

Seasons Greetings from the LEA



LEA Webinar

Rapid Problem Solving

D.Brunst, D.Marriott, P.Watkins
December 8th 2021

Welcome to our Rapid Problem Solving webinar. This is our last webinar of 2021 and we are pleased you are able to join us. My name is Dave Brunst. I manage the activity at the Lean Enterprise Academy, and I am joined by two of our Senior Lean Coaches, Peter Watkins and David Marriott, today.

LEA - Purpose & Approach

Our Purpose:

We are a not for profit organisation, established to help customers become self-reliant on their lean journey. Through research, products and services we provide better, faster and cheaper ways to learn and improve.

Our

Approach:

LEAN TRANSFORMATION FRAMEWORK

SELF RELIANT CUSTOMERS



"Give a man a fish and you feed him for a day. **Teach** him how to fish and you feed him for a lifetime" – Lao Tzu

Many of you will be aware, but for those that are new to LEA, we were founded in 2003 by Dan Jones as a not-for-profit organisation. Our aim is to help people become self-reliant on their lean journey.

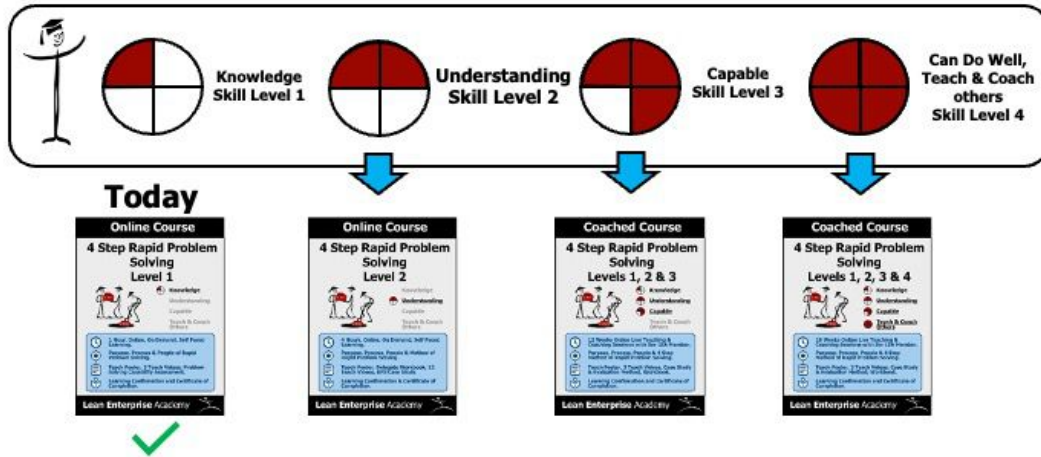
We have products and services that we offer to customers based around 3 key value streams – Learn, Teach & Coach and Share. At the intersection of each of those processes is our "Lean Learning Journey" platform where we are writing down, in a usable form the key knowledge required to learn and implement lean.

The materials are organised around the Lean Transformation Framework which we both research and develop with partner organisations.

The materials and processes that we develop are based on a fundamental principle – "Give a man a fish and you feed him for a day. Teach him how to fish and you feed him for a lifetime."

What is your Lean Journey?

Lean Learning Journey – Skill Levels



Learn more about our online & coached courses at:

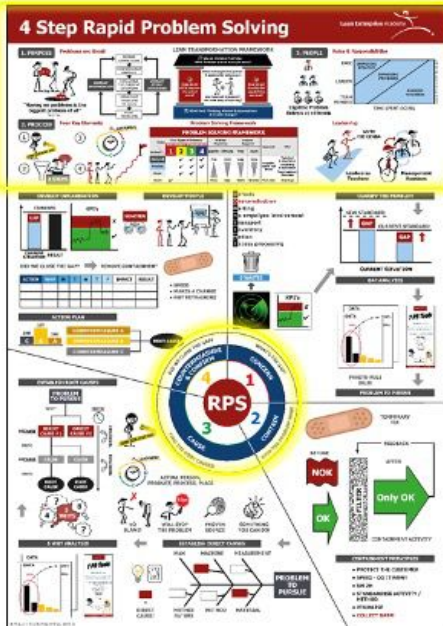
www.leanuk.org/lean-courses

To put today into context, the materials are all about Knowledge – Skill Level 1. However, you can develop understanding by learning yourself online, using the Practical Problem Solving Level 2 course.

To become capable however – you need to practice. This is best done on real problems, at the workplace.

We offer teaching and coaching for this and we offer a process to help you (once capable) to be able to train and teach others in your organisation. This approach mirrors what we know from the way excellent lean companies like Toyota develop capability. It is simple and effective. It uses a Plan-Do-Check-Act methodology at each stage.

Webinar Agenda



- **Agenda**
- **Teach Poster Concept**
- **Introduction to Problem Solving**
 - **Purpose**
 - **Process**
 - **People**
- **Q & A**
- **Overview of the 4 Steps**
- **RPS Quadrant Chart**
- **Lean Learning Journey for RPS**
- **Summary/Q & A**

Let's move onto today's content. Next up is an explanation of our teach poster method and I'll provide an introduction to problem solving in terms of purpose, process and people. We will then take questions. David will give an overview of the 4 steps of rapid problem solving and then hand back to Peter who will share insights around the rapid problem solving quadrant chart. We will discuss how to develop understanding on both your lean journey and the journey you develop for your colleagues before I lead the final discussion and Q & A session. Before we look at the teach poster method, let's look at some problems with problem solving.

The Problem with Problem Solving?

- 1. Certifications based upon Knowledge not Capability**
- 2. Trying to use A3's for every problem**
- 3. Only Containing Problems, not getting to Root Cause**
- 4. Jumping to solutions**
- 5. Leaders trying to solve all problems**
- 6. Leaders not coaching others in the process/thinking way**
- 7. Taking too long to do**
- 8. I Understand it, but can't apply it in my situation**
- 9. Not capturing and visualising problems**

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There are lots of problems, with the way we manage problem solving in organisations. Here are our current vital few

Firstly focusing on certification instead of capability.

Trying to use A3's for everything. When the only tool you have is a hammer, everything starts to look like a nail.

Only containing problems, not getting to root cause. Then wondering why we are dealing with the same issues over again.

Not using PDCA, instead jumping to solutions.

As a leader, trying to solve everything. All we end up doing is running around fighting fires.

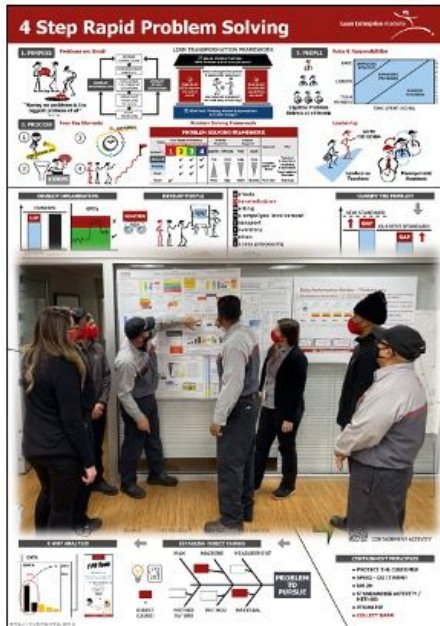
Then we have little time to coach and develop others.

When we are not skilled in problem solving, it takes way too long.

Understanding the theory, but not being able to apply to a situation

And finally not capturing and visualising problems.

Teach Poster Concept



■ Why do we use a Poster?

- Can be taught by leaders in the workplace or online without the need for a training room.
- Structured in to defined areas making it easier to remember.
- Pictures are remembered easier than words & create more interest and discussion.
- A poster can be put up in your workspace for future reference, not hidden on a pc.

For a sustainable Lean Transformation, we are strong believers in the concept of “Leaders as Teachers”.

