — check adjacent elements as well, since process changes often have downstream effects that are not immediately obvious.
9. Conduct the validation process: SME review, quality review (if applicable), safety review (if applicable), and blind performance test if significant changes have been made.
10. Update the revision history block: record the date of the revision, the nature of the change, and the name of the person responsible for the update.
11. Distribute the updated JBS to all authorized trainers and post the current version at the point of work. Physically remove and destroy (or archive) all superseded versions. Old JBS versions left in circulation are a significant hazard.
12. Re-train all affected operators on the updated elements. An update to the JBS that is not accompanied by retraining of current operators is only half-complete — new workers will be trained correctly, but existing workers will continue using the superseded method.

13. Verify, through follow-up observation, that operators are performing the updated method after retraining.

Document Control for a JBS Library

A JBS library without document control is a liability. When multiple versions of the same JBS are in circulation, trainers may be teaching different standards. When documents have no revision history, it is impossible to determine whether the current version reflects the current best practice or a practice that was superseded years ago. Effective document control for JBS documents requires:

- A unique document number for every JBS. The numbering system should indicate the work area, the operation, and the revision level at minimum.
- A defined owner for every JBS — the person responsible for keeping it current. This is typically the supervisor or team leader for the work area, not a central training department. Ownership at the point of work creates accountability for currency.
- A master list of all current JBS documents, with document number, revision level, owner, and next scheduled review date. This master list should be auditable — any authorized person should be able to determine quickly which JBS documents exist, which version is current, and when each was last reviewed.
- A controlled copy system: JBS documents posted at workstations are designated controlled copies, identified as current. When a JBS is updated, the superseded controlled copy is physically retrieved and replaced. JBS documents that are filed but not posted are not deployed.
- Access control for creation and modification: only authorized persons can create or modify JBS documents. This does not mean that workers cannot suggest improvements — it means that suggestions go through an approval process before they are incorporated into the official document.

Building a JBS Library: Prioritization and Sequencing

For organizations that do not yet have a JBS library and are beginning to build one, the challenge of prioritization is significant. An operation with hundreds of distinct tasks cannot create high-quality JBS documents for all of them simultaneously. A rational prioritization approach works through the following sequence:

- Tier 1 — Critical tasks: Those with direct safety impact, high quality risk (high defect or rework rates), or sole-practitioner dependency (only one person knows how to do the task). These must be done first regardless of other considerations.
- Tier 2 — High-frequency training tasks: Tasks that new employees are trained on most frequently, where JBS investment pays off quickly through volume of use.

- Tier 3 — Knowledge concentration risk tasks: Tasks performed by experienced workers who are approaching retirement or whose tenure is otherwise at risk, where the knowledge transfer urgency is high.
- Tier 4 — All remaining standardizable tasks: The full library of tasks that benefit from standardization, addressed systematically over time as Tier 1–3 documents are completed and maintained.

A realistic goal for most organizations beginning this process is 3–5 new JBS documents per month per work area, with the first Tier 1 documents completed within the first 90 days. Organizations that attempt to create comprehensive libraries too quickly produce poor-quality documents; those that move too slowly lose momentum and organizational commitment. The middle path — steady, quality-controlled progress — is the right approach.

Metrics for JBS Library Health

The health of a JBS library should be measured to ensure it is serving its purpose and to identify where investment is needed. Key metrics include:

Metric	What It Measures	Target	Warning Signal
JBS Coverage Rate	Percentage of defined critical tasks with current, approved JBS documents	>95% of Tier 1 tasks; >80% of all defined tasks	Any Tier 1 task without a current JBS is a critical gap
JBS Currency Rate	Percentage of JBS documents reviewed within the scheduled review cycle	100% reviewed within defined cycle	Documents unreviewed beyond their review date signal maintenance failure
Training-to-JBS Adherence	Percentage of training sessions for which the trainer used the current JBS version	>99%	Any training delivered from a superseded JBS is a system failure
Post-Training Performance Accuracy	Percentage of recently trained operators performing the defined key points correctly in follow-up observation	>90% within 30 days of training	<80% indicates JBS deficiency, training deficiency, or inadequate follow-up
JBS-Linked Defect Resolution	Percentage of defect root cause analyses that result in JBS review and update where applicable	100% of defects with traceable method cause	Defect analyses that do not result in JBS review miss the corrective action opportunity
Improvement Capture Rate	Percentage of validated process improvements	>95%	Improvements not captured in JBS will

Metric	What It Measures	Target	Warning Signal
	incorporated into JBS within 30 days of validation		not be sustained through future training

The JBS and the Continuous Improvement Cycle

The Job Breakdown Sheet sits at the intersection of training and continuous improvement. Every time a process is improved, the JBS must be updated. Every time a JBS is used for training, the training experience may surface improvement opportunities. This bidirectional relationship means that the JBS library and the improvement system must be integrated — not managed as separate programs.

