Turn your Thinking Around: New Approaches to Problem Solving

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Ladies and Gentlemen, welcome to **Turn your Thinking Around – New Approaches to Problem Solving**. I'm Ross Maynard and I'm your tutor for this course.

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Problem-Solving

This is the third course I have written on problem solving and decision making, and all three courses cover different aspects of this fascinating field.

- In **Problem Solving and Decision Making Creatively**, I cover a five stage approach to problem solving and introduce some of the most used problem solving tools including the Problem Statement and Goal Statement; Stakeholder Analysis, Process Mapping, The Ishikawa Diagram, Data analysis and the Ideas Grid
- In The **Creative Accountant: Personal and Professional Problem-Solving Skills**, I look at the three types of problem and the different tools that work best with each type of problem. The Critical problem is a crisis where a response is needed urgently. The Tame Problem is a situation where a standard problem-solving approach works well; and the Wicked Problem is a highly complex and multi-faceted problem where a more flexible approach is needed and where new tools can help. The new tools covered include the Four Frame Model, Perceptual Positions, Bright Spots Analysis and solution focussed approaches.
- This course is called "**Turn your Thinking Around: New Approaches to Problem Solving**" and my aim is to help problem solvers think about things in different ways. We can easily get into a rut in our problem solving using the same tools over and over and producing predictable answers which may help address a problem in the short term, but don't eliminate it. In this course, I introduce new problem-solving tools to help you think about problems in new ways and, hopefully, develop new solutions which will address a problem more thoroughly than previously.

Let's look at our agenda

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Turn your Thinking Around: Agenda

In part 1 of **Turn your Thinking Around – New Approaches to Problem Solving** I introduce 11 new problem solving tools that are designed to help enhance the thinking of any problem solving team. I also examine why problem-solving efforts sometimes fail, and introduce the principles of effective problem solving.

In Part 2 I cover the first set of three problem solving tools – those designed to stimulate new thinking.

In Part 3 I cover the three problem solving tools designed to bring new resources to the problem-solving table

In Part 4 I introduce the two problem solving tools which bring new people skills to the group

And in Part 5 I cover the final three tools that help the problem-solving group use counterintuition to open new angles of the issues they are analysing

Finally in Part 6 I talk about the make-up of the problem-solving team; how to quantify the benefits of problem solving and what tools to use when in the problem-solving process.

I hope you enjoy the course.

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The Copernican Revolution

Up until the sixteenth century, scholars, thinkers and leaders in the western world thought that the earth was the centre of the universe and that the sun and the planets orbited around the earth.

This was the view held by the church so it was difficult to object to it, as Galileo would later find out.

Some ancient Greek thinkers had speculated that the earth and the plants revolved around the sun, but their writings had been lost or ignored. The Roman philosopher Claudius Ptolemy had believed that the earth was the centre of the universe, and this was the view that prevailed in the western world. Some scholars, particularly in the Arab world, criticised Ptolemy's ideas and these influenced western thinkers in the late fifteenth century, but the view was not challenged until Nicolas Copernicus.

Copernicus studied at the University of Bologna and became interested in astronomy. He first published a work speculating that the earth and the planets might orbit the sun around 1514. He published a much more detailed work in 1543.

Copernicus' views did not cause an immediate revolution in thinking. The received wisdom of those in positions of power remained that the earth was the centre of the universe, and some astronomers tried to disprove Copernicus' theory. However, the data they collected supported rather than his challenged views.

In 1596 Johannes Kepler published a book that supported Copernicus' theory. He also showed that the planets moved in an elliptical orbit rather than a circular one and developed the three laws of planetary motion.

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The telescope was developed in the early 1600s and improved by Galileo. With his telescope, Galileo made a number of startling discoveries that finally destroyed the idea that the earth was the centre of the universe and proved that the earth and the other planets revolved around the sun. Galileo's writings were so powerful and so influential that they brought him into conflict with the church. Although he argued that it was not contrary to the teaching of the bible, in 1616 the Roman Inquisition declared that the idea that the earth was not the centre of the universe was heretical. Books promoting the Copernican view were banned and Galileo retired from scholarly life. However, in 1632 Galileo wrote another book which defended Copernican theory. He was found suspect of heresy and placed under house arrest for the rest of his life. His writings were banned and he was ordered to recant his theory. Galileo turned his attention from astronomy to physics. He died in 1642.

But change was already in motion. The Protestant reformation in the 1500's freed many scholars from the dogma of the Catholic Church and the Copernican revolution continued. Isaac Newton and others continued to develop the science of astronomy to what we have today.

The Copernican revolution was one of the key influences for the Age of Enlightenment during which views about science and nature were transformed. Thinkers and scientists no longer felt constrained by the dogmas of the day but explored new theories and new discoveries. The mindset of mankind was freed from doctrines of faith.

Nowadays the term Copernican Revolution is applied to any paradigm shift in thinking. We move from one set of facts that we are certain of, to exploring ideas that another set of facts might be true.

This is a guiding principle of modern scientific advance – the idea of developing a theory and then attempting to prove or disprove it is what moves thinking forward. For example, when Einstein proposed radical new ideas about the forces and nature of space and time, he was not pilloried or accused of heresy; rather other scientists sought to test and develop his theories.

The same is true in life. Once we shift our thinking from a fixed mindset, amazing things can happen.

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Examples of the Copernican Revolution

- Thomas Newcomen and James Watt developed the stationery steam engines that powered the start of the industrial revolution, but few people thought the idea of steam locomotives was realistic – the engines were too big and too heavy. Even as late as 1825, the journal The Quarterly Review said "What can be more palpably absurd than the prospect held out of locomotives travelling twice as fast as stagecoaches?"