That is Leaders who take the time to teach and coach their team, on the job to develop their capabilities rather than relying on separate function(s) to do it for them.

As you know, the benefits of doing this are huge in terms of advancing your lean journey, the challenge is however how to provide materials that enable leaders to do that.

Our current standard – the best way we know today, is to use a Teach Poster.

Rather than a 100 page PowerPoint slide deck, we have tried to distil the subject matter down on to one piece of paper – a bit like an A3!

This is much less daunting for the leaders to use and also much more informal than sitting down in a class room looking at a screen.

All the Posters have a similar layout and structure making them easier to follow and remember. As you can see images/pictures are used over words to stimulate interest and discussion. A facilitation guide is written for each poster covering the “Important Steps”, “Key Points” and “Reasons” for each of the images to assist the Leader when starting out to Teach.

Finally, the Poster can be put up in your workspace for future reference rather than being hidden on a pc. Ok, so I’ll now hand over to Peter

Problem Solving – Introduction

Work through:

1. Purpose
2. Process
3. People

Starting Point:

Lean Transformation Framework

4 Step Rapid Problem Solving

1. PURPOSE Problems are Good! **LEAN TRANSFORMATION FRAMEWORK**

REPHRASE COMPETITIVE PURPOSE
 CONFIRM PURPOSE PURPOSE
 CHALLENGE THE CURRENT SITUATION
 DEVELOP FEASIBLE SOLUTIONS
 DEVELOP PROBLEMS TO SOLVE
 SOLVE PROBLEMS

VALUE DRIVEN PURPOSE: What Problem are we trying to solve?
 How do we do it & improve the current way?
 What management systems & leadership behaviors are required to support the new way of working?
 What Risk, Training, Material & Assumptions are the barriers?

3. PEOPLE Roles & Responsibilities

EXEC IMPROVING STRATEGY
 LEADER IMPROVING PROCESSES
 TEAM MEMBER RUNNING PROCESSES

Capable Problem Solvers at all levels

2. PROCESS Four Key Elements

1. DEFINE THE PROBLEM
 2. ANALYZE THE PROBLEM
 3. DEVELOP SOLUTIONS
 4. IMPLEMENT SOLUTIONS

P. LEARNING
 PLAN
 DO
 CHECK
 ACT

PROBLEM SOLVING FRAMEWORK

Type	1	2	3	4	Problem Complexity	Analysis Method	Time	Depth	Approach	Who
Advanced	✓	✓	✓	✓	High	Deep	Long	Deep	Technical & Operations Knowledge & Skills	Team Leaders/ Members
Intermediate	✓	✓	✓	✓	Medium	Medium	Medium	Medium	Technical & Operations Knowledge & Skills	Team Leaders/ Members
Rapid	✓	✓	✓	✓	Low	Shallow	Short	Shallow	Fix It Now	Everyone
React	✓	✓	✓	✓	Very Low	Very Shallow	Very Short	Very Shallow	Fix It Now	Everyone

Leadership: GO TO THE GENBA
 Leaders as Teachers
 Management Routines

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Ok, so we are going to go through the upper portion of the 8 Step Practical Problem Solving Poster.

We always start with the learn Transformation Framework and then cover Purpose, Process and People.

Purpose positions the subject and why is it important.

Process the conditions and considerations required to apply it.

And People the roles and responsibilities required to make it happen.

Problem Solving is the #1 Lean Skill!



Go to www.leanuk.org/about-the-lean-enterprise-academy/how-to-do-lean/ to see the full LTF video explanation

We always start with the Lean Transformation Framework, which in essence is our approach or how we do Lean and ask where does this topic fit in.

The framework consist of five dimensions which all need to be considered for a successful Lean transformation.

These dimensions can be asked as a series of questions and starts with Number 1 at the top:

“What is our Value-Driven Purpose and more specifically what Problem are we trying to solve?”

Clearly, you need to be competent problem solvers if we are going to answer the first question!

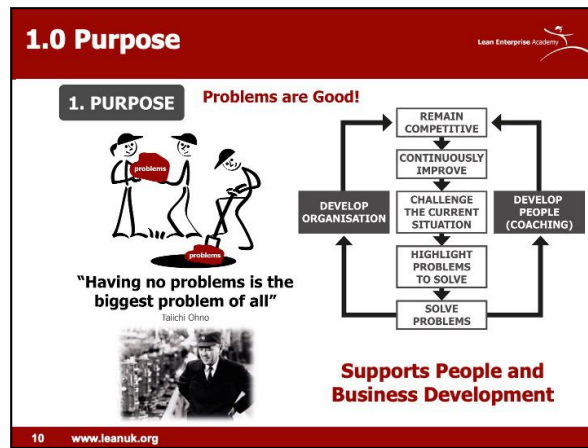
However it is probably likely that we are going come up against other problems when tackling questions 2 through to 5.

We therefore see Problem Solving and the thinking way as the number one Lean skill and the reason why we decided to use it to launch our Lean Learning Journey platform last year.

If you think about it, a lot of the familiar lean tools we know and love, like 5S, Standard Work, Value Stream Mapping, SMED etc. were all created to try and solve specific problems.

So Problem Solving is the number 1 Lean Skill to master.

A full explanation of the Framework can be found on our Website. Or watch our latest youtube video where we interview John Shook about the LTF.



So lets look at Purpose and Why is Problem Solving Important
Firstly we need to accept that Problems are good!

We should see them as golden nuggets of opportunity rather than something to sweep underneath the carpet.

As Taiichi Ohno said, “Having no problems is the biggest problem of all”.

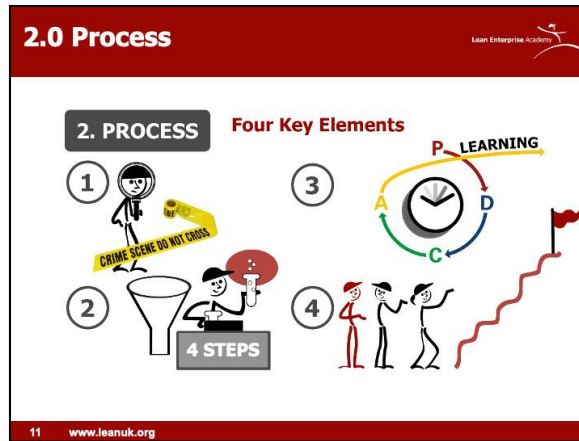
We should therefore actively seek out problems and start digging them up for people to tackle.

Taking a step back however, and looking at the bigger picture, consider the flowchart on the right.

Clearly as an organisation we want to remain competitive which means highlighting and solving those problems.

But in doing that we have two big benefits and they are to develop the organisation but more importantly develop your people.

And that is why it is so important as it is supporting people and business development at the same time.



Looking at process next and some considerations around applying it, there are Four key elements with respect to problem solving.

The first is to encourage the “Go and See” approach.

A bit like a Crime Scene Investigator, going to the actual place where the crime took place to see the evidence while it is still fresh and look for clues.

Secondly, it s important to have a scientific method and approach to the problem solving – in this case we have 4 Steps or a Process to follow.

Thirdly is to encourage PDCA thinking to close the loop and most importantly ask “What did you learn?” for next time.

The point of the clock in the middle is to invoke speed, the better and quicker we can do this the faster we learn and the faster we improve.

An finally the last element is to never give up on reaching that Ultimate Goal.

Each problem solved is a step close to that destination and as Leaders we have to recognise that achievement and encourage our people to take the next step.

