Problem Solving Additional Slides

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Process 2: Set SMART targets

S PECIFIC

M EASURABLE

A TTAINABLE

R EALISTIC

T IME BOUND
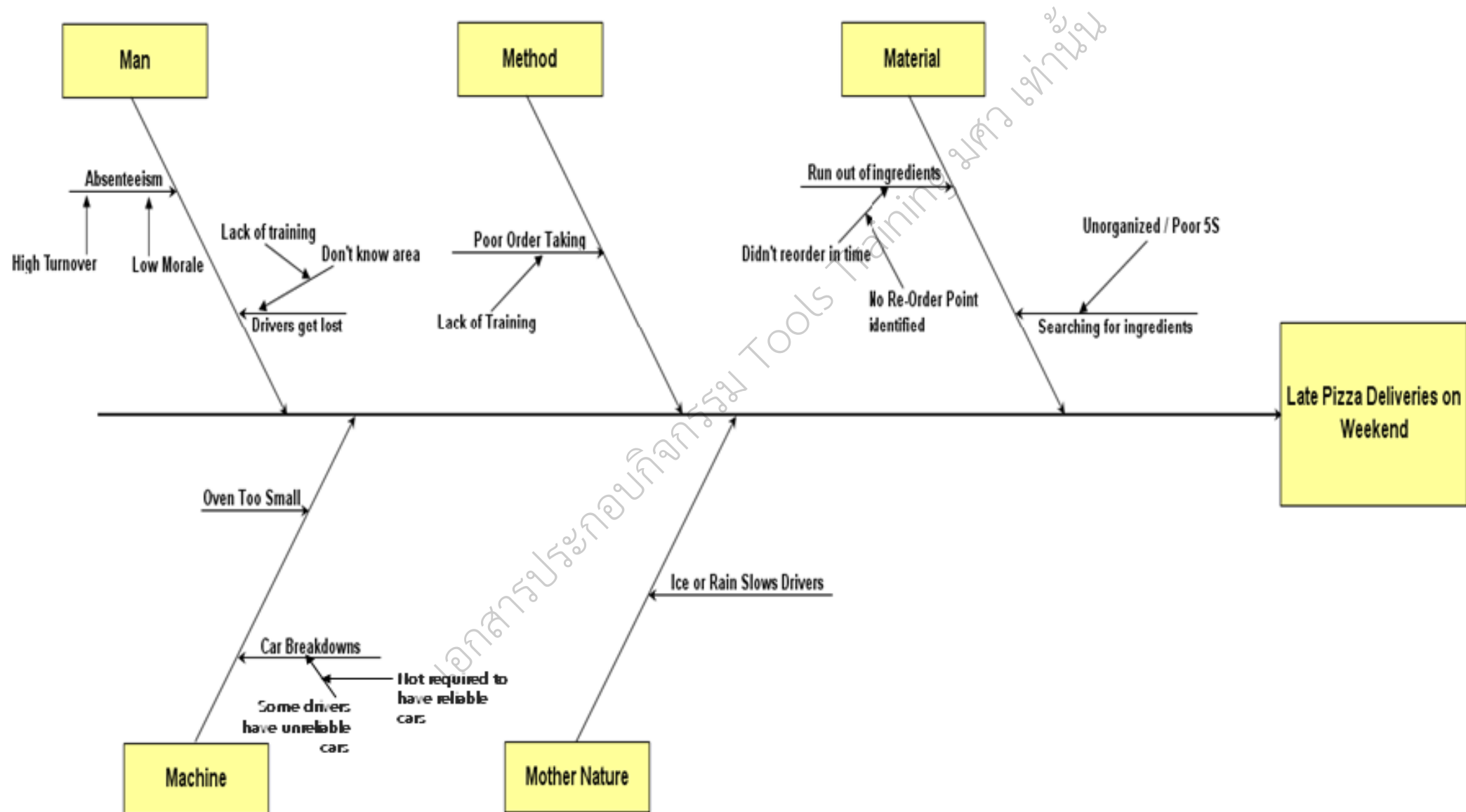
Process 2: Gather facts and keep asking "Why"

Problem : "The milk is spoiled"

- Why 1? : "why is the milk spoiled"
- Why 2? : "we had too many cartons in the fridge."
- Why 3? : "We bought more cartons than we needed at the store."
- Why 4? : "There was a sale on milk and we tried to save money."