- The concept of heavier than air powered flight seemed fantastical until the Wright brothers proved it could be done.
- An automatic firing gun seemed an impossibility until the Maxim gun was invented in 1884 and used with devasting effect in the First and Second World Wars and many other conflicts.
- Many people considered it impossible to run a mile in less than four minutes until Roger Bannister achieved it in 1954. Bannister's record lasted only 46 days. The current men's outdoor record is 3 minutes and 43 seconds
- The limits of technology meant that the world water speed record in 1939 was 141mph. The development of the jet engine and the hydroplane opened up new opportunities for development. The current record is 317mph set in 1978. The two attempts since then have resulted in the death of the drivers but other attempts are in development.
- The United States of America went from theory to putting a man on the moon and returning him safely to earth in less than 10 years

My point is that we can easily develop a set way of thinking that we find hard to break out of. We form habits and, in general, we humans don't like to change from ingrained ways of thinking or of doing things.

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That is why problem solving can become routine and repetitive. We think about our business and personal problems in the same way each time and come up with the same sorts of solutions. To develop bold new solutions to problems we need new ways of thinking about them.

That is the purpose of this course.

To quote Ghandi:

Your beliefs become your thoughts,
Your thoughts become your words,
Your words become your actions,
Your actions become your habits,

End of lesson 1

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Lesson 2: New Tools for Problem Solving

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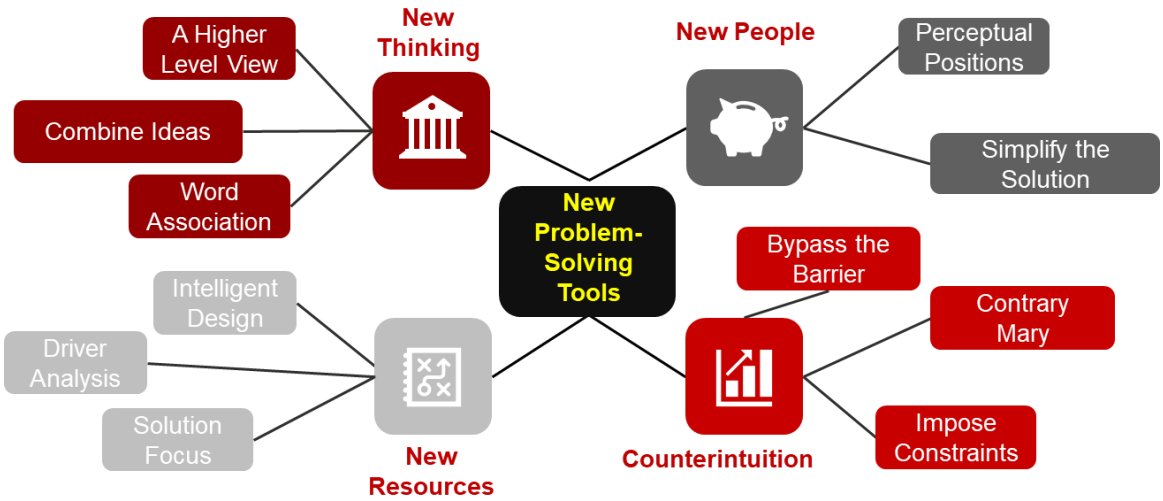
New Tools for Problem Solving

My other two courses on problem solving contain a lot of tools. Some of them will likely be familiar – like the process map or brainstorming – and some of them may be less familiar – like the SBAR tool for critical problems or the Four Frame Model. You can, and should, use any of those tools when working in a problem-solving group. The tools I introduce in this course are for those times when things get a bit stuck. For when the tools you are using become a bit too familiar, or when you run out of ideas and need some fresh thinking.

I've grouped these new approaches to problem solving into four categories:

- New Thinking for when you want to think about things differently
- New People for when you want to freshen up the mindsets of the people you're working with
- New Resources for when you want a new technique to try
- And Counterintuition for when you think taking a non-conformist view might bring new ideas



To be honest these four categories are a little artificial since these are all new techniques designed to shake up the group's thinking and generate some fresh ideas. I've used them to structure this course, but you can use any of the tools in any

combination with any group at any time. They're particularly useful for injecting a dose of fresh energy when a group has been working together for a while and become a bit tired of working through the more familiar tools.

We'll start exploring the tools in the next lesson. First let us consider the skill of creative thinking.

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The Creative Thinker

Many people consider creative thinking to be a special skill which only select people are blessed with.

I disagree. I believe that creative thinking is a mindset. I'm an accountant who likes a nice clear structure to work to, and always has a well organised task list. Accountants are not generally considered creative thinkers but I also earn part of my living by creating online courses which seek to provide information on business concepts or methods in 60 to 90 minutes. You have to be pretty creative to explore business issues in a relatively compact course.

I also earn part of my living being an improvement facilitator. I support teams made up of a mix of skills, abilities and thinking styles to address and solve problems affecting their organisation. Working with a mixed team to resolve a problem in a relatively short timescale certainly requires creatively.

I believe I am a creative accountant – in a good way – and I believe that we can all be creative thinkers. It's just a mindset. To develop a creative mindset, you need to be open to a set of principles which I'll cover on the next *Slide*. But, essentially, its about not being constrained by assumptions or mental blockages.

Some people have a personality type where they think there is one "right" way to do something or to think about something, and every other way is wrong in some respect. They can be so constrained by the "one best way" thinking that they refuse to even contemplate that there might be another way to resolve an issue or achieve a goal. It is difficult for those people to think creatively because they find it hard to break away from the railroad tracks that constrain their thought processes.

But to be a creative thinker you must break-away from such constraints and allow your mind to travel in any direction it pleases. That is not to say you should throw aside concepts of right and wrong in moral judgements, but you should free your mind to think through alternative approaches *before* you judge whether they are right or wrong or practical or impractical.

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Why our Problem-Solving Efforts Fail

We humans are hard wired for quick decision making. Our ancestors had to live on their wits and that means a fast appraisal of the circumstances with an instant decision. It's what we call "gut instinct", and in many cases, our gut instinct is the correct decision certainly in the evolutionary fight for survival it has served us well.