In organizations with mature Lean or continuous improvement systems, the JBS update is a required deliverable of every Kaizen event or improvement project that affects a trained task. Before the improvement event concludes, the team identifies all JBS documents that require updating, makes those updates, validates them, and plans the retraining of current operators. The improvement is not considered complete until the JBS reflects it. This integration ensures that improvements are sustained through the training system rather than fading as current operators drift back to old habits and new operators are trained to the old standard.

The improvement cycle and the JBS interact in the other direction as well: a well-maintained JBS library makes improvements more reliable and more measurable. When the current method is precisely defined in the JBS — with specific key points and the reasons behind them — proposed improvements can be evaluated against a clear baseline. The improvement addresses a specific key point, in a specific step, for a specific reason. The result is verifiable and documentable.

Section 7: Job Breakdown Sheets Across Industries

The Job Breakdown Sheet was designed in manufacturing but has proven applicable wherever work requires skill, consistency, and the transfer of knowledge from experienced practitioners to learners. Each industry adapts the format and terminology while preserving the essential three-column structure.

Manufacturing: The Origin and Core Application

Manufacturing remains the setting for the most rigorous and systematic JBS practice. In automotive manufacturing, aerospace, electronics, medical devices, and food and beverage production, JBS documents are often required by quality management systems (ISO 9001, IATF 16949, AS9100) as evidence of controlled work instruction. The JBS serves simultaneously as a training document, a quality document, and a compliance record.

In high-mix, low-volume manufacturing — where many different products are produced in small quantities — JBS documents are particularly critical because operators must frequently switch between products and tasks. Without well-constructed JBS documents and systematic retraining at each changeover, quality typically degrades during the first production run on a given product after any absence.

Manufacturing JBS practice is also the most mature in terms of document control systems, trainer certification programs, and metrics. Organizations implementing JBS in other industries should look to leading manufacturing practitioners — particularly Toyota-aligned companies and their Tier 1 suppliers — for the most developed models of sustained JBS practice.

Healthcare: Patient Safety as the Organizing Principle

Healthcare has experienced one of the most significant expansions of JBS practice in recent decades, driven by a growing body of evidence that standardized clinical procedures reduce medical errors. The Institute of Medicine's landmark 2000 report "To Err is Human" — which estimated that medical errors caused between 44,000 and 98,000 deaths annually in the U.S. — triggered a patient safety movement that has embraced standardization tools including JBS.

In healthcare, JBS documents are used to standardize clinical procedures where variation creates patient harm risk: central line insertion, medication administration, surgical site preparation, hand hygiene, patient transfers, and equipment setup for procedures. The key points in healthcare JBS documents are driven by evidence-based clinical guidelines, infection control standards, and adverse event data. The reasons column is particularly important: clinicians who understand why a sterile technique step is critical — not merely that it is required

— are far more likely to apply that reasoning correctly in atypical situations that the standard did not explicitly anticipate.

Healthcare JBS practice faces cultural challenges that manufacturing does not. Clinical autonomy — the tradition of physician and clinician independent judgment — can create resistance to standardization. The effective response is to frame JBS-based standards as codifying best practice for typical cases, while explicitly acknowledging that clinical judgment governs the exceptions that fall outside the standard. Standard plus judgment is a more reliable system than judgment alone, even in complex clinical contexts.

Construction and the Trades: Portability and Site-Specific Adaptation

Construction presents specific JBS challenges because work is performed in highly variable physical environments. A JBS for electrical conduit installation developed in a laboratory environment must function on a construction site with varying temperatures, lighting, confined space, and elevation. The JBS must be robust enough to guide performance across these variable conditions, which requires key points that address not only nominal conditions but the most common and most safety-critical variations.