Process 2: Gather facts and keep asking "Why"

Process 3: Specify and check the real root cause

Align 5 Whys

What is the cause of poor sales negotiation of a staff member

- Why 1? : The staff member does not work well
- Why 2? : His motivation is low
- Why 3? : He does not have confidence in collecting sales
- Why 4? : He does not know how to negotiate with customer
- Why 5? : There is no guidelines for staff members to use for negotiation

- OK The root cause has been detected
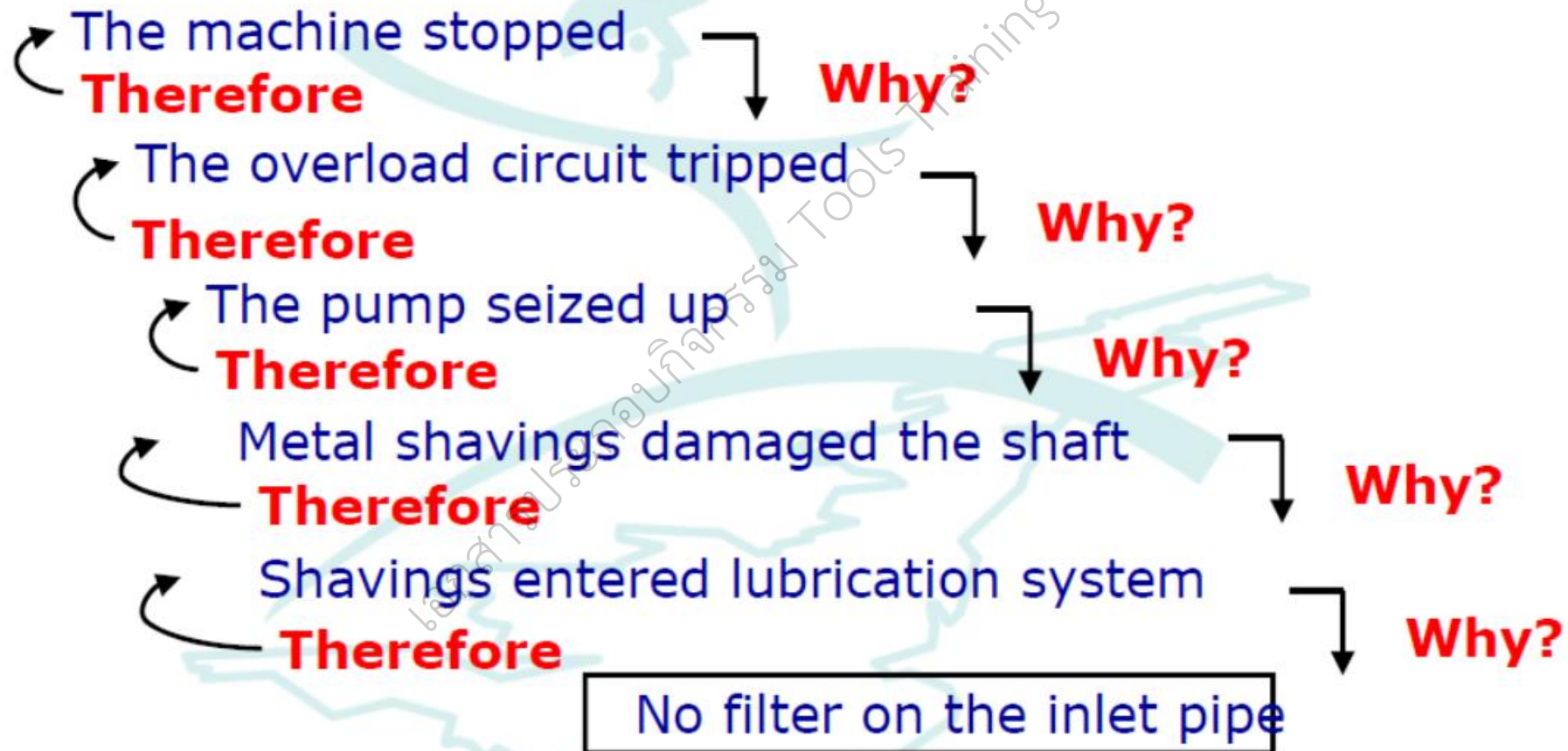
Process 3: Specify and check the real root cause