But in a world of complex business processes with multiple factors at play, gut instinct often leads to wrong or ineffective decisions. Complex far reaching decisions require much more thorough examination and the way the human brain has evolved doesn't always support such meticulous attention to detail.

So why do our problem solving efforts sometimes fail?

1. **We're pattern spotters**. The human brain is very good at spotting patterns. We're great at bringing information together and detecting similarities with what we already know in order to form a conclusion. But sometimes we spot patterns where there aren't any. Or we link pieces of information together and jump to an unjustified conclusion based on erroneous assumptions. Linking information together to identify a pattern serves us incredibly well in many areas of life but it can also lead us down a wrong path and we need to be aware of that

2. **We make assumptions**. As we accumulate learning over the years, our brains package that learning into assumptions. These assumptions save us a lot of mental exhaustion and it would probably be impossible to live our lives without assumptions. Can you imagine the stress of having to establish every morning whether your breakfast is safe to eat and the water is safe to drink. We assume it is safe because experience has taught us that it should be. Likewise, we judge the distance of cars on the road and assume it's safe to cross. We get to know how a business process works, and we assume we know what's wrong when it breaks. The trouble is that things change over time and an assumption that worked in the past may not work now. Cars accelerate much faster nowadays so a safe distance to cross the road will be different today than when you first learned years ago. Likewise, new technology, new components and new working practices may mean that your business process is breaking in a different way to the way you think. Many of our assumptions become deeply engrained and We are loath to let them go. That can lead us to making incorrect decisions on the basis of outdated assumptions. Sometimes we call this unconscious bias.

3. **We're task orientated**. Human personality is very varied but many of us who develop careers in business are task orientated. We work through a series of steps to deliver an outcome, and we do the same for problem-solving and decision making. I introduce a five-step problem-solving method in my course "Problem Solving and Decision Making" creatively. And a nice, structured model like that is great in most circumstances. The problem comes when we get fixated on the steps rather than on solving the problem once and for all. For example, we allocate three hours for analysing the problem and generating ideas and, as the time runs out, we jump to a solution. It's not necessarily the right solution but we are so fixated on moving onto the next task in the series that we feel bound

to stop any further analysis. Sometimes our focus on tasks takes our attention away from completely solving a problem.

4. **We're not rational**. We often like to think we are rational decision makers but we're not. We usually make decisions based on emotion. Sure we think we've analysed the data rationally, but then we make up our mind because, for some irrational reason, we like the idea of one course of action better than another and we go that way. That's why marketing works. There is no rational reason for you to choose the premium priced brand, slickly marketed, but it makes you feel somehow better inside – it feeds your vanity or your sense of status or your aesthetic senses better than the more rational choice. Ultimately, very few of our decisions (if any) are made on purely rational grounds.

5. **We're lazy**. It's true. The human brain is wired to take the easy option. Analysing options and making decisions is hard mental work and our brains often like to reduce the workload by nudging us towards the easy option. This is particularly true as we get physically tired. Have you ever noticed that, towards the end of a long tiring meeting the group opt for quick and easy decisions, which, hours earlier, would have prompted much debate? Sometimes we just want to get it over with, so we take the easiest way out we can.

To try and minimise the influence of these factors, we need to understand the principles of creative thinking.

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The Principles of Creative Thinking

There's a great quote that's attributed to Henry Ford:

"Whether you believe you can do a thing or not, you are right".

The quote was published in Reader's Digest in 1947, six months after Ford's death. There is no record of whether or when he actually said it, but it doesn't really matter, it's a useful quote to describe the creative thinker – a person starts from the point of view that a thing might be possible, rather than it not being possible. Let's look at the principles of creative thinking:

1. **View Problems as a Challenge**. Creative thinking is an attitude that problems are not to be feared or hidden but to be faced head on. Problem solving is exciting

and fun, not a chore. To quote Bill Gates “my belief [is] that the power of creativity and intelligence can make the world a better place”

2. **Be Open to new ideas**. Creative thinking, by definition, involves new approaches, new ideas and new solutions. This is the Copernican Revolution. The Creative Thinker mustn’t be constrained about the current way of thinking about things or doing things. He or she must be willing to conceptualise new ways of thinking for their operation, their business or their industry. To solve your problem forever you might need to break out of the standard way of working for your process or your business.

3. **There are no “wrong” answers.** Fear of risk or failure inhibits creative thinking. The creative thinker knows that they’ll go down wrong avenues and make mistakes. These failures add to the store of knowledge. To quote Thomas Edison “when I have, fully decided that a result is worth getting, I go about it, and make trial after trial, until it comes” – Success Magazine 1898.

4. **Avoid the Blame Game.** It’s easy to blame others for our failures or set-backs – it’s market conditions; it’s the competition; it’s poor staff or poor management; you name you can blame it. The trouble is placing blame elsewhere is an excuse for not taking responsibility and doing nothing. The creative thinker is not interested in fault, he or she is interested in what could be done.

5. **Examine Everything; Ask Questions.** The roots of a solution might lie in the smallest of details or the most obscure of findings. The creative thinker examines every aspect of a problem or issue from all angles. Input should be sought from all sources and everything and everyone should be questioned about the issue – not just the perceived experts. In his autobiography, My Life and Work published in 1922, Henry Ford wrote: “If there is any one secret of success, it lies in the ability to get the other person's point of view and see things from that person's angle as well as from your own”

6. **Be Optimistic**. Creative Thinking often involves developing unconventional ideas into seemingly bonkers solutions. Many of those ideas and solutions will fail. The creative thinker should not be downhearted by such setbacks but reflect on the results and learn something new. Henry Ford has a good quote on this “Failure is only the opportunity more intelligently to begin again. There is no disgrace in honest failure; there is disgrace in fearing to fail.”- quoted in the Magazine of Business 1927

7. **Create the Right Environment**. Creative thinking flourishes in an environment where ideas can be openly discussed and examined without fear of criticism. Strictly hierarchical organisations where reports go up and instructions come down are not conducive to creative thinking. Neither are environments where poor performance results in a search for someone to blame. Creative thinking flourishes in organisations where people work together as equals in spite of their supposed rank; where ideas are freely exchanged and discussed; and where problems result in a problem-solving team being formed to find the root cause without blame being attached.