2.0 Process										
PROBLEM SOLVING FRAMEWORK										
Types	Four Types of Problems				Problem Properties		Analysis Required		Approach	Who
	Healthy/Controlled	Controlled/Proactive			Quantity	Difficulty	Time	Depth		
Methods	1	2	3	4	Flow	Hard	Long	Deep		
Advanced		✓	✓	✓	▲	▲	▲	▲	Scientific data & fact driven	Technical & Specialists
Practical	✓	✓	✓	✓	▲	▲	▲	▲		Leadership & Specialists
Rapid	✓	✓	✓	✓	▲	▲	▲	▲		Team Leaders/ Members
React	✓				Many	Easy	Short	Shallow	Fix it now	Everyone

The next consideration in Problem Solving is to explain, as I'm sure you understand, that not one size fits all with respect to the types of problems and the approach to take.

In his book, Art Smalley did a great job of describing Four Types of Problems as:

Type 1 - Troubleshooting

Type 2 – Gap from Standard

These are reactive or caused types of problems.

Type 3 – Target Condition

Type 4 – Open-Ended

Whereas these are created or proactive types of problems.

In the Framework we have tried to show the different methods you can apply to those types of problems.

For example Type 1 is described as Troubleshooting those unexpected events – a flat tyre for example.

Clearly here you just need to React to the problem and fix it now – just change the tyre.

In terms of problem properties, many of these types of problems happen and are relatively easy to fix.

Analysis time is short and really you don't need to think about it too much, just fix it now and these will happen to everyone in the organisation.

The classic Toyota analogy here would be reacting to Andon cord pulls on the assembly line.

Moving up to Rapid problem solving, you can see that this approach tends to work well with for those Type 2 and 3 "Gap from Standard" and "Target Condition" problems.

Typically a four step approach this tends to be for those data driven type issues and used by those front line leaders of teams and their members.

By their nature they are frequent, not too complicated or time consuming but offers a structured approach to get to root cause countermeasures and prepares them well for the thinking behind Practical Problem Solving.

Practical Problem Solving is what we call the A3, 8 Step approach. It is also suitable for Type 2 and 3 problems but for those more challenging business issues and in some cases those difficult Type 4 Open Ended problems.

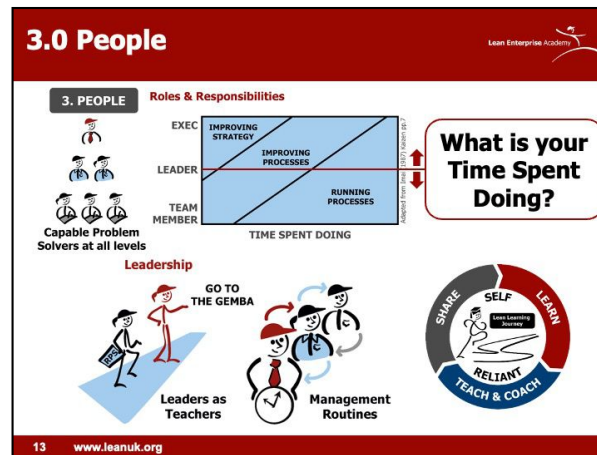
These problems are tough to solve and therefore take time and a deeper level of thinking than rapid, but often offer greater rewards and returns.

The trick however is not just filling out and completing the A3 template, but more about the logic and thinking way of solving the problem.

You probably get the thinking now with Advanced methods and problems - in that there are not so many of them around, they are difficult and take time to solve with deep analysis and investigation.

There are probably only a few in your organisation that are capable of tackling these issues which often result in a new product or way of doing things – a step change.

The point of this framework is to really get you to think about the Types of Problems people face and the best method to approach them considering their level in the organisation.



Moving on to People, lets think about some roles and responsibilities in the organisation and the connection to problem solving.

Starting with the simple hierarchy on the left, what we want is for everyone in the organisation to be Capable problem solvers. An army of them at all levels right from Team Member level through to the Top Execs.

Of course as we have just discussed they are not all solving the same problems, but applying the right approach to those occurring at the their level.

If we consider the model on the right, lets say that "Improving Processes" is tackling problems.

This tries to show proportionally how much time we should spend doing those activities based upon on our level in the organisation.

At Team member level for example, they should spend most of their time doing the value adding work or running processes, but also have some time made available to improve the process and solve some problems.

At the Exec level, we really want those people spending most of their time thinking about Strategy and where the organisation is going, improving what we currently do and a small amount of their time running the business day to day.

The question to ask is where do you see Leaders in your business spending their time..

Are they too busy firefighting, running the business day to day with no time for improvement? And why is that?

If the whole organisation isn't aligned and mobilised to solve problems at their level then your Leaders are always going to be too busy to improve.

That's why Leaders as Teachers is such a key concept to embrace to allow the organisation to grow through developing its people in to an army of problem solvers.

Management Routines or Leader Standard Work is a key mechanism to facilitate the time to do this and recognise, coach and feedback to people on their problem solving capability development.

This is the key to becoming self reliant on your Lean Learning Journey.

Questions ?

What Questions Do You Have?

4 Step Rapid Problem Solving

Lean Enterprise Academy

1. PURPOSE

Problems are Good!

"Having no problems is the biggest problem of all!"

DEVELOP ORGANISATION → CHALLENGE THE CURRENT SITUATION → DEVELOP PEOPLE (COACHING) → SOLVE PROBLEMS

DETAILED COMPETENCE → CONFIDENCE TO DECIDE

LEAN TRANSFORMATION FRAMEWORK

① VALUE-DRIVEN PURPOSE: What results are we trying to achieve?

② What management system & leadership behaviors are we trying to improve the actual result?

③ What Best Thinking, Method & Approaches drive this change?

3. PEOPLE

Roles & Responsibilities

EXEC: IMPROVING STRATEGY

LEADER: IMPROVING PROCESSES

TEAM MEMBER: RUNNING PROCESSES

Capable Problem Solvers at all levels

Leadership: GO TO THE GEMBA

Leaders as Teachers

Management Routines

2. PROCESS

Four Key Elements

① ② ③ ④

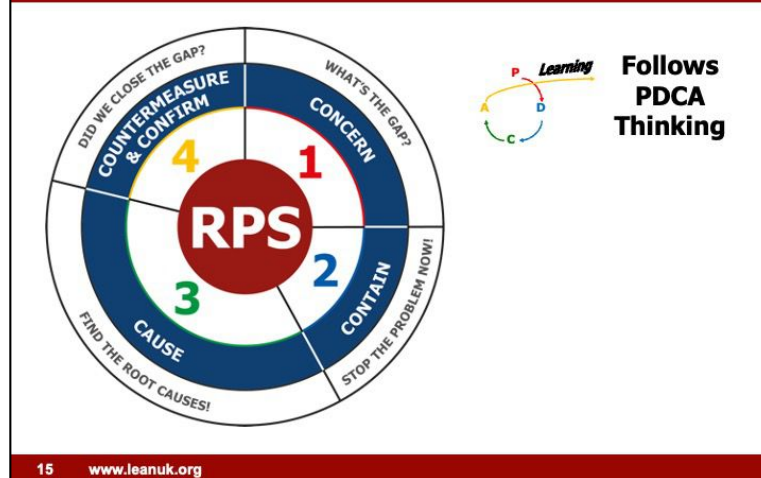
4 STEPS

P-LEARNING

Problem Solving Framework

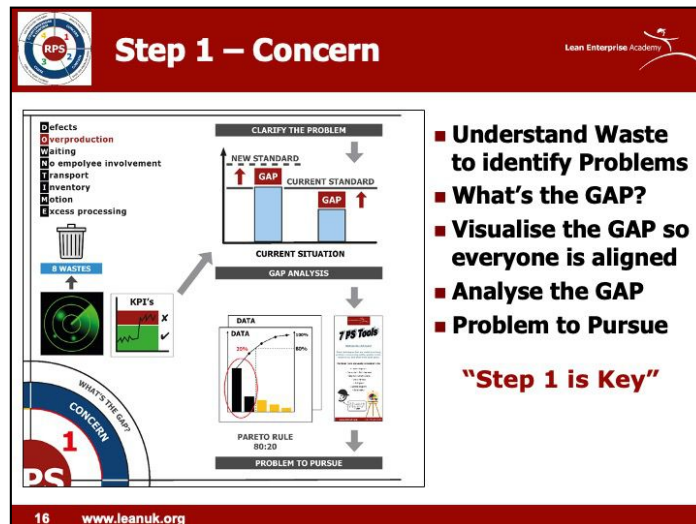
Type	Four Types of Problems				Problem Process		Analysis Required		Approach	Who
	1	2	3	4	Quality	Difficulty	Time	Depth		
Hidden	✓	✓	✓	✓	None	None	None	None	Technical & Operational	Employees
Admitted	✓	✓	✓	✓	None	None	None	None	Technical & Operational	Employees
Prevalent	✓	✓	✓	✓	None	None	None	None	Technical & Operational	Employees
Repet	✓	✓	✓	✓	None	None	None	None	Technical & Operational	Employees
					None	None	None	None	Technical & Operational	Employees