Misalign 5 Whys

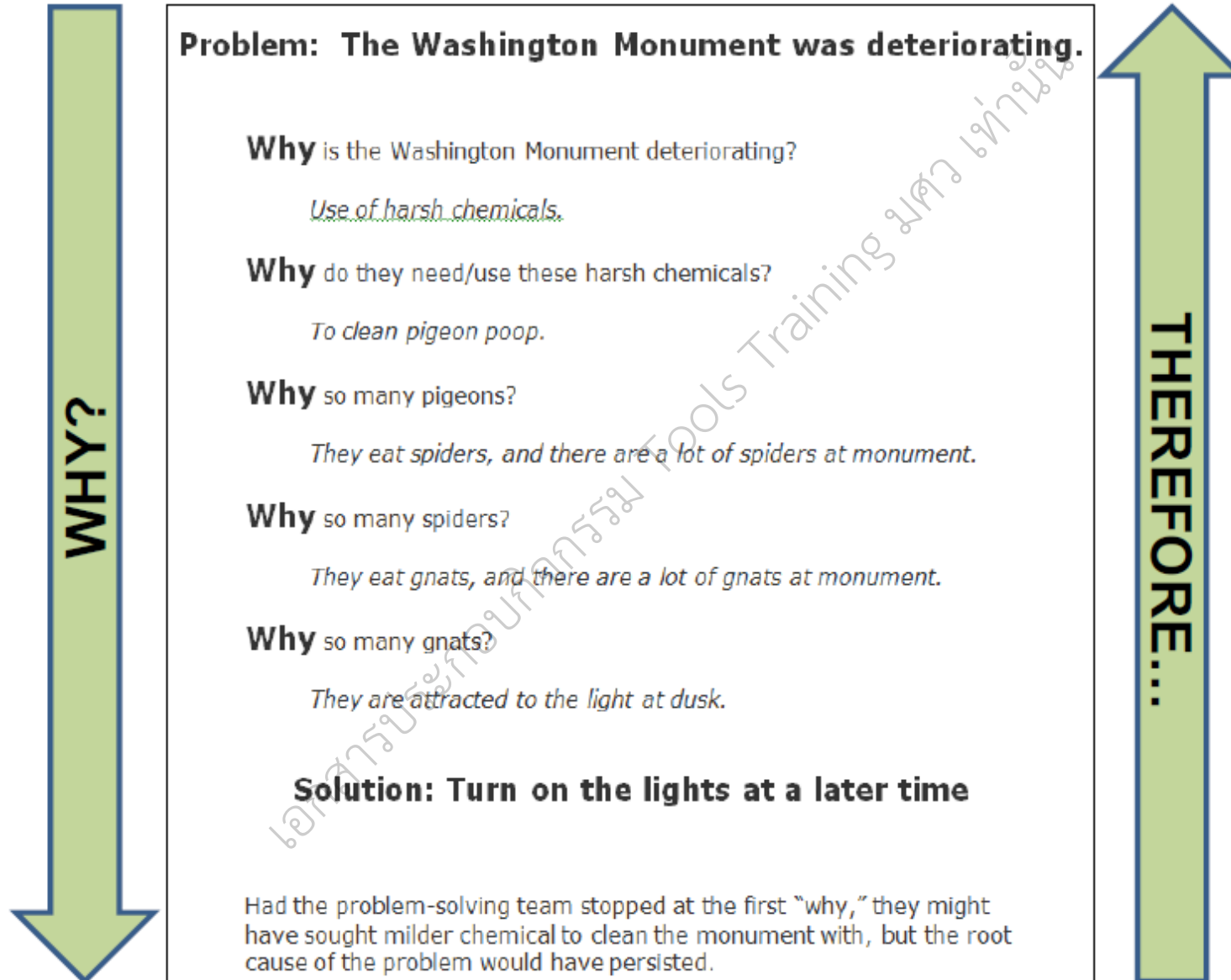What is the cause of poor sales negotiation of a staff member

- Why 1? : The staff does not attempt to conduct enough business
- Why 2? : He does not realize that his business performance is low
- Why 3? : His salary is low
- Why 4? : His superiors' performance evaluation skills is inconsistent
- Why 5? : The HR performance evaluation system is not good

- NoK: The Why 4 becomes unfocused and shifts from staff to superior then the system. The Why should be on the staffs performance levels and work attitudes to find the actual root cause

Process 3: Specify and check the real root cause

To check 5-Why chain read in reverse with the "Therefore" test

The machine stopped
Therefore → Why?

The overload circuit tripped
Therefore → Why?

The pump seized up
Therefore → Why?

Metal shavings damaged the shaft
Therefore → Why?

Shavings entered lubrication system
Therefore → Why?

No filter on the inlet pipe

5 Why Analysis Example

WHY? ↓

THEREFORE... ↑

Problem: The Washington Monument was deteriorating.

Why is the Washington Monument deteriorating?

Use of harsh chemicals.

Why do they need/use these harsh chemicals?

To clean pigeon poop.

Why so many pigeons?

They eat spiders, and there are a lot of spiders at monument.

Why so many spiders?

They eat gnats, and there are a lot of gnats at monument.

Why so many gnats?

They are attracted to the light at dusk.