End of lesson 2 and end of Part 1

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Part 2: Problem Solving Tools for New Thinking

Lesson 3: Tool 1: A Higher-Level View

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Problem Solving Tools for New Thinking

There are three problem-solving tools that I have grouped under the heading “New Thinking”. These are designed to give you a new aspect for thinking about a problem.

The tools are:

- A Higher Level View
- Combine Ideas
- Word Association

We cover the higher-level view tool in this lesson and combine ideas and word association in the following lessons.

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Tool 1: A Higher Level View

I worked for a period with a great problem-solving trainer, and he told the groups he worked with that they should start by looking at the problem from a very high level. He called it the 30,000 foot view – that’s 10,000 metres if you work in metric.

The 30,000 foot view helps give an understanding of a problem in the context of the surrounding environment and interconnecting processes. It’s important to understand the context of the problem because that can lead us to insights that might solve the problem at a higher level. Rather than fix the specific problem with a specific step in a detailed process, our higher level view might lead us to realise that we could, instead develop a completely different process or, perhaps, adapt the interconnecting processes so that the problem process is not needed anymore.

There are five steps to do this:

1. Create a Problem Statement

2. Ask the question: “What are we trying to achieve?”
3. Ask: “What will that do for us?”
4. Ask: “What will that do for the organisation?”
5. Draw a high-level process map which shows how that organisational level aim is achieved.

Essentially, we are moving back from examining the specific problem in detail to discover the higher-level purpose or aim that we are trying to achieve for the organisation.

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The Problem Statement

The Problem Statement is one of my favourite tools for defining the scope and impact of a problem. I’ve already covered it in my course “Problem Solving and Decision Making Creatively”.

The Problem Statement summarises the issue we are addressing in three or four sentences:

- What is the business problem?
- What are the consequences of the problem?
- Who is affected, and how?
- What are the impacts of the problem on the customer, on the process and on the organisation? (provide data if available)

This gives a good grounding in the problem we want to address and the impact it is having. Then we start moving our thinking about the problem to a higher level. Let me explain using an example.

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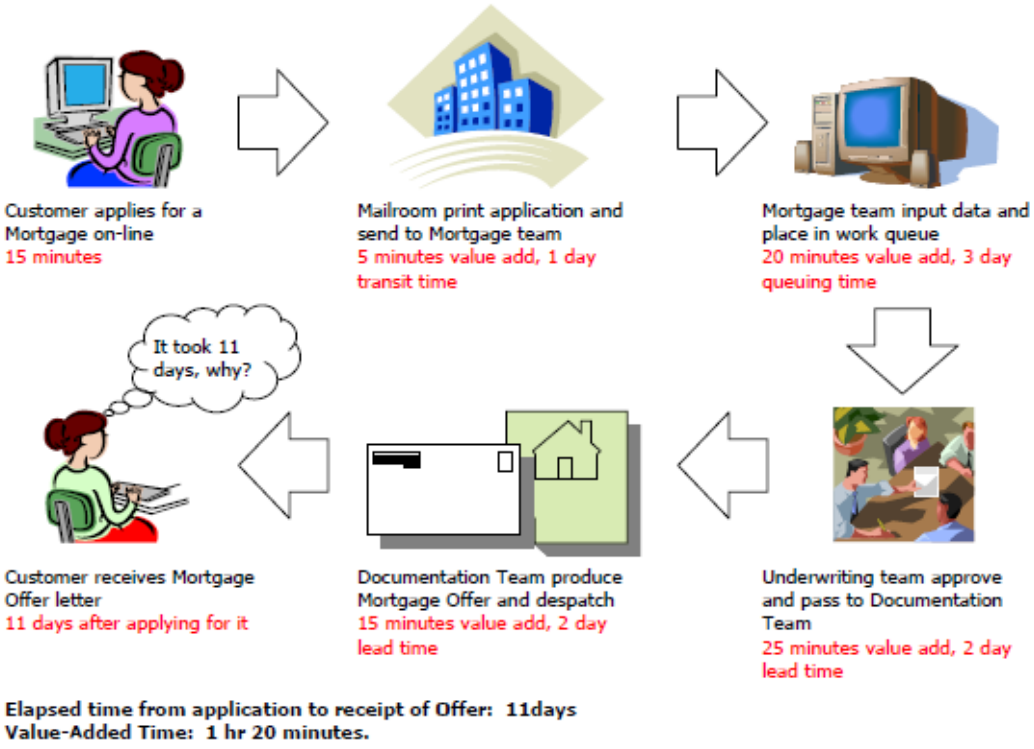
A Higher-Level View Example



Here we have the mortgage application process for a bank from 7 or 8 years ago. And we might prepare a Problem Statement as follows:

“Currently it takes 11 days to respond to a customer’s application for a mortgage. The actual time spent reviewing the application is less than 2 hours. The delay results in customer dissatisfaction and stress with around 30% of customers opting for another mortgage provider as a result of our slow service. It also means our reputation in the marketplace is poor”.

Clearly this bank needs to speed up its process but before we jump to the solution of investing hundreds of millions of pounds in new technology, let’s consider the higher-level view.

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- Question 1: “What are we trying to achieve?” We’re trying to identify customers that fit our risk profile and lending criteria and give them the result of their mortgage application more quickly
- Question 2: “What will that do for us?”. This will improve our customer retention and thus profitability as well as improve customer satisfaction.

- Question 3: “What will that do for the organisation?” It will improve the bank’s ranking with mortgage advisors and in the marketplace and it will improve profitability by attracting more credit-worthy customers

So the higher level aim is to improve the bank’s standing in the marketplace and to attract more profitable customers. I’m not an expert in this field, but there may be ways that this objective can be achieved with a less cumbersome approval process.