Overview of the 4 Steps



In this section we will give a high level overview of the thinking way behind each step of the Rapid Problem Solving Method, which is based on Plan Do Check Act as indicated by the different colours. Red for plan, blue for do and so on.

You will also see that the largest portion is Step 3 highlighting where we will spend most of our time whilst solving the problem.



Step 1 is called "Concern." The concern is the problem to solve. But how do we decide whether we have a problem? Problems come onto our radar in various ways. Understanding & Identifying the 8 wastes through observation can help you uncover the "problems with the work" in your organisation. You may have internal or external customer complaints. You may be reworking products or process steps – trying to deliver to your internal or external customer. Or you may have a gap in your KPIs.

Having a gap in something measurable is important. If we are not able to answer the question "What's the GAP" we are probably not clear about what is the Problem to Solve. The concern is just an opinion or someone's perception and if we can't measure it then we can't improve it. The Gap is the difference between where you should or want to be (let's call this the standard) and where you currently are.

There are two main types of GAP's :-

Caused Gaps – to get back to current standard

Or created GAP's – to improve from the current standard

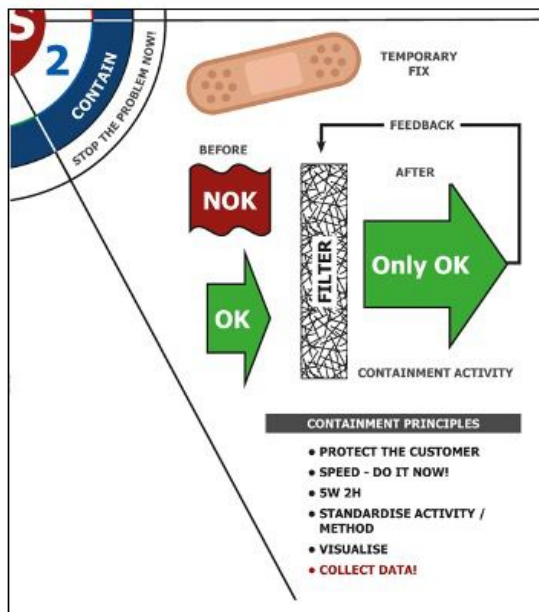
The Gap or problem will no doubt be made up of many things so we need to analyse it into more manageable items.

Using data and Pareto Diagrams and the 80:20 rule from the 7 Problem Solving Tools are a great way to do this to determine the Problem to Pursue or what to focus on.

Step 1 is key as it clarifies the problem you are trying to solve in simple, numeric terms



Step 2 – Contain



- Stop the bleeding
- Protect the customer
- Understand the problem better

“Don’t stop after Step 2 Contain”

Step 2 is Contain - this is where we ask if can stop the problem now?

Think of step 2 like a Band aid / Plaster, it focuses on stopping the bleeding and protects customer, which will buy you time to solve problem properly by following the rest of the steps

Stopping the problem “flowing out” immediately to an internal or external customer will relieve pressure and limit the chance of you jumping to solutions. It gives you time to collect data to understand the problem better.

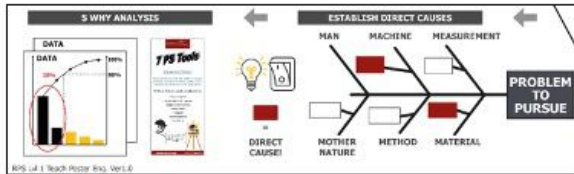
Standardising the activity or method using the 5W, 2H - why, what, where, when, who, how, how much questions will ensure that the containment is robust and thoughtfully considered. Always make sure you provide feedback to check that the containment is working and visualise the results.

Warning – When dealing with problems a lot of organisations stop after step 2 Contain.

– this usually builds in waste & cost into your processes and even worse the problem could happen again as you didn’t understand the causes and end up in fire fighting loops



Step 3 – Cause



■ Establish Direct Causes of Problem to Pursue

- Can use Fishbone diagram as brainstorm framework
- Light switch test!
- Must Prove with Data

“Prove Cause & Effect”

The purpose of Step 3 – Cause – is to investigate and find the root causes of the Problem to Pursue.


Root causes are the fundamental reason for the occurrence of the problem. By implementing countermeasures to the Root causes, we prevent the problem reoccurring.

Before finding the Root causes however, we need to establish Direct Causes of the “problem to pursue”, this should be proven by data or experiment through go see and study


Its like a light switch – Turn the cause off, the Effect stops..., every effect has a cause – this is what you must prove through data or experiment.

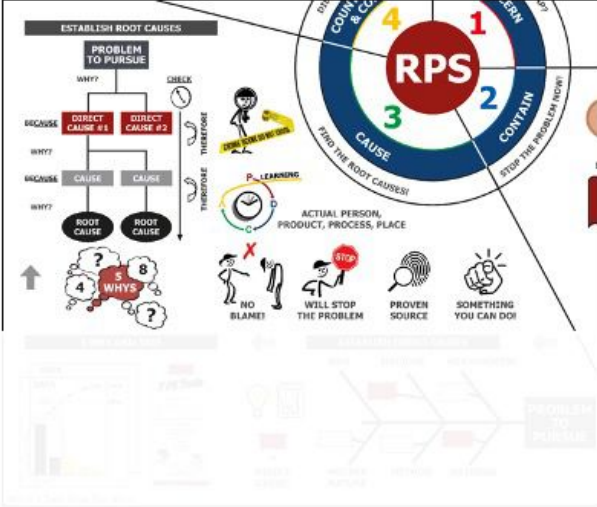
Use data to establish direct causes or use an Ishikawa (Fishbone) diagram as a framework to structure potential causes through Brainstorming. If you don't have any data, you will have to collect and analyse the information using the 7 Problem Solving Tools. Check Sheets and Pareto Diagrams are a great ways to do this and establish the Direct Causes.

The Direct Causes should be clearly summarised and proven with data, as these are what you need to prevent from recurring and are needed for a Five Why Analysis.



Step 3 – Cause





- **Establish the Root Causes**
- **5 Why Analysis**
- **Start with Problem to Pursue**
- **First Level of Why is the Direct Causes**

"Will Stop the Problem"

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The Five Whys focus on finding the Root Cause of your Problem to Pursue – probably one of the most difficult steps to do correctly.

This is done by starting with the Problem to Pursue and then using the Direct Causes as the first level of your 5 Why Analysis.

By asking why you will drill down to the root causes. 5 whys isn't always 5 - it might be more or less than 5 Whys.

Each why might give multiple answers, you will need to capture them all and use data and facts at each stage to understand a proven pathway to root causes.

You can then check your thinking logic by going up back up the path and asking therefore and also make sure the statements make sense from a chronological point of view.