Solution: Turn on the lights at a later time

Had the problem-solving team stopped at the first "why," they might have sought milder chemical to clean the monument with, but the root cause of the problem would have persisted.
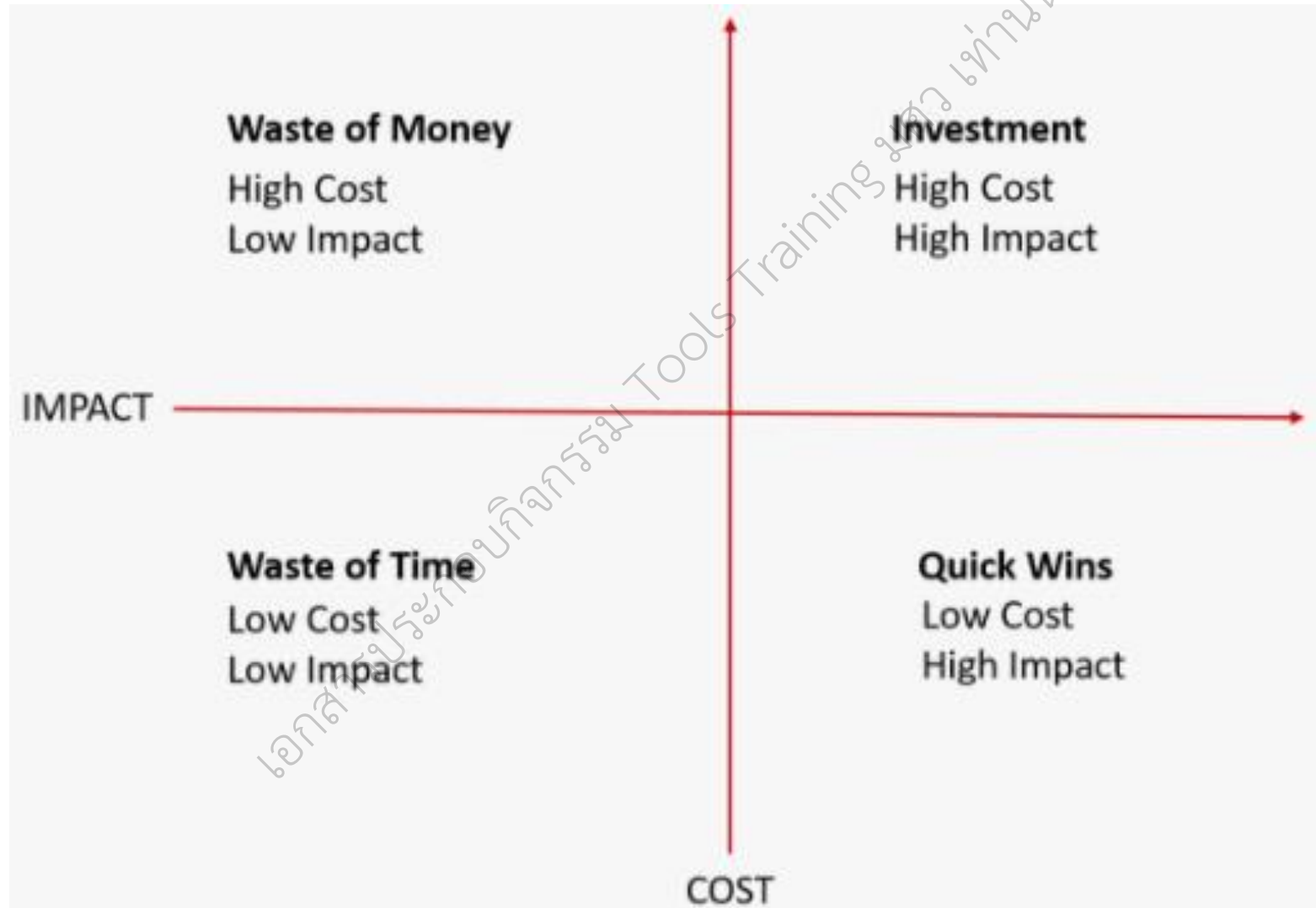
Impact/Effort Matrix Example