Transition

Let’s consider some alternative solutions that might meet the higher-level purpose:

1. Customers might be pre-approved for a mortgage if they have had their primary account with the bank for a certain number of years.
2. Likewise, customers who have other forms of credit with the bank might be pre-approved up to a certain amount.
3. The bank could automatically review the credit worthiness of each of their customers periodically and inform them of their eligibility for a mortgage. We’d need to explore data protection and other requirements for this as checking a customer’s credit record without their approval might be problematic.
4. The bank might offer pre-approval for a mortgage and other financial products, such as a credit card, as part of a regular financial health check it offers to customers.
5. The bank could develop an AI driven online pre-approval tool which would give customers an instant answer about the mortgage deals they would be offered without affecting their credit rating. They could then take that pre-approval forward to the next stage to get a formal offer.

The point of the higher-level view model is that, often, taking a step back from the detail and considering the overall objective can lead to new thinking about how to achieve the objective. There might be a different way of achieving the objective without needing the problem process at all.

End of lesson 3

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Lesson 4: Tool 2: Combine Ideas

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Combine Ideas

When the Beatles were making their famous song Strawberry Fields Forever, they found that they liked the beginning from one take they had recorded and the end from another take. The trouble was that the two takes were recorded at different tempos, with the end part 22% faster than the beginning section. So George Martin, their producer, speeded up the first section a fraction, and slowed down the second take by 12%. He then spliced the two together giving us the ethereal song we all know. If you want to know more, there are videos on YouTube explaining what they did.

Two ideas combine to give one better solution. And it is often the case that we can take two, or more, ideas that don't quite work and bring them together into one stronger proposal. There are many many examples of this in real life. In fact, scientific advances usually occur by developing and blending existing known ideas in new ways. The reason that COVID19 vaccines have been developed so fast is that scientists took existing knowledge about how vaccines work and combined it with knowledge about respiratory viruses to create a sort of carrier package into which they just needed to insert the specific genetic signature of the COVID virus.

The formula for the combine ideas tool is, therefore, very simple – review ideas you have already explored and review how they might be combined to make something more powerful. Here are the steps:

1. List existing ideas and proposals
2. Examine the existing ideas against the Ideas Grid
3. Explore which ideas might combine with other ideas
4. Appraise the combined ideas.

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The Ideas Grid

The Combine Ideas tool will normally be introduced after we have developed a series of ideas for dealing with a problem but found that none fully resolve it. If we have experienced similar problems before, we would also consider the ideas that were put into action then.

Thus, we have a list of existing ideas, proposals and actions, some of which may partially solve the problem which we are facing but none of which are satisfactory. We now want to examine how these ideas might be combined to create a more effective solution. In some cases, it may be obvious how ideas could be combined, but in other cases there may be no clear connection. To explore the ways in which ideas might be combined we review the elements of each idea we have using the Ideas Grid. For each starting idea, we discuss the following questions:

- First What?
    - What resources does this idea require?
    - What is their source and who is responsible for deploying/ managing them?
    - What expertise is needed to implement this idea?
- Second Who?
    - Who are the stakeholders who would implement this idea?
    - Which individuals or groups would benefit?
    - Which individuals or groups would be negatively impacted?
- Third When?
    - When during implementation is this idea activated?
    - When will it be completed?
    - Which other actions are required at the same time?
    - When does the idea cause problems?
- Fourth Why?
    - Why does this idea not fully solve the problem?
    - What are the unresolved issues and why do they occur?
    - What are the benefits of this idea?
    - What are its weaknesses?

Examining each existing idea and proposal through these four sets of questions will help us understand it in more detail and we can see more clearly how ideas might be combined.

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Combining Ideas

Once we have examined each idea, proposal or previous action using the Ideas Grid, we can begin to see how combination ideas might be created. For example the problem-solving team should consider:

1. Which ideas use similar resources or similar expertise for implementation? Can they be combined to produce a stronger proposal?

2. Which ideas involve the same stakeholders? Can those ideas be melded into a combined proposal?
3. Can ideas that negatively impact a group of stakeholders be combined with ideas that positively benefit them to create a proposal which balances stakeholder interests and, therefore, has a stronger chance of success?
4. Can ideas that would need to be implemented at the same time be combined into a single more streamlined plan?
5. Can ideas which cause problems at a certain time or certain stage in the business process be combined with ideas which eliminate or mitigate those problems?
6. Can ideas which have unresolved weaknesses in some areas but benefits in other areas be amalgamated with synergistic ideas to create a stronger proposal?

Working through this structure will help the problem-solving team develop some enhanced ideas which would mitigate the weaknesses of the individual ideas and reinforce their strengths. These combined ideas can then be appraised in more detail to see which are worth implementing. Ideas to prioritise are those which are relatively easy to implement, and which resolve the problem identified either fully, or nearly completely.

Where a combined idea does not quite completely resolve a problem, then the group should undertake further ideas work to come up with proposals to fill the gap.

End of lesson 4

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Lesson 5: Tool 3: Word Association

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Word Association

We've all played the word association game – usually as a bit of fun with friends. You say a word, usually a noun, and I respond with the first thing that comes into my head.

You say chicken, I say egg or maybe road or maybe feathers, or maybe Thai Green Curry!

In films and comedies, I've seen psychiatrists use it with their patients, but I don't know if it they use it in real life.

We can use word association to change our thinking about an issue in problem-solving. It's a bit of fun to deploy when the group get stuck in a rut. It's a technique that can also be used in conjunction with the previous technique of Combine Ideas.

Here are two ways of using the technique:

- As a tool to analyse the problem
- As a tool to enhance ideas generation

Let's look at both.

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Analysing the Problem with Word Association

In lesson 3 I covered the Problem Statement – a summary of the issue we are facing in three or four sentences.

We can use Word Association to explore the problem we are facing from new points of view.