Make sure your Root Causes

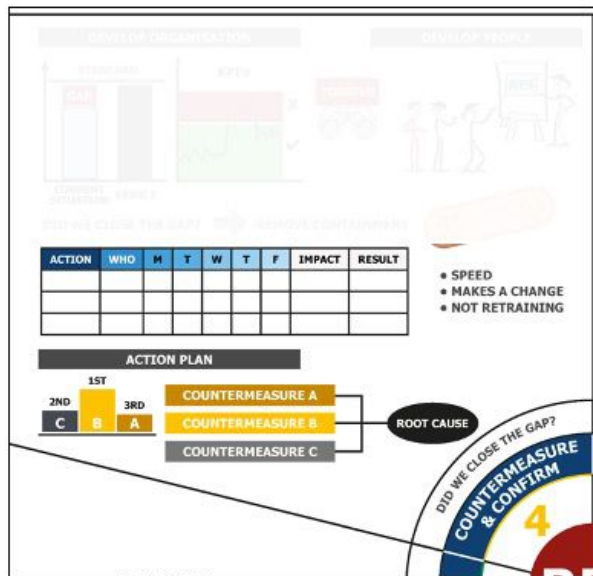
- Don't blame individuals
- Will stop the Problem from happening again
- Are a proven source, and
- Are something you can do – i.e it's in your or the organisations' control.

Some good tips are to Go and See the actual person, product, process and place with your

own eyes to truly understand the situation and find the Root Causes.



Step 4 – Countermeasure & Confirm



- Countermeasures aligned to specific to Root Causes
- Alternative Ideas
- Evaluate & prioritise
- Make a change
- Action Plan for each countermeasure

"See Countermeasures through" with speedy action together as a team

Step 4 is Countermeasure & Confirm and focuses on what you will do to close the GAP.

The starting point for developing countermeasures is the root causes from the analysis made in Step 3.

Now you can develop specific actions to address the specific root causes (rather than the large vague Gap from Step 1). – this is why people fail to solve a problem if they jump to solutions.

You should have more than one countermeasure idea, think of at least three alternatives

The countermeasure ideas should be evaluated based upon some kind of relevant criteria e.g. Cost, Leadtime, risk, ease of implementation.

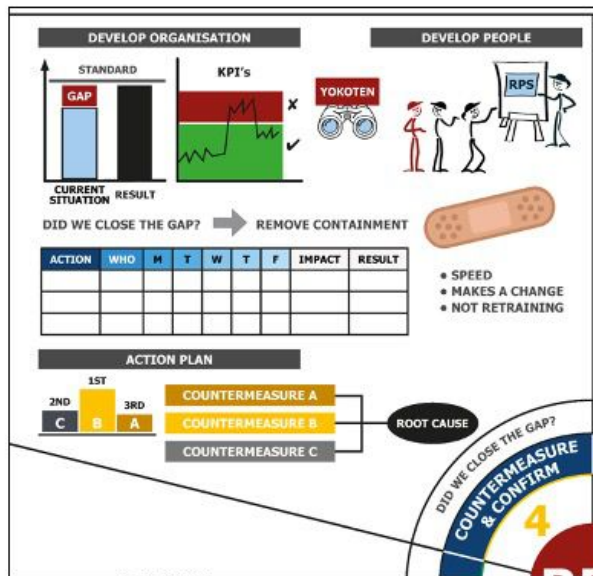
The countermeasures should be then prioritisation based on the evaluation and by their impact on how much will it help to close the Gap by.

A countermeasure should make a change by doing something different, they should be planned & implemented quickly through PDCA to ensure they are seen through to conclusion and their impact evaluated.

Team Work and the right behaviours are Key to seeing Countermeasures through quickly.



Step 4 – Countermeasure & Confirm



- **What is the Result**
- **Did we close the GAP?**
- **Remove Containment**
- **Yokoten – Share the Learning**

“Develop People & Develop the Organisation”

We need to Confirm the Results of Countermeasures by asking did we close the Gap?

Ongoing measurement enables understanding of impact of your countermeasures that address the root causes of the problem to pursue.

We should ask:-

What is the Result?

Did we close the Gap to the Standard required.

Can we remove the Containment activity that was put in place from Step 2- so we don't build waste into to the work.

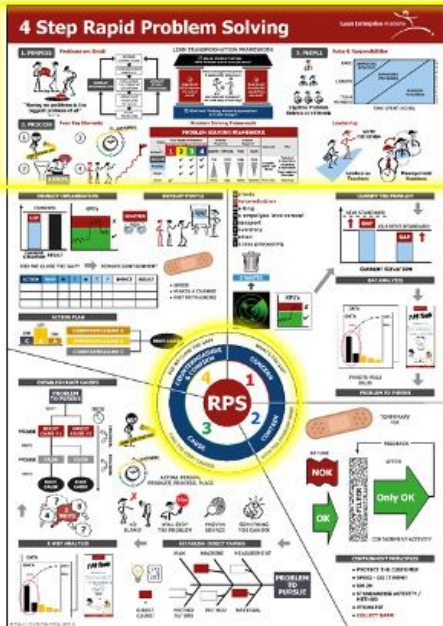
The next activity focuses on Standardising the changes made & share the learning or Yokoten the RPS activity to help Develop the Organisation.

This involves creating or updating work standards to use as a new base line for the work and to do further Improvement.

Individuals must take the responsibility for doing this rather than relying on the organisation or others to do it for them which in turn helps to Develop the People.

This was a very brief overview - but our Skill Level 2 course gives you a much more detailed understanding of the thinking behind each step and a case

study learning exercise to practice using the RPS Quadrant Chart.



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- ✓ **Q & A**
- ✓ **Overview of the 4 Steps**
 - **RPS Quadrant Charts**
 - **Lean Learning Journey for RPS**
 - **Summary/Q & A**

Ok, So we have covered the Teach Poster Concept and the Introduction to Problem Solving covering Purpose, Process and People and the Method. Next, we are going to move on to RPS Quadrant Charts. I'll now handover to David M.

RPS Quadrant Chart – 4 Steps

- **Quadrant Chart is how we summarise the problem solving journey using the 4 Steps.**

“If you can’t explain it simply enough, then you don’t understand it well enough.” – Albert Einstein.

And really that is the thinking behind RPS Quadrant Charts – being able to simply explain your thinking on one piece of paper.

As you know, this is a real skill and takes time to do.

In our Level 2 - Understanding Course we show you how to complete an RPS Quadrant Chart using a Case Study.

The Case Study provides a fictional sequence of events for a Team Leader challenged with the problem of meeting Customer Demand and increasing output.

Each Step is broken down as per the process just explained by Dave.

Part of it is in the form of dialogue with his Team supplemented by data and information gained as he proceeds with his investigation.

The content is then translated to each section of the Quadrant Chart.

You get the chance to do it yourself and then compare with how a solution might look.

Emphasis is on visualisation and being able summarise the key points to build the case and solve the problem.

RPS Quadrant Charts – What the Story Should Look Like

Visual guidance on creating an RPS Quadrant Chart.

The Case Study is all well and good and gives you some Understanding of applying the 4 Steps.

However, the challenge comes when people start to tackle your own problem.

This is when the “Rubber hits the road” shall we say but often this can be quite a daunting prospect.

All logic can go out of the window and it can be easier to start jumping to solutions rather than following the 4 step process.

To try and combat this therefore, we have also created a guide to describe what a good Quadrant Chart should look like and the expected content.

Again each Step is broken down and covers what the story should look like.

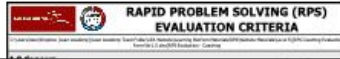
Step 3 for example takes you through finding the Direct and eventually the Root Causes having determined the Problem to Pursue.

This involves further use of the 7 Problem Solving Tools such as Check Sheets, Pareto's and Cause Effect Diagrams.

From our experience and feedback we have found this to be a very useful aide memoir.

