

Production Study Data Capture

TWI Study Builder Edition — Narration-to-Element Training

QUALITY NARRATION → QUALITY INDUSTRIAL ENGINEERING OUTPUT



The master workbook is no longer typed into by hand

Every station's element table is now captured through the TWI Study Builder — you narrate what the operator does, and the tool turns it into clean, standardised rows.

Today you will learn to:

- ✓ Narrate an element so it answers 5W1H in one breath
- ✓ Use “next” so the splitter finds the right row boundaries
- ✓ Tell Current method narration from Proposed / Idea-to-Improve entries
- ✓ Fill measured data (units, stopwatch cycles, distance) in the table
- ✓ Recognise and fix a flagged row before you export

WHAT CHANGED



OLD WAY

Type the 5W1H sentence directly into the Method Details cell on the station sheet.



NOW

Type the observation as one running narration; TWI Study Builder builds the rows for you.

It still analyses only the words you give it — nothing more, nothing less. Vague or incomplete narration still produces vague or incomplete ECRS / SMED / TPM / Lean output. The tool changed; the discipline of good input has not.

One narration, five automatic phases



Phase 4 happens silently — you don’t fill Category or Therblig yourself. It is what lets man_gantt_mtm, mm_chart_analyzer and the Q&A engine consume the study later without re-guessing.

The 5W1H rule — still the most important slide

Before you narrate an element, make sure your sentence answers all six:



WHAT

Pick the shell



WHY

To start the assembly sequence



WHERE

From the trolley, at the table



WHEN

First operation of the cycle



WHO

Operator



HOW

By hand, single piece

FINAL NARRATION — ONE SENTENCE, ONE ELEMENT

“Operator picks the shell from the trolley and places it on the table to begin the mesh-fixing sequence.”

This sentence becomes one row the moment you type “next” and move to the following action.

Type “next” between elements

ONE CONTINUOUS NARRATION

“operator picks up the housing from the left bin next rotates the housing and inserts it into the fixture next presses it firmly next checks the seating next walks to the glue station”

SPLITS INTO FIVE CLEAN ELEMENTS



IF YOU FORGET TO TYPE “NEXT”

The tool also splits on connecting words — “and then”, “after that”, “and also”. If a piece still contains two or more recognised action verbs, it is split automatically at each verb, and every resulting row is flagged so it gets a second glance instead of being silently merged.

Current Method — narrate the waste too

Capture what actually happens today, including the waste, as one flowing narration:

- Manual handling
- Waiting
- Inspection
- Walking / reach distance
- Tool or fixture used

WORKED EXAMPLE — NARRATED AS ONE STREAM

“Operator picks one shell from the trolley next places it on the table next deflashes the pasting area next applies hot-melt glue next fixes both mesh pieces by hand next taps them with a soft hammer next places the shell at the next location.”

SEVEN ROWS, AUTOMATICALLY

The same seven-step sequence, split by the tool the moment you click “Split into tasks”:

- 1 Pick shell from trolley
- 2 Place on table
- 3 Deflash pasting area
- 4 Apply hot-melt glue
- 5 Fix mesh pieces by hand
- 6 Tap with soft hammer
- 7 Place shell at next location

You never manually create a row — you only narrate.

Proposed Method — capture the idea on the same row

After the current-state element is split into a row, type the improvement idea straight into that row's Idea to Improve field — short, specific, and actionable in a few words.

- **Waste eliminated / combined / re-sequenced**

“Keep the storage trolley nearby the table”

- **Fixture or tooling change**

“Deflashed part to be received from injection moulding”

- **Automation introduced**

“Try adhesive tape instead of hot-melt glue”

- **Parallel (LH+RH) activity**

“Use the soft hammer to tap”

Downstream, these ideas plus your narration feed the ECRS / SMED / TPM / Lean engine automatically — see Section 6.

Vague narration still breaks the tool

“Do work”

No activity defined — the Standardiser has no verb it can map.