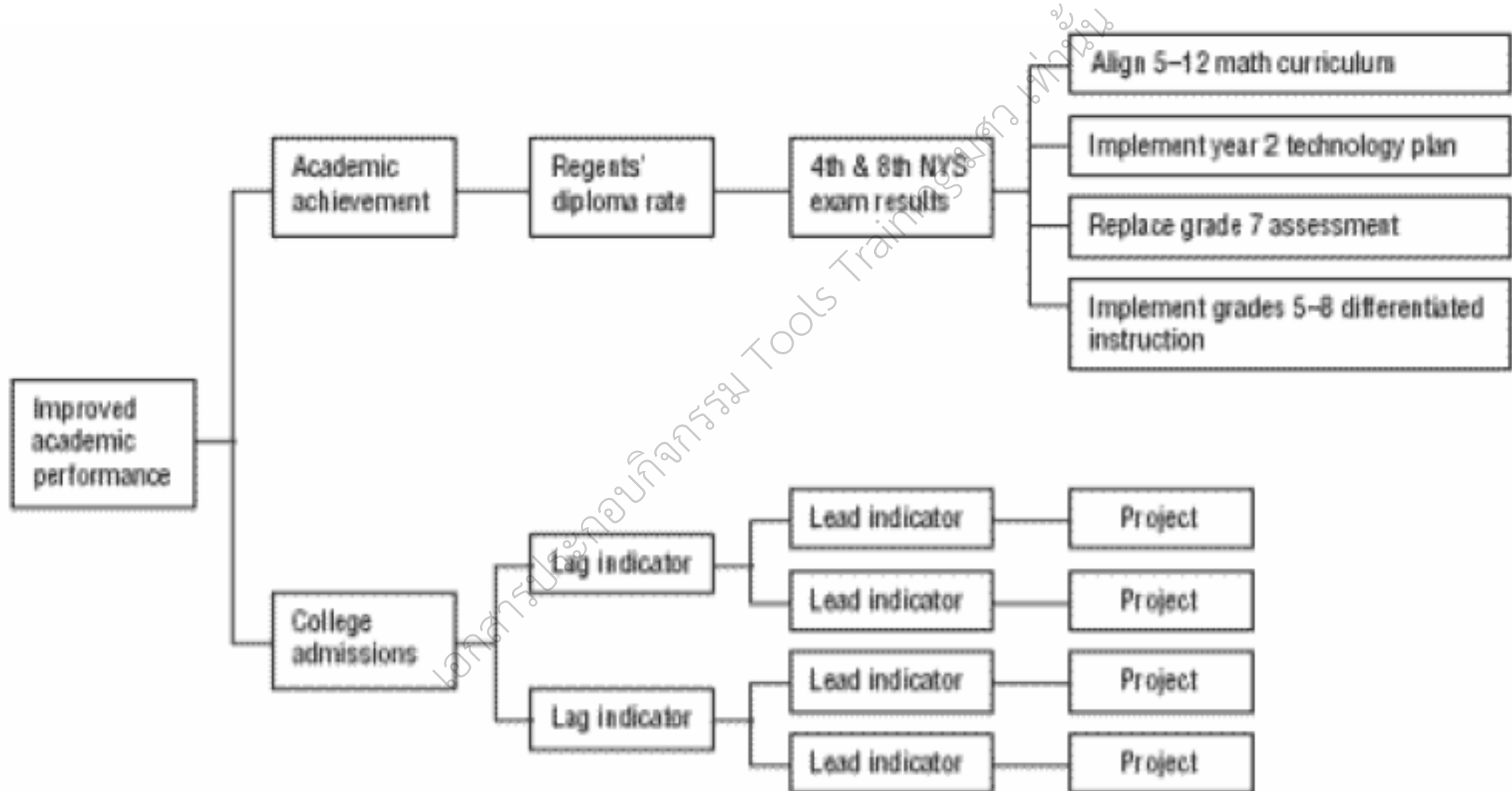- A countermeasure which requires low effort and produces high impact is ideal.
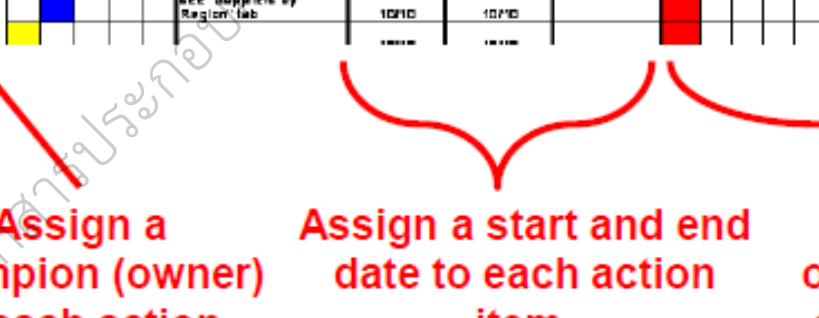
Cost/Impact Matrix Example

Key elements of an effective problem statement

- **Gap**: Identify the gap (pain) that exists today. (what)
- **Timeframe, location and trend**: Describe when and where the problem was first observed and what kind of trend it is following (how often).
- **Impact**: Quantify the gap (cost, time, quality, environmental, personal, etc.) (how much)
- **Importance**: To the organization, the individual, etc. (who) to better understand the urgency. (why)

Tree Diagram Example

Gantt Chart

Project : Implementation
Start Date — 6-Oct-08
Go Live Date — 7-Nov-08

| | Complete | On Time | Danger |

Planned Completion Date — Actual Completion Date

Who — Customer, LG ENG, LCTM, Carrier, Supplier

| Action | Champion | Comments | Start Date | Planned Complete Date | Actual Complete Date | Status |

Weeks 1–5

List all action items for improvement and check/adjust.

Assign a Champion (owner) to each action item

Assign a start and end date to each action item.