RPS Quadrant Chart – Evaluation Method

- Evaluation Method for RPS Quadrant Charts.
- Learn how to Teach & Coach RPS with Us!



3.0 Cause		
Expected Content	Evaluation Levels	Coaching Questions
<ul style="list-style-type: none"> - Cause Effect relationship proved between the Problem to Pursue and the Direct Cause(s). - Use of data and experiments to prove it. - Logical 5 Why Analysis to determine the Root Cause(s) that will stop the Problem. 	<ol style="list-style-type: none"> 1 Direct Cause investigation is weak and the effect on the Problem can't be proven. Based upon intuition, assumption, what they think. 2 Direct Cause investigation is good but the 5 Why Analysis is not logical. No go & see. 3 Logical 5 Why Analysis used to find the Root Causes. Evidence of go & see/investigation. Root Causes will stop the problem. 4 In addition, rapid low cost experiments have been used to prove the Root Causes. 5 Simple, easy to share and understand by anyone. 	<ol style="list-style-type: none"> a. What did you find when you went to see it for yourself? b. How would you summarize the problem in your own words? c. How did you check that they are Direct Causes? (1st Why) d. What did you learn when you asked "why" five times? e. What specific causes did you uncover through your investigation? f. How did you verify the causes? g. What do you think happened in terms of the timing or sequence of events to arrive at the root cause? h. How are you sure that solving this root cause will stop the problem? i. What did you learn from the because/therefore check? j. Why, why, why.....?

But that's only part of the story, the last piece of the jigsaw puzzle is being able to evaluate whether someone has met the criteria of following the 4 Steps, completing the Quadrant Chart to a good level and solving the problem!

To address this we have developed an Evaluation Method.

Each Step is broken down in to three criteria:

The Expected Content - From the Poster and the key elements.

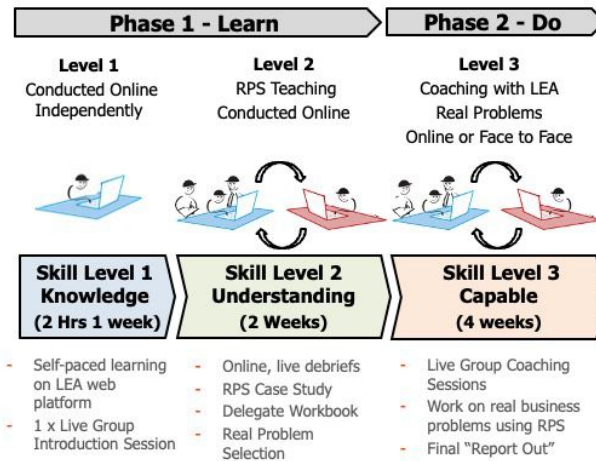
An Evaluation Level – Which is a score out of 5 – a good score is a 3.

And Coaching Questions – these are probably the most important part as they offer the Leader open style questions to encourage the right thinking for each Step and steer the team member in the right direction to achieve the desired Evaluation Level.

The Criteria can be used both by the person conducting the RPS to check that they have completed each step sufficiently and also the Coach to check and provide guidance through the problem solving activity.

RPS Capability Development Lean Learning Journey

• Process



So this is our typical Learning Journey for RPS that we recently experimented with one of our research partners – a Toyota car dealership in Canada.

As you can see we took them through two phases of development, the first where they learnt the method over approximately 3 weeks, and the second where they demonstrated their capability by solving an actual problem.

Skill Levels 1 Knowledge, and 2 Understanding were conducted online using the LEA web based platform.

Live debriefs were held to confirm understanding and answers any remaining questions.

Skill Level 2 used the Case Study to practise each of the Steps and complete the Quadrant Chart.

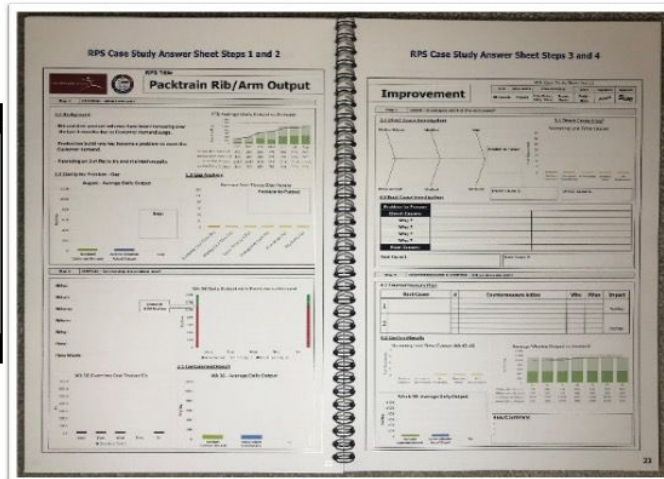
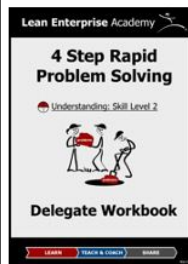
They then selected real problems to tackle using the RPS method.

Weekly live coaching sessions were held to check their approach and maintain progress.

This took approximately 4 weeks to complete depending upon the problem selected and the availability of data.

RPS Capability Development Lean Learning Journey

- **Process**



To assist the delegates, each one was given a Workbook.

This contains a copy of the Teach Poster, the Case Study Exercise, a Blank Quadrant Chart to complete the exercise as shown, What the Story Should look Like, the Quadrant Chart Rating Sheet, and of course, at the back the Case Study Answer for reference.

This was used in parallel with the online platform progress through each of the 4 Steps.

RPS Capability Development Lean Learning Journey

1.0 Concern

1.1 Problem Statement

- His and Jim product volumes have been increasing over the last 6 months due to Customer demand surp.
- Production build rate has become a problem to meet the Customer demand.
- Operating on 3 shifts to try and maintain supply.

1.2 Clarify the Problem: Gap

August - Average Daily Output

1.3 Gap Analysis

Average Line Pieces/Day Parts

Problem to Pursue: **20-100 lost time PCS**

Gap: **109**

YTD Average Daily Output vs Demand

Month	YTD Average Daily Output	Demand
Jan	100	100
Feb	100	100
Mar	100	100
Apr	100	100
May	100	100
Jun	100	100
Jul	100	100
Aug	100	100

2.0 Contain

Who: Frank

When: Overtime → increase production

Where: Production line

When: Week 36

Why: close the gap

How: overtime

How Much: \$200/hr = 1500 @ 30

2.1 Containment Result

Week 36 Overtime Cost Tracker \$'s

Week 36 - Average Daily Output

Gap: **+16**

3.0 Cause

3.1 Root Cause Investigation

Problem to Pursue: **Stamping Lost Time**

Direct Causes:

- Stamping lost time
- Machine stopped
- Filter are not checked/replaced
- Handpiece not put on machine
- Machine not on same place
- Filter are not checked/replaced

Indirect Causes:

- Machine stopped
- Filter are not checked/replaced
- Handpiece not put on machine
- Machine not on same place
- Filter are not checked/replaced