- First, discuss the problem statement with the problem-solving group and identify some key words or phrases which describe what you would like to achieve by solving the problem. These are our aspirational phrases. For the mortgage application process, I discussed in lesson 3, the aspirational phrases might be "fast response", "customer satisfaction" and "new customers".
- Taking each aspirational phrase in turn, do a fast brainstorm with the problem-solving group to identify words and phrases they associate with that phrase. Continue this for as long as you get fruitful responses.
- Use the words and phrases generated to work-up ideas that might deliver those aspirations.

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Each word association brainstorm is likely to generate several dozen associated words or phrases. It's difficult to replicate that live energy in an example, but the brainstorm for the phrase "fast response" might generate the following ideas:

- Instant feedback
- Chatbot interaction
- Automated decision
- Pre-approval

- Valued customer
- Market leading
- Customer triage
- Automatic approval

The group can then work on these thoughts to develop ideas to fulfil the aspiration. For example, here the word association is surfaced the idea of triaging customers so that those that meet certain criteria get automatic approval within certain limits. Or an automated AI driven portal could give an online decision based on the customer's responses to questions. A third idea would be to research what other providers do to provide quick responses to applications.

I am sure that the word association would generate more thoughts and that other ideas would come out of this, but you get the idea.

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Using Word Association to Enhance Ideas

We can use word association to enhance ideas that the group has generated in a similar way to that for analysing the problem:

- Identify some words or phrases that describe the key features of the idea being reviewed.
- Take each phrase in turn, and do a fast brainstorm with the problem-solving group to identify words and phrases they associate with that phrase.
- Use the words and phrases generated to discuss ways in which the improvement idea might be enhanced.

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For example, one of the ideas we came up with using word association to generate ideas for giving customers a fast response to their mortgage application was that of an automated decision through an AI driven online portal.

- Our descriptive phrase for this idea might be "automated decision"
- The group word association might come up with suggestions such as:
- Interactive AI
- Information gathering

- Robot
- Programming
- Choices
- Risk assessment
- Triaging
- Scenarios

From these thoughts the group might discuss some ways of enhancing the original idea:

For example, an AI chatbot is used to take customers through online scenarios which allow the customer to understand their choices of the financial plans available to them.

An online questionnaire is used to triage customers for risk assessment with “low risk” customers given immediate approval, and higher risk customers transferred directly to trained analyst

Another idea I didn’t put on the graphic would be for the bank to create an app for the digital assistants that many people have – Alexa or Google Home – that customers can have a discussion with about mortgage options. I quite like that one, I wonder if any banks have done that.

The word association tool can feel a bit unnatural at first for a team setting, and that is the point really. It makes us use our minds in a different way which leads to new thinking. Once the group gets used to it, its good fun.

End of lesson 5 and end of Part 2: Problem Solving Tools for New Thinking

Slide

Part 3: Problem Solving Tools with New Resources

Lesson 6 Tool 4: Intelligent Design

Slide

Problem Solving Tools with New Resources

The three problem-solving tools I have grouped under the heading New Resources are about bring new skills and expertise into the problem-solving group. In the main

this is about supporting the group to develop new skills that will enhance their problem-solving, but it can also be about bringing some new members into the group whose skills can help with these tools. I am particularly thinking about design engineers, process planners and similar design experts.

The tools are:

- Intelligent Design
- Driver Analysis
- Solution Focus

I'll cover intelligent design in this lesson, with driver analysis and solution focus in the next lesson.

Slide

Tool 4: Intelligent Design

In lesson 2, I discussed why our problem-solving efforts can fail, and one of the reasons is that we humans are lazy. The human brain is wired to take the easy option and we will tend to take the route that we perceive to be the simplest to achieve our goal. In a work situation that often means ignoring the official procedure and taking shortcuts if we feel that is less hassle. But deviating from the planned process carries risk – the risk of errors, failure or even danger.

Many business problems arise because the process is too complicated or too onerous. It may be that changes have been made to the process over time that have resulted in increasing complication and decreased understanding of how it works. Or it may be that the people working in the process haven't been sufficiently trained to work it correctly.

Whenever an organisation reviews its operations and processes, or whenever a problem-solving team is put together to examine something that has gone wrong, it is worth considering that part of the solution maybe a redesign to make the process simpler to operate. That is intelligent design – making it easy to operate the process correctly and hard to make mistakes.

It sounds obvious, but so many business operations are clunky and poorly designed, and organisations rarely take the time or invest the effort to simplify them.

Intelligent design is about reviewing how a process or operation works and designing it in a way that the objective of the process is achieved in the simplest possible way. When the correct operation of the process or activity is the easiest, then there is no point in creating shortcuts, so the risk of errors, problems and mistakes is much reduced.

Slide

Intelligent Design a straightforward concept and involves the problem-solving team discussing a number of key questions:

- Is the problem caused by a failure to follow the correct procedures?
- At which point(s) does the actual work done deviate from the procedure?
- What are the reasons behind the deviation from procedure? Reasons might include lack of training or understanding; a complicated procedure; fiddly or difficult steps in the process; frustration at delays; unreliable equipment; poor IT systems; and so on.
- Is it really necessary that the procedure should be followed as written? Could the same outcome be achieved in different ways?

Transition

Once the group has worked through these questions, they can then begin to develop ways to redesign the process to remove the reasons for deviation. The aim is to design a process and a procedure which is easy to follow and easy to carry out. Making it easier to follow the correct process than to deviate from it will greatly reduce the number of problems in the process.