“Machine running”

No operator action — nothing to classify as VA / NVA.

“Check”

What is being checked, and with what?

“Assemble”

Which parts? Using what method?

Turning vague words into narration the splitter can use

WRONG	CORRECT
Check	Inspect OD using digital vernier
Assemble	Insert retainer into housing using fixture
Move	Transfer tray to next station using trolley
Fit part	Place magnet retainer in locating fixture and flare edge using pneumatic press

A flagged row is asking for a second look, not an error

WHY A ROW GETS FLAGGED

- Its action verb wasn't recognised by the Standardiser.
- It was auto-split from one sentence that contained two or more actions — it deserves a second glance.

A highlighted row in the table means exactly one of these two things — never a data-loss error. Use “Teach verb for this row” or “Teach object for this row” depending on which part is wrong. The correction is remembered permanently, so you never re-teach the same phrase twice.

AT EXPORT, DON'T DISMISS

“Station incomplete”

the named resource hasn't got a single row yet.

“Incomplete cycle-time data”

a row is missing CT1 / CT2 / CT3 or No. of Units.

“Unclassified rows”

at least one verb still isn't recognised.

A row with no CT1/CT2/CT3 or No. of Units has no real measurement behind it, however complete it looks otherwise — confirm you really mean to export past the warning.

What you type, what the tool computes

YOU TYPE THIS

- ✓ Resource name (Operator, machine)
- ✓ No. of Units
- ✓ CT1 / CT2 / CT3 stopwatch readings
- ✓ Dist (mm)
- ✓ Idea to Improve

Double-click a cell — or press F2, or Tab / Shift-Tab to move between editable cells.

THE TOOL COMPUTES THIS

- = Category and Therblig motion code
- = End Time — from the CT readings
- = Avg (s), Var %, Status
- = Time in (s) — End minus Start

These columns are live formulas. The table screen doesn't even offer them as fields you can type into — that's exactly what keeps every row's calculation reliable.

The 3-cycle stopwatch study

WHAT YOU TYPE

No. of Units	2
CT1 (s)	8
CT2 (s)	10
CT3 (s)	6

Enter the raw reading in seconds for three separate cycles, and how many pieces that reading covered.

SYSTEM AUTO-CALCULATES

$Avg(s) = IF(Units>0, raw-avg / Units, raw-avg)$

RAW AVG

8s

$(8+10+6)/3$

AVG PER UNIT

4s

$8s \div 2 \text{ units}$

Var % = 40% → flagged “Review”

Three readings differing by more than 15% trigger Review / Standardise. Re-time the step — the table won’t let you edit Avg or Var% to force a green result.

Nothing reaches the workbook until you click Export

STATION COMPLETION STATUS PANEL

✓ Operator

✓ Operator-2

... Machine

Stays INCOMPLETE until every expected resource has at least one element.

1

Export refused

if a Man Machine station’s machine elements aren’t filled in yet.

2

Popup on gaps

missing CT1-3, Units or an unresolved verb — fix now or export anyway.

3

Write to workbook

columns B and C of the target station sheet are filled, or the sheet is created.

Structural changes go through the Start Screen

1

New station

Builds the sheet from the master's own template — identity, S.No sequence, formulas, all correct.

2

Insert a station

Every later station rennumbers automatically; Index sheet is rebuilt to match.

3

Delete a station

Tool shows exactly which stations will be renumbered before anything happens.

4

Rewrite from scratch

Same Identity + element table flow, pre-filled — change only what needs fixing.

5

Add elements

Existing rows load into the table — insert, delete, or edit any row before export.

Components, Tools & Notes — kept off the element table

From the Start Screen, choose Components / Tools / Notes for a station to record what it uses — separate from the element table itself.