Trade apprenticeship programs — the formal training systems for electricians, plumbers, pipefitters, ironworkers, and other construction trades — have increasingly incorporated JBS-based training into their curricula. The four-year apprenticeship model provides ample time for the deep skill development that trades require, and JBS documents provide the scaffolding that ensures that every apprentice receives consistent instruction in critical key points, regardless of which journeyperson they are working alongside on a given day.

Knowledge Work and Service Industries

The application of JBS to knowledge work is the most counterintuitive and, in some ways, the most interesting. The conventional assumption is that knowledge work is too variable and judgment-dependent to be standardized at the level of steps and key points. In many cases, this is a misconception.

Complex knowledge work tasks — completing a financial analysis, conducting a structured customer interview, performing a software code review, processing an insurance claim — involve a combination of judgment-dependent decisions and technique-dependent execution. The technique-dependent elements are exactly those for which JBS is appropriate: the specific steps in a structured analysis, the critical questions that must be answered in a customer interview, the specific checks that must be performed in a code review.

The key points in knowledge work JBS documents tend to address decision criteria rather than physical technique: "If the variance exceeds 5%, flag for supervisor review before proceeding" is

a key point for a financial analysis step. "Confirm the customer's stated requirement against the contract specification before accepting the order" is a key point for an order entry step. The reason column explains the downstream consequence of failing to apply the decision criterion — the financial exposure, the compliance risk, the customer relationship consequence.

Emergency Services: High-Stakes, Time-Compressed Training

Police, fire, and emergency medical services operate in the most demanding training environment of any industry: the consequences of incorrect performance may be immediate and irreversible, the conditions under which performance occurs are unpredictable and high-stress, and the training itself must be completed in compressed timeframes. JBS-based training is well-suited to this environment for exactly these reasons.

In emergency medical services, JBS documents for critical interventions — airway management, hemorrhage control, cardiac arrest management — must be designed for performance under stress, in degraded conditions, with limited equipment. The key points reflect the most common failure modes under stress: the specific checks that practitioners tend to skip when cognitively overloaded, the technique adaptations required when conditions are imperfect, the precise sequencing that prevents errors from compounding. The reasons column is critically important: responders who understand why a step must be performed in a specific way are better equipped to improvise intelligently when conditions prevent nominal execution.

Quick Reference: Job Breakdown Sheets at a Glance

JBS Element Definitions — The One-Page Summary

Element	Definition	The Test Question	Common Mistake
Step	A logical segment of the operation — a discrete action that moves the work forward. Steps are the major segments of the task, not the micro-details.	"If I skipped this entirely, would the task fail or be incomplete?"	Including key point detail in the step description; steps that are too granular (single motions) or too broad (entire phases of a complex operation)
Key Point	Anything about a step that could: (1) make or break the job, (2) injure the worker, or (3) make the work easier to do. Key points are the specific critical aspects of executing each step correctly.	"What specific condition must be true about how this step is performed?"	Restating the step as a key point; vague key points ("do it carefully"); including too many key points per step (burying critical ones in marginal ones)
Reason for Key Point	The specific consequence of failing to follow the key point — expressed as the physical, safety, or process outcome that results from deviation.	"What happens — specifically — if the operator does not follow this key point?"	Tautological reasons ("because it is required"); reasons that are too vague ("for quality reasons"); omitting the reasons column entirely

JBS Header — Required Fields

Field	Purpose	Example
Job / Operation Name	Unique, unambiguous identification of the specific task	Final Assembly: Door Panel Installation, Station 7 — Line B
Department / Work Area	Physical location where the operation is performed	Final Assembly — Body Shop, Line B
Parts / Materials	All components, materials, tools, and equipment needed to perform the operation	Door panel assembly P/N 44-7823; torque wrench calibrated to 20–30 ft-lbs; adhesive type H-44
Safety Equipment Required	All PPE and safety precautions specific to this operation	Safety glasses; cut-resistant gloves; steel-toed footwear; lockout tag for Panel Press

Field	Purpose	Example
Quality Standard / Spec Reference	Drawing numbers, specification numbers, or quality standards governing this operation	Drawing 44-7823 Rev. C; Work Instruction QI-445; ASTM D1002 (adhesive shear strength)
Trainer / Author Name	Who created the JBS — for accountability and contact if questions arise	J. Martinez, Senior Process Engineer; verified by K. Thompson, Quality
Date Created / Revision Date	When created and when last revised — essential for currency verification	Created: 2022-03-14; Rev. C: 2024-11-02
Revision History	Log of all changes made, with date and nature of change	Rev. A: Initial release. Rev. B: Updated torque spec per Eng. Change 4471. Rev. C: Added Step 6 gasket verification per CAR-2024-88