Let me give you one example. Some years ago, I worked with a medium sized company who were experiencing a lot of customer complaints about invoicing. There was over-charging and under charging and incorrect charging. All sorts of problems. The company was proposing to spend a six-figure sum on a new IT system in the hope of correcting the errors, but they hadn't actually looked into why the problems were arising. I spoke to the people involved – the sales team and the finance team – and I discovered that they didn't speak to each other. In fact, they didn't like each other at all. The sales team would make a sale and enter the order into the system, but if there was a change to the order, they didn't pass that onto the finance team. Neither did they tell the finance team about any special terms agreed for payment or discounts etc. The finance team raised invoices based on the original orders entered at the standard terms. They didn't check the invoices with the sales team before sending them out or discuss how previous problems encountered might be resolved. The sales team didn't understand the bureaucracy that the finance team wanted completed – finding it cumbersome; and the finance team didn't appreciate the sales team's processes and the many changes that might occur at different points. Inevitably, a significant number of the invoices were wrong and the same errors kept repeating. The problem wouldn't be solved by a six-figure IT system because the core problem remained - it was a problem of communication – pure and simple. What the business needed was a working group with representatives from both teams to review the whole sales and invoicing process and make it easy for both teams to get the information they needed. The teams needed to understand and respect each other's processes in

order to create a new way of working which they both could adhere to and which met the needs of both groups, and of customers.

End of lesson 6

Slide

Lesson 7: Tool 5: Driver Analysis and Tool 6: Solution Focus

Slide

Tool 5: Driver Analysis

Driver Analysis is another tool where it can be useful to bring in some specialist expertise to help the team. With Driver Analysis we examine the root causes of the problem in detail to identify what its drivers are. By drivers I mean the specific issues that are triggering the problem.

There are three stages to using the driver analysis tool:

1. Map the affected process in detail to identify the step at which the problem arises. Process mapping is a good tool to use here.
2. Examine the problem step in detail to identify the root-cause issues behind the problem. The Fishbone Diagram or Ishikawa Diagram is a useful tool for this
3. Construct a Driver Diagram to identify ways of resolving the root-cause problem.

Let’s work through these steps with an example.

Slide

Process Mapping

Process Mapping charts how work flows through a business process, showing every twist, and turn in that journey. It’s a good way of visualising how complicated a process has become. It also helps identify the point at which a problem arises.

Slide

Consider the following process map of the call handling process used in a doctor’s surgery. As we can see, after verifying the patient’s identity the practice reception team

need to identify if the patient's condition is a "red flag" issue that needs an emergency response.

The main categories for an emergency response are pregnant women, sick children and chest pain, fitting or breathing difficulties. Now it is very difficult to determine if someone with breathing difficulties just has a cold or has a life-threatening condition – particularly if the conversation is taking place on the phone. This is a weak point in the process and one where we want to develop better solutions.

Once we have identified the point at which the problem arises on the process map, we move onto the next stage – identifying the root-cause of the problem.

Slide

The Ishikawa Diagram

The Ishikawa Diagram provides a structured way for an improvement team to examine the root causes of a problem. The team analyse the problem from six points of view, to give a broader understanding of the issues involved:

- Materials – the materials and tools used at the point the problem occurs.
- Methods – the procedures and working instructions in place.

- Measurement – the sufficiency and accuracy of the data and measures collected.
- People – the skills and capabilities of the people working in the process where the problem occurs. Note we do not seek to blame the people, but rather identify any weaknesses.
- Machines – the equipment used in the process, including IT systems.

In our example, we want to identify the root-cause behind patients with serious breathing difficulties not being correctly identified as needing emergency treatment. And we can use the Ishikawa Diagram to help do that.

Slide

I have created this Ishikawa Diagram to analyse this problem of identifying patients with serious breathing difficulties who need emergency treatment. It's likely that a group discussion would yield more potential causes to explore, but you can see how the structure of the Ishikawa Diagram allows the problem to be broken down into elements which means that we can start to generate ideas for solutions for each element.

Here, the problem is highlighted in the box at the head of the fishbone. And under measurement we see that root causes are the difficulty in distinguishing between a minor problem and a serious breathing problem. This is particularly true if the conversation is taking place on the phone. Also, at present, we have no means of testing the person's breathing.

Under methods, I've identified that the reception team have no script to help them ask the patients questions about their breathing which might lead to a better identification of at-risk patients.

Under materials we see that there is no guidance or support material available.

Under people, we see that there has been no training of reception staff on this issue, and they have no medical expertise.

Under machines, I have identified that there is no test equipment even if the patient arrives in person.

And other mother-nature, we acknowledge that some patients hide their condition, perhaps not wanting to talk about it to non-medical staff, or not willing to accept that they are ill.

I am sure this analysis is already starting to spark some ideas for how the doctor's practice might address this problem. We start to do that in the next stage.

Slide

The Driver Diagram

A Driver Diagram provides a visual representation of the factors that drive a specific root-cause or issue, and it links those drivers to proposed actions. Let's continue the example of the problem identifying serious breathing difficulties in patients that call a doctor's surgery.

Transition

Our aim is for the reception team to be able to correctly identify when a patient has breathing difficulties that are serious enough to warrant emergency attention.

The problem-solving group have combined the issues identified in the Ishikawa Diagram into three main root-causes – that they have no means of testing a patient's breathing; that they have no training or guidance material; and that patients are sometimes unwilling to engage with reception staff.

We now want to generate potential solutions that will resolve these drivers.

- For the inability to test breathing we have two possible solutions.
    - We could invite the patient into the surgery for a test. However, this would have to be conducted by a medically trained member of staff. If the patient's condition is serious then the time involved in organising this is likely to be unacceptable. I think this option is discounted.
    - The second possible solution is to research if there are tests that can be administered over the phone. This might include the patient reciting a long sentence to test how breathless they are. Or perhaps it might involve asking the patient to breath in a particular way. It's possible that there is software that can analyse the breathing in real time to indicate if it is serious. I have no expertise in this field so I don't know, but it would seem a possibility.
- To address the lack of training and guidance, the practice should prepare guidance materials and a training session to cover the listening and questioning skills that will help identify if a case is an emergency
- Finally where patients are not willing to discuss their condition with the reception staff then ideas that might help are:
    - To develop a script to help the reception staff explain to patients the need for them to describe their condition more fully and, perhaps, to undertake the breathing test.
    - Another option might be to immediately pass the call to a duty doctor. There is a danger with this option in that patients might feel it is a way to get

straight through to a doctor and might start exaggerating their condition to get this immediate consultation, rather than have to wait for an appointment.