Focus on the distribution of work to prevent batching of action items. Also focus on interdependencies (critical path vs task)
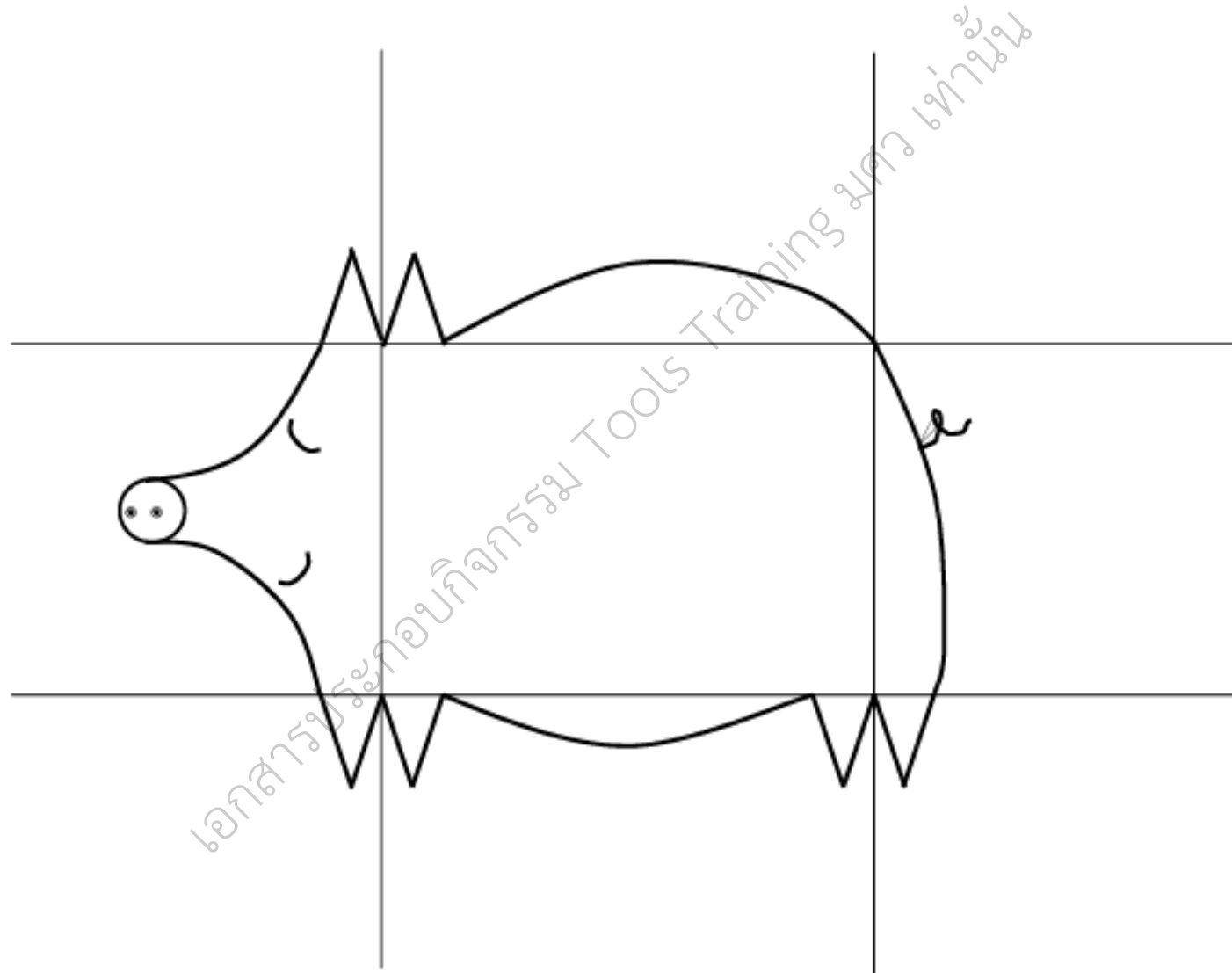
Make Countermeasures Visible

→ Check progress regularly

→ Anticipate obstacles and breakthrough

→ Thoroughly communicate by reporting, informing, and coaching

Process 1:Evaluate overall results and processes

	BAD RESULT	GOOD RESULT
GOOD PROCESS	Impossible	Excellent!
BAD PROCESS	It's OK if we learned something.	It's only luck!

Example : Drawing a Pig

Standard Operating Procedure
Standardize Work Instruction

Status	Final
Revision	1
Rev. Date	8/29/2005

Procedure Number PIG0001-A	Page 1 of 1

| Task	Description	Sub-Task	Instructions
1	Draw a letter M at the top left intersection.	1.1	Bottom center of M touches intersection
2	Draw letter W at bottom left intersection	2.1	Top center of W touches intersection
3	Draw letter W at bottom right intersection	3.1	Top center of W touches intersection
4	Draw arc from letter M to top right intersection		
5	Draw another arc from top right intersection to bottom right W		
6	Draw an arc between the two bottom Ws		
7	Draw the letter O in center left box		
8	Draw arc from letter M to tangent of the circle		
9	Draw arc from left W to tangent of the circle		
10	Draw an arc for the mouth	10.1	Half way between the W and circle
		10.2	Must be a happy pig
11	Draw an arc for the eyes	11.1	Half way between the M and circle
12	Draw cursive letter e near top of arc on right		
13	Draw two dots in middle of circle for pigs' nose.		

A Gap: The two types of Gaps:

What is the Problem?