JBS Creation Checklist

Phase	Checklist Item	Done?
Preparation	Task selected and scoped: clearly bounded, repeatable, sufficiently complex to warrant JBS	<input type="checkbox"/>
Preparation	SME identified and available; quality and safety representatives engaged if applicable	<input type="checkbox"/>
Preparation	Workstation set up correctly with all production-representative tools, materials, and equipment	<input type="checkbox"/>
Observation	Minimum of 3–5 complete cycles observed at the point of work	<input type="checkbox"/>
Observation	All critical moments (hesitations, adjustments, quality checks) noted	<input type="checkbox"/>
Observation	Video recording or detailed field notes captured for analysis	<input type="checkbox"/>
Steps Column	Steps identified and sequenced through collaborative analysis with SME	<input type="checkbox"/>
Steps Column	Each step is a logical, bounded segment — not too granular, not too broad	<input type="checkbox"/>
Steps Column	Step descriptions use active, specific verbs; no key point content in step descriptions	<input type="checkbox"/>
Key Points Column	Quality key points identified for each step through failure mode analysis	<input type="checkbox"/>
Key Points Column	Safety key points identified for each step; all required PPE listed in header	<input type="checkbox"/>

Phase	Checklist Item	Done?
Key Points Column	Technique key points identified — craft knowledge that makes execution easier or more reliable	<input type="checkbox"/>
Key Points Column	Key points are specific and observable; no vague language ("carefully," "properly")	<input type="checkbox"/>
Reasons Column	Reason written for every key point — no blanks, no tautologies	<input type="checkbox"/>
Reasons Column	Reasons state the physical, clinical, or process consequence of deviation at a meaningful level of specificity	<input type="checkbox"/>
Reasons Column	Unknown reasons flagged for engineering/quality investigation rather than left blank or fabricated	<input type="checkbox"/>
Visual Aids	Photographs or diagrams added for all steps where technique is not fully conveyed by words	<input type="checkbox"/>
Validation	SME review completed; all inaccuracies corrected	<input type="checkbox"/>
Validation	Blind performance test completed by a practitioner who did not participate in creation	<input type="checkbox"/>
Validation	Quality review completed (if applicable)	<input type="checkbox"/>
Validation	Safety review completed (if applicable)	<input type="checkbox"/>
Validation	Novice training test completed; trainer questions and errors used to refine document	<input type="checkbox"/>
Documentation	Document number, revision level, and next review date assigned	<input type="checkbox"/>
Documentation	Revision history block completed	<input type="checkbox"/>
Documentation	Controlled copies posted at point of work	<input type="checkbox"/>

Job Instruction Delivery Checklist

JI Step	Trainer Action	Verification
Prepare (before session)	Review JBS; set up workstation exactly; plan session scope and follow-up	Trainer can narrate all steps, key points, and reasons from memory
Step 1: Prepare the Worker	Put learner at ease; establish prior knowledge; explain job importance; position learner correctly	Learner is comfortable and positioned with operator-perspective view
Step 2, Pass 1: Full speed, no narration	Demonstrate complete operation at normal pace without explanation	Learner has seen complete task shape and rhythm

JI Step	Trainer Action	Verification
Step 2, Pass 2: Step names only	Demonstrate again, narrating step names only as each begins	Learner can name the steps in sequence
Step 2, Pass 3: Steps + key points + reasons	Demonstrate again, narrating step, key points within each step, and reason for each key point	Learner has heard full JBS content while watching physical performance
Step 3, Try 1: Performance only	Observe learner performing; correct errors immediately at the moment of occurrence	Learner completes operation; errors corrected immediately
Step 3, Try 2: Performance + step names	Observe learner performing while narrating step names	Learner narration is synchronized with physical performance
Step 3, Try 3: Performance + full narration	Observe learner performing while narrating steps, key points, and reasons	Learner can perform and narrate all three levels correctly and fluently
Step 4: Follow Up	Designate check-up resource; encourage questions; establish tapering observation schedule; document training	Training record completed; follow-up schedule defined and communicated