Root Cause 1: **Filter are not checked/replaced**

Root Cause 2: **Filter are not checked/replaced**

1.0 Countermeasure & Confirm

1.1 Countermeasure

1. No preventative maintenance routine
2. No process for older parts

1.2 Confirm Results

Stamping Lost Time Causes Wk 45-48

Average Weekly Output vs Demand

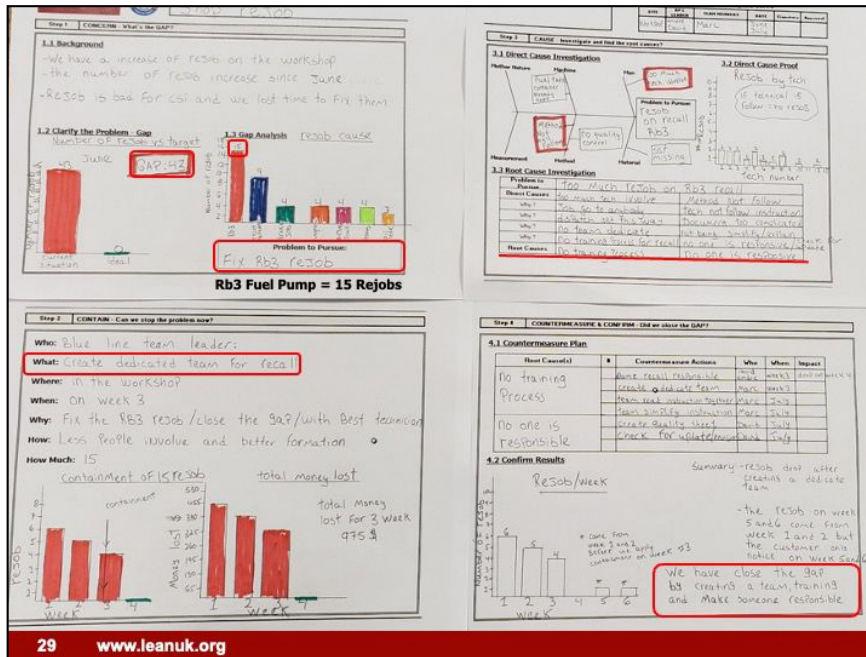
Week 48 - Average Daily Output

Result Summary: The stamping lost pieces have been reduced by 100%. The shift time being closed. The containment period on week 46. We'll focus on the next problem.

As you can see, the completion of the Case Study is quite a low tech high involvement activity.

We encourage the delegates to complete it by hand, not only for ease and speed but to ensure they think about what they are writing down rather than just typing or copying text.

The use of colour, callouts are welcomed to help visualise and explain what they are trying to say and communicate the problem solving story.



So this is the RPS for the actual problem one of the teams solved in Phase 2 of the Learning Journey when they were demonstrating their Capability.

This particular Dealer had a problem with Rejobs or in other words vehicles having to be returned to the garage to correct work that had been done incorrectly on them.

As you can see in June they had a Gap of 42 vehicles versus a standard of 0.

After analysing that Gap, they identified that the Problem to Pursue was the Rb3 fuel pump replacement for a recall campaign accounting for 15 incidents.

To Contain and stop the problem, they decided to dedicate just one Team to do this work going forward, comprising of Technicians who had done the fuel pump replacement and not created any Rejobs.

After some investigation, they found that the Root Causes were that the training process for replacing the fuel pumps was inadequate and that no one was responsible for creating and making the training.

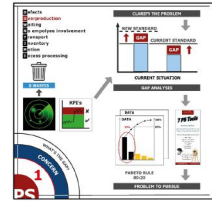
Toyota had supplied a 45 page technical document explaining the process of replacing the pump correctly but this had not been properly understood by all 15 technicians. It was assumed all of them had read and understood it, but this had not been confirmed – hence the creation of rejobs.

After implementing countermeasures to the root causes, no further rejobs were created for the fuel pump recall.

Also, any future complicated recall tasks are now handled in this way to check and confirm the technicians can and do the work correctly.

RPS Quadrant Chart – Evaluation Exercise

- **Your chance to Evaluate Step 1.0 of an RPS Quadrant Chart**
- **You will need the Evaluation Criteria Sheet sent out to you for Step 1.0**
- **We will present Step 1.0 of an RPS**



OK, so now its your chance to have a go at coaching and evaluation some ones RPS Step 1 with a fun exercise!

You will need the documents to hand which were sent out to you with your invitation and I will go through with you in a minute.

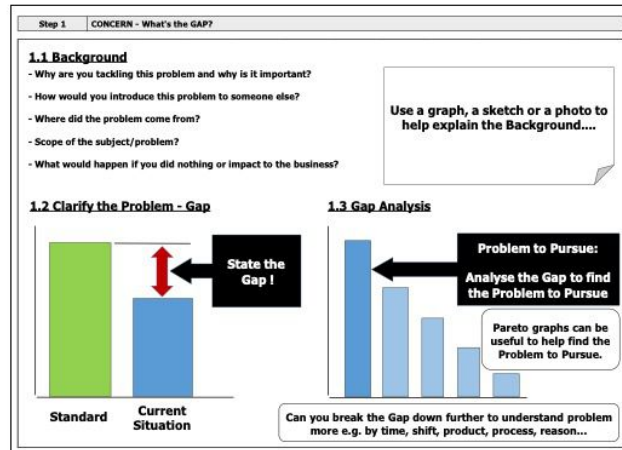
The idea here, is that we will present to you an RPS Step 1.0.

Using the documents we would like you to think of some coaching questions you might as and eventually evaluate which level of achievement we have managed to achieve.

Finally we'd like you to think about some next steps for us..

RPS Quadrant Chart – Evaluation Exercise

■ Step 1.0 What the Story Should Look Like



So to recap What Should the Story look like for Step 1.0?

Well there should be some Background to give some context to the Problem and set the scene as we say.

Pictures or graphics or supporting data can be used to help this also.

The Gap should be clearly visualised between the Standard (where you should or want to be) and the Current Situation in terms of where you are.

And finally we want to Analyse that Gap to determine the Problem to Pursue or in other words the biggest contributor to the Gap.

Pareto diagrams are useful to do this and we must ensure that it is quantified.

RPS Quadrant Chart – Evaluation Exercise



Step 1.0 Evaluation Criteria

RAPID PROBLEM SOLVING (RPS) EVALUATION CRITERIA

C:\Users\User\Dropbox (Lean Academy)\Lean Academy Team Folder\LEA Website\Learning Platform Materials\RPS\Website Materials\Level 3\RPS Coaching Evaluation Form Ver 1.0.xlsx\RPS Evaluation - Coaching

1.0 Concern	Expected Content	Evaluation Levels	Coaching Questions
<ul style="list-style-type: none"> - Background/context/why solve this problem? - Clarify the Current Situation, Standard & Gap. - Gap Analysis to define the Problem to Pursue. - Use of the 7 PS Tools to visualise. 	<ol style="list-style-type: none"> 1 Although the problem is stated it's not clear why it is a problem/why they are tackling it. 2 Gap clearly visualised the Problem Clarified, but Gap Analysis insufficient to truly determine the Problem to Pursue. 3 Gap clearly visualised the Problem Clarified. Thorough, logical Gap Analysis to determine the Problem to Pursue. 4 As 3, but also business impact considered. 5 Content is simple, clear and easy to share with little or no explanation. 	<ol style="list-style-type: none"> a. Describe the problem to me in your own words? b. What's the difference between the Standard & Current Situation? c. What will be the benefit if we solve this problem? d. How can you use the 7 PS to visualise the Gap? e. What would happen if we did nothing? f. How did you decide or select this problem? g. How can you break down the gap? h. What are the biggest contributors to the gap? i. What is the Problem to Pursue here? j. What is the impact of this problem on your area or the business? 	

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To evaluate Step 1.0 please refer to the criteria shown.

Expected Content, Evaluation Levels, and Coaching Questions.

The Expected Content is a reminder from the Teach Poster of what we are looking for.

The Evaluation levels run from 1 – 5, 1 being the lowest and 5 being the best.

The Target is to get at least a 3, which is a good, solid level.

You must fulfil the whole criteria to achieve that level. Point scores are acceptable e.g 1.5, but you must be clear what the delegate needs to do in order to reach the required level to give good coaching feedback.

Which leads on to the example Coaching questions. These are generic but give some idea as to what to ask in order to "pull" from the delegate and not tell them what to do.



Ok, so what will happen next is that we will present to you our Step 1.0 for a problem one of your colleagues is trying to solve.

After the presentation we will ask you, via the Aha Slides to use these documents to try and coach our delegate and evaluate their Step 1.0.