Improvement through raising standards and solving problems

Next standard

Current standard

Raise the standard

Maintain current standard

Original standard

Time

Created GAP

Caused GAP
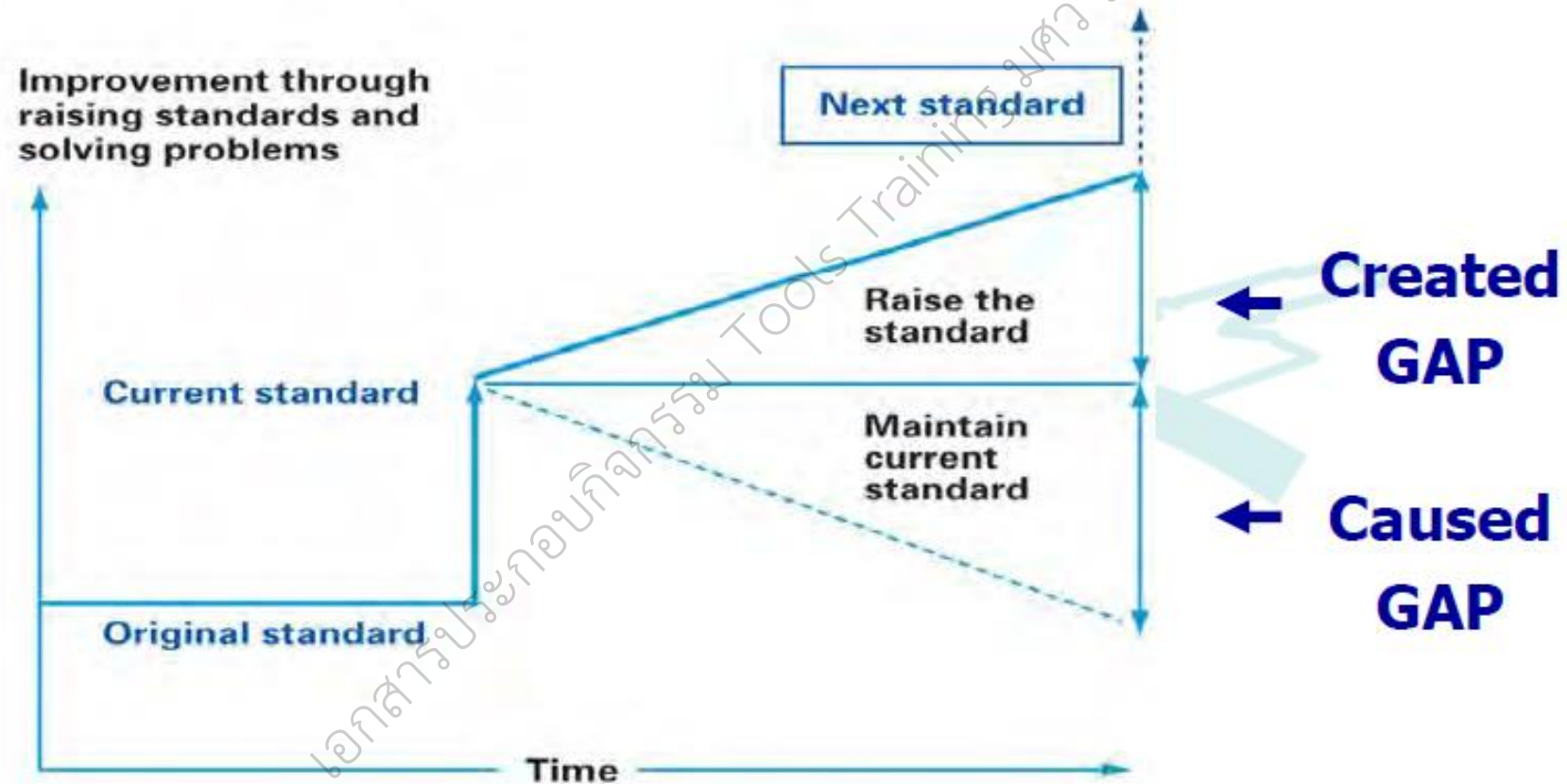
A problem is any performance other than desired performance at any given time.