Key Terms Glossary

Term	Definition
Job Breakdown Sheet (JBS)	A structured training document that breaks a defined work task into Steps, Key Points, and Reasons for Key Points — the foundational preparatory tool for Job Instruction training.
Step	A logical, bounded segment of a work operation that moves the task forward. Steps answer "What do I do next?"
Key Point	The specific critical aspect of a step that could make or break the job, injure the worker, or make the work easier. Key points answer "How must I do this step?"
Reason for Key Point	The specific consequence of failing to follow a key point, expressed in terms of quality, safety, or operational outcome. Reasons answer "Why must I do it this way?"
Job Instruction (JI)	The four-step training method (Prepare, Present, Try Out, Follow Up) for which the JBS is the essential preparatory tool. Developed by TWI in 1940–1945.
Training Within Industry (TWI)	The U.S. government training program developed in 1940 to address the industrial training crisis of World War II. The origin of the Job Breakdown Sheet and Job Instruction method.

Term	Definition
Tacit Knowledge	Knowledge that experts possess but have not (and often cannot easily) articulate — embedded in perception, muscle memory, and intuition. The JBS creation process is the primary mechanism for making tacit knowledge explicit.
Blind Performance Test	A JBS validation technique in which a practitioner who did not participate in creating the JBS follows it exactly as written to verify that it produces correct performance without requiring supplementary knowledge.
Controlled Copy	A designated version of a JBS document that is the official current version, identified as such, posted at the point of work, and physically retrieved and replaced when the document is updated.
Subject Matter Expert (SME)	The most experienced and competent practitioner of the task being documented. The primary source of tacit knowledge for JBS creation.
Layered Process Audit (LPA)	A multi-level observation system in which supervisors, managers, and senior leaders verify that operators are performing the key points defined in current JBS documents.
Knowledge Elicitation	The systematic process of drawing out tacit knowledge from subject matter experts through observation, questioning, and structured analysis — the intellectual core of JBS creation.

Final Thoughts — The Job Breakdown Sheet as an Act of Respect

There is a way of thinking about the Job Breakdown Sheet that goes beyond its practical utility as a training and knowledge transfer tool. At its best, a Job Breakdown Sheet is an act of professional respect — respect for the knowledge of the experienced practitioner who holds it, respect for the learner who deserves to receive it in the most useful form possible, and respect for the work itself.


When an experienced machinist sits down with a JBS author and works through the process of articulating what they know — the precise grip, the specific sound, the visual cue that tells them the cut is right before the instrument confirms it — they are being asked to take seriously the knowledge they have spent twenty years acquiring. The JBS process says: what you know matters. It is worth capturing. It is worth passing on. Your expertise is not a personal attribute that will retire with you; it is an organizational asset that belongs to everyone who comes after you.

When a new worker receives training delivered from a well-constructed JBS by a certified Job Instruction trainer, they are receiving the concentrated benefit of every expert practitioner who contributed to that document's creation. They are not starting from zero. They are starting from the accumulated wisdom of the people who preceded them — given to them systematically, in a form they can understand, at the moment when their hands are doing the work and the knowledge is immediately meaningful.

This transfer of knowledge from experienced to novice, organized and mediated by a disciplined document and a disciplined training method, is one of the most fundamentally human things that organizations do. It is how skills survive across generations. It is how the knowledge embedded in excellent work is preserved and extended rather than lost.

The Job Breakdown Sheet does this reliably and reproducibly. That is why it has survived — essentially unchanged in its essential structure — for more than eighty years, across every major industry and every developed economy. The three columns — Step, Key Point, Reason — are not a bureaucratic artifact. They encode a theory of how skill is acquired, how knowledge is organized, and how expertise is transferred. That theory has been validated millions of times, in factories and hospitals and construction sites and training rooms around the world.

Create your Job Breakdown Sheets with discipline and rigor. Use them with the fidelity that the Job Instruction method requires. Maintain them with the seriousness that living knowledge documents deserve. And remember that every time you complete a JBS that captures knowledge that might otherwise have been lost — or deliver a training session that turns a novice into a skilled practitioner in a fraction of the time it would otherwise have taken — you are participating in one of the oldest and most important practices of human civilization: the deliberate transmission of skill from those who have it to those who need it.

 *The work is worth doing. Do it well. A Job Breakdown Sheet that is accurate, complete, and honest about what it does not know is one of the most valuable documents your organization can possess. Build your library one good JBS at a time, and the cumulative effect — in quality, in safety, in training speed, in organizational resilience — will exceed anything that any individual measure could produce alone.*

References & Further Reading

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