STN-1 — WORKED EXAMPLE

COMPONENTS USED

Rotor, Rotor Shaft

TOOLS USED

Conveyor, Fixture, Pallet, Trolley

NOTES

(free text optional-simply saying ---You can also Type --system also can capture)

AUTO-SUGGEST FROM ELEMENTS

Current values load automatically. Click Auto-suggest from elements and the tool pulls a list straight from the station’s own narration — the same extraction the rest of the pipeline already runs.

Not quite right? Edit the fields directly — they’re plain text, not locked to what the tool suggested.

Auto-suggest

Save

Study Setup — and starting a brand-new study

STUDY SETUP — AVAILABLE ANY TIME FROM THE START SCREEN

Line / Project name

Customer

Company / Unit

Location

Product / Model

Takt Time (s)

Industry

Sub-Type

Current values load automatically — change only what needs fixing.

STARTING A BRAND-NEW STUDY

- 1 Archives the current master, every station included, into Master_Archive — nothing lost, just moved aside.
- 2 Deletes every station sheet except the first, and resets the Index register.
- 3 Walks you into Study Setup for the new line — Line/Project and Customer are required, the rest can wait.
- 4 Starts capturing the new line's first station.

Nothing happens until you confirm — you're shown exactly what will be archived and deleted first.

Captured more than one study this way? Switch Study... jumps between them — whatever's open saves first.

Same operation, different narration, different insight

ENTRY 1

“Load part”

SYSTEM OUTPUT

Limited — no waste category can be identified from one verb and one noun.

ENTRY 2

“Operator bends to pick the part, walks 2 m, aligns it manually, and loads the fixture.”

SYSTEM DETECTS

- Motion waste (bending)
- Transportation waste (2 m walk)
- Ergonomic risk
- Fixture-improvement / ECRS opportunity

What good narration generates — automatically

1

ECRS questions

2

SMED opportunities

3

TPM 16 major losses

4

Lean 8 wastes

5

Safety concerns

6

Productivity gains

NO MANUAL ECRS TICKING NEEDED

All six are generated automatically from your narration and Idea-to-Improve entries — but only when the description is meaningful. Garbage narration in → garbage recommendations out.

Your turn — narrate this element

STARTING POINT

“Fit magnet retainer.”

Use 5W1H to expand it into one full narration sentence, then compare with the model answer below.

MODEL ANSWER

“Operator places the magnet retainer in the locating fixture and flares the edge using the pneumatic press to secure the retainer.”

Do's and don'ts

✓ DO

- Type “next” between every element in your narration.
- Watch the Station Completion Status panel before you try to export.
- Fill CT1/CT2/CT3, No. of Units, Dist and Idea to Improve as you go — don't leave them for later.
- Use New station / Insert / Delete from the Start Screen for structural changes.

✗ DON'T

- Don't dismiss the “incomplete cycle-time data” warning without a reason.
- Don't clear Stn-1 and type over it for a new line — use “Start a brand-new study” instead.
- Don't leave Components / Tools / Notes blank — it's the station's own record, separate from the element table.
- Don't skip Study Setup for a new line — Line/Project and Customer are required before Stn-1 can be captured.

Pre-export checklist

☐

Is the narration understandable to someone new to the line?

☐

Does each element answer 5W1H?

☐

Did you type “next” between every element?

☐

Is the Current method narrated factually, as observed?

☐

Is the Proposed / Idea-to-Improve entry specific and measurable?

☐

Is Station Completion Status showing every resource complete?

☐

Have CT1/CT2/CT3, No. of Units and Dist been filled for each row?

☐

Have Components, Tools and Notes been recorded for the station?

☐

Have all flagged rows been reviewed with Teach verb / Teach object?

☐

Did you use the Start Screen for any new, inserted, or deleted station?

KEY TAKEAWAY

Good narration is still the first improvement activity.

TWI Study Builder generates powerful Industrial Engineering insight only when the narration you give it is complete, factual, and structured. The tool changed — everything in this deck exists to protect that one input, same as before.