Continuous Improvement (Kaizen)
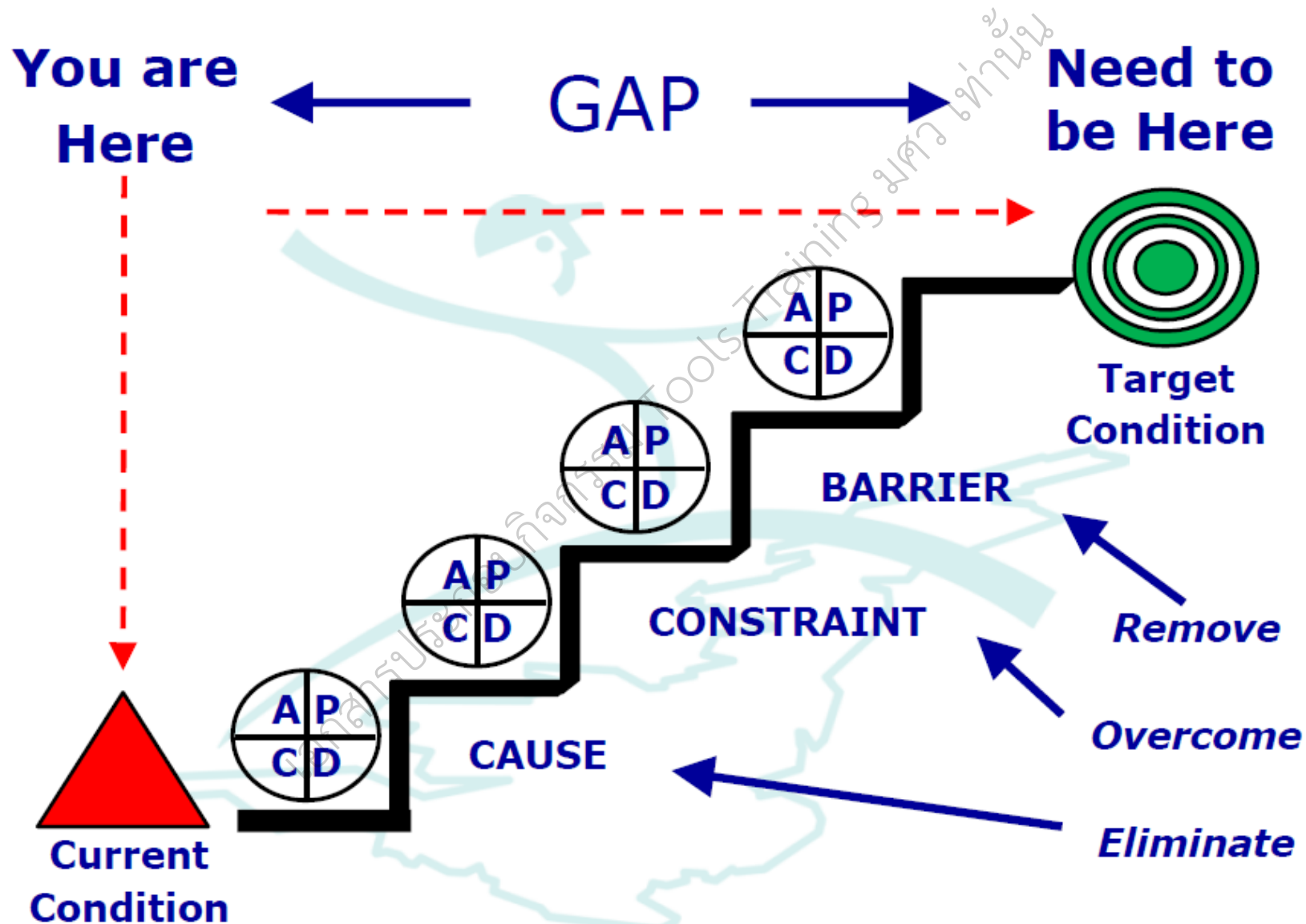
Theme: Review Questions For Problem Solving A3s

Background

- Is there a clear theme for the report that reflects the contents?
- Is the topic relevant to the organisation's objectives?
- Is there any other reason for working on this topic (e.g. learning purposes)?

Current Situation

- Is the current condition clear & logically depicted in a visual manner?
- How could the current condition be made more clear for the audience?
- Is the current condition depiction framing a problem or situation to be resolved?
- Are the facts of the situation clear, or are there just observations & opinions?

Goal

- Is there a clear goal or target?
- What, specifically, is to be accomplished?
- How will this goal be measured or evaluated?
- What will improve, by how much, and when?

Root Cause Analysis

- Is the analysis comprehensive at a broad level?
- Is the analysis detailed enough and did it probe deeply enough on the right issues?
- Is there evidence of proper 5 whys thinking about true cause?
- Has cause and effect been demonstrated or linked in some manner?
- Are all the relevant factors considered (human, machine, material, method, environment, measurement, and so on?

Countermeasures

- Are there clear countermeasure steps identified?
- Do the countermeasures link to the root cause of the problem?
- Are the countermeasures focussed on the right area?
- Who is responsible for doing what, by when (is 5W1H clear)?
- Will these action items prevent recurrence of the problem?
- Is the implementation order clear and reasonable?
- How will the effects of the countermeasures be verified?

Effect Confirmation

- How will you measure the effectiveness of the countermeasures?
- Does the check item align with the previous goal statement?
- Has actual performance moved in line with the goal statement?
- If performance has not improved, then why? What was missed?

Follow-up Actions

- What is necessary to prevent recurrence of the problem?
- What remains to be accomplished?
- What other parts of the organisation need to be informed of this result?
- How will this be standardised and communicated?

Ref: Sobek & Smalley 2008 pp 50