Please have the documents to hand so you can review and make some notes if you wish.

Good luck!

RPS Quadrant Chart – Evaluation Exercise





RPS Title
Kadia Machine "C" OE Improvement


Step 1 CONCERN - What's the GAP?

1.1 Background

In Q1, OE % is not high enough.
The Kadia Machine C is always stopping causing problems.
We decided to improve it.



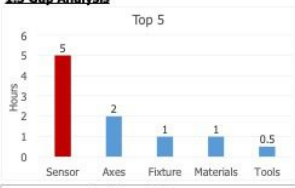
1.2 Clarify the Problem - Gap



Machine	W1	W2	W3	W4	W5	W6	W7	W8	W9	W10	W11	W12	W13	W14
OE %	78	79	79	80	81	78	76	75	73	63	70	64	65	70

1.3 Gap Analysis

Top 5



Category	Hours
Sensor	5
Axes	2
Fixture	1
Materials	1
Tools	0.5

Problem to Pursue:
The Sensor on Kadia Machine C

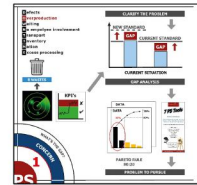
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Ok, so, my name is Ivor Issue and I'm going to present my Step 1.0 of my RPS Quadrant Chart for your review.

RPS Quadrant Chart – Evaluation Exercise

- Your chance to Evaluate Step 1.0 of an RPS Quadrant Chart
- You will need the Evaluation Criteria Sheet sent out to you for Step 1.0



Think about how you would coach Ivor to achieve a level 3 rating for his RPS Quadrant Chart

Read Questions 1 What coaching questions do you have for Ivor?

To help you look at some of the coaching questions given on the evaluation form.

Remember coaching questions need to get him to think about it – not tell him what to do

Read Questions 2 - What Gaps do you see between Ivor's RPS and What the Story Should Look Like?

Refer back to the What the story look like document and contrast it against Ivors – how could he improve visually to tell the story simply

Read Question 3 - What Rating would you give the RPS?

Level 1 - Although the problem is stated it's not clear why it is a problem/why they are tackling it

Level -2 Gap clearly visualised the Problem Clarified, but the Gap Analysis insufficient to truly determine the Problem to Pursue.

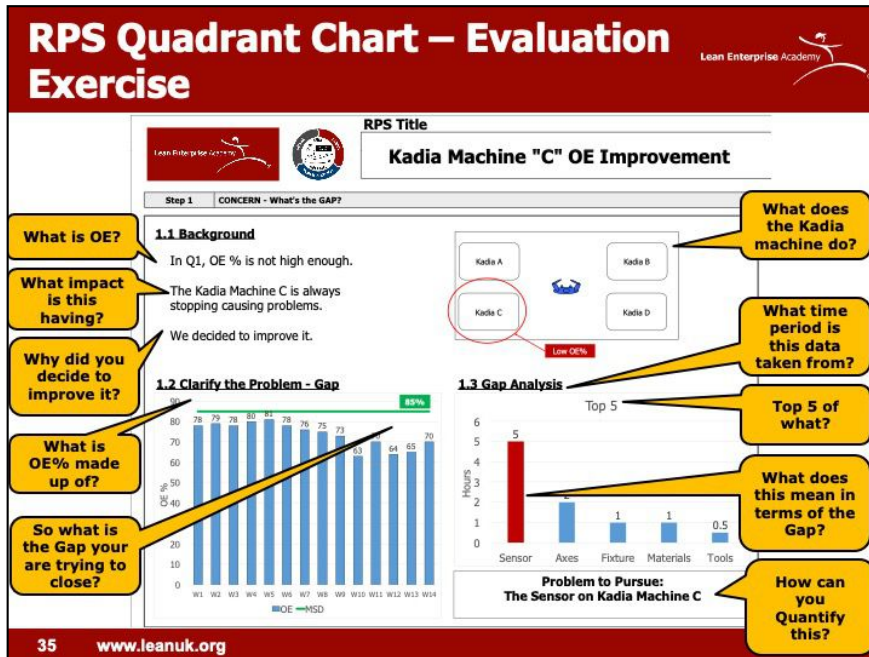
Level -3 Gap clearly visualised the Problem Clarified. Thorough, logical Gap Analysis to determine the Problem to Pursue.

Level -4 As level 3, but also business impact considered.

Level 5 Content is simple, clear and easy to share with little or no explanation.

Read Question 4 - What would be your recommended next Steps be for Ivor?

As a coach its important to get Ivor to be clear on his next steps - what changes would you get him to think about doing from his next steps.



Hmm, yes Ivor has a bit of homework to do!

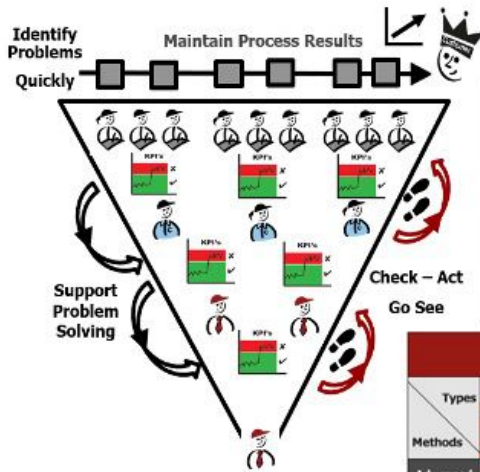
We would rate him at Level 1 – Although the Problem is stated it is not clear why it is a problem or why they are tackling it.

Here are some questions that we would probably ask him – some of which you asked also.

As you can appreciate, developing Capability takes time and practise, it is not just as simple as attending a training course.

Well I hope you enjoyed that, Dave over to you to summarise and wrap up.

Problem Solving at All Levels



PROBLEM SOLVING FRAMEWORK										
Types	Four Types of Problems				Problem Properties		Analysis Required		Approach	Who
	1	2	3	4	Quantity	Difficulty	Time	Depth		
Methods	1	2	3	4	Quantity	Difficulty	Time	Depth	Scientific, data & fact driven	Technical & Specialists Leadership & Specialists Team Leaders/ Members
Advanced		✓	✓	✓	Few	Hard	Long	Deep		
Practical		✓	✓	✓	▲	▼	▼	▼		
Rapid		✓	✓		▲	▼	▼	▼		
React	✓				Many	Easy	Short	Shallow	Fix it now	Everyone

Rapid problem solving is useful for individuals, teams and organisations. Arguably, Concern, Contain, Cause, Countermeasure, Check is easier to learn and grasp. The thinking can be applied to a large proportion of small problems. The fact that it can be applied frequently and with short cadence means the skill can be taught regularly, practiced regularly and therefore mastered. But, don't forget – the approach is fractal. It can be used at team level and at organisation level. Don't let the forms get in the way of your learning. As with A3, not all problems need a quadrant chart, but they do need a thinking way.

Practical Application for Performance Improvement

Plan					Do		Check	Act
No.	Concern	Contain	Cause	Counter-measure	Who	When	Check	Evaluation
1	Vehicle lot car won't start	Boost car	Battery is "flat"	PDI when car is sold	George	14/2	⊕	⊕

"Vehicle Lot" Car won't start



"Why" won't the car start?

The battery is flat

"Why" is the battery flat?

The car has stood 1 month since PDI

"Why" has the car stood 1 month since PDI?

We PDI cars asap

We PDI cars to keep techs busy

We PDI get paid for the PDI.....



To practice, it helps to make the process visible. Rapid problem solving is most effective when integrated into the performance management and improvement management systems. This simple example from the case we discussed shows how simple this activity is. The team have integrated Concern, Contain, Cause, Countermeasure and Check into their daily team board. Think about your visual boards and whether you have a cadence for them and whether PDCA is embedded into them.

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So "What questions do you have?" about the presentation or the any of the services just mentioned.