And there we have it. The Driver Analysis tool allows us to explore an issue, identify root causes, and then develop ideas to address those causes.

Slide

Tool 6: Solution Focus

I've covered several solution-focussed problem-solving tools in previous courses – particularly **The Creative Accountant: Personal and Professional Problem-Solving Skills to help you improve your effectiveness and expand your horizons.** In this course I am going to focus on the What does Good Look Like Grid.

The solution focus approach ignores the problem itself and looks forward to a time when it has been eliminated. It then asks the problem-solving team to plan what the future in the organisation might look like when the problem is resolved. What would the operation of the business and its processes be like for the organisation and its stakeholders in terms of:

- Business processes and methods
- People and skills
- Management and Organisation Structure
- Regulation and Rules
- Performance measurement and monitoring
- Communication and Culture
- Assets and Equipment
- Customers
- Suppliers
- Other stakeholders

Slide

This uses the What does Good Look Like grid and the group then identify objectives for each of these elements and create plans to achieve them. Looking ahead of the problem like this, and planning for a future state that delivers benefits for the organisation and its stakeholders can, sometimes, helps us develop ways of delivering those objectives without being constrained by the problem. We find new ways of operating which simply don't require the problem process or problem step.

This isn't always the case of course, but sometimes just jumping ahead of the problem and thinking about the scenario we want to create can free our minds to develop new ways of achieving the objective. This can be particularly powerful where we invite people to join our problem-solving team who are experts in the areas we are planning for but are not tainted by the problem, and may have no awareness of it. Their contributions are free from the constraints of the problem.

As the saying goes:

"Sometimes you need to step outside, get some air, and remind yourself of who you are and who you want to be"

End of lesson 7 and end of part 3 Problem Solving Tools with New Resources

Slide

Part 4: Problem Solving Tools with New People

Lesson 8: Tool 7 Perceptual Positions and Tool 8: Simplify the Solution

Slide

Problem Solving Tools with New People

I have grouped two problem-solving tools under the heading New People. And by New People, I really mean new people skills – that is using new skills to understand people and how they work. These tools are particularly useful where people are a key element in the causes of a problem. The tools are:

- Perceptual positions
- Solve Something Simpler

I cover both of those tools in this lesson.

Slide

Tool 7: Perceptual Positions

I have covered the perceptual positions tool in several of my courses including Business Communication Skills, Facilitating High Performance Teams and The Creative Accountant: Personal and Professional Problem-Solving Skills.

The reason is that it is a really useful tool to explore new ways of thinking about people and their issues.

Perceptual Positions involves putting yourself in another person's "shoes". In problem-solving we use this tool to consider a problem or issue from the point of view of others. It's an excellent tool to gain alternative "angles" on a problem. It opens up new ways of looking at a problem and thinking about it and this often generates new ideas for solving the problem.

Perceptual Positions allows us to use new people in our problem solving virtually – by thinking through how they would view the problem and how they would go about resolving it.

If the problem-solving team are not making progress analysing the problem from their own points of view, it makes sense to use our imagination to consider how others might approach the problem.

Here's what to do.

Slide

- Ask one member of the group to volunteer to play the role of a new virtual person in the team. The volunteer chooses a role to inhabit. Among the choices of roles to use, the group should consider:
    - Detective
    - Auditor or inspector (e.g. health and safety auditor)
    - Scientist
    - Innovator or inventor
    - Entrepreneur
    - Marketeer
    - Engineer
    - Professor
    - IT expert
    - Athlete
    - Pilot

- Doctor or surgeon
- And so on, there are many roles that can be useful

- The volunteer inhabits the character of the role they are playing, and sits in a chair in the centre of the group - or they can stay on their feet if they feel that encompasses the role better – and group members ask them questions:
  - As the character they are playing, how do *they* feel about the problem?
  - What do they think might be the causes of the problem?
  - What further information would they want about the problem?
  - How would they go about resolving the problem?
  - What would their first steps be?
  - What would solving this problem mean for them?
- Then ask for another volunteer to repeat this process in one of the other roles the group want to explore.

Perceptual Positions is a fun and energising exercise. It's fascinating to see how playing the role of another character can unlock thinking about a problem and its solution, and it really does give fresh insights into an issue.

Slide

Tool 8: Simplify the Solution

It's easy to get bogged down in the detail of a problem and that can lead to the creation of a complex multi-facetted plan to address the problem. The more complicated the solution we develop, the less likely its going to work – or be delivered on time and on budget. A simpler solution will be cheaper and easier to implement.

Before jumping into developing a detailed implementation plan for the fiendishly convoluted solution that your problem-solving team has devised, it is worth running the simplify the solution tool just to see if there might be another, simpler, way.

The simplify the solution tool involves the problem-solving team working through some key questions:

1. **What would happen if we didn't solve the problem?** It is worth the group exploring the consequences of not solving the problem. Of course, these might be unacceptable like a rapid loss of customers, or health hazards. Or it might be that the problem doesn't create any serious consequences other than some inconvenience. Or perhaps a stop-gap sticking plaster solution would be adequate until the process is no longer required

2. **What is the minimum solution that we could accept?** The group should build on the idea of not solving the problem by discussing the minimal possible solution. What would need to be done to remove the unacceptable consequences of the problem without any additional benefit? Could that work, perhaps as a temporary measure? A cheeky version of this question would be – "what can we get away with?"

3. **How long is a solution needed for?** In some cases, we try to develop a "perfect" fix for a problem – something that will really last. But we might not actually need it to last for long. Technology is constantly changing; methods and processes are developing; the desires and preferences of customers are changing. It might be that the group realise that the business process will have to be upgraded or reengineered anyway within the next year or two. A brilliant solution is not needed when an efficient solution will suffice.

4. **Is there another way round the problem?** Continuing the theme of simplifying the solution, the problem-solving team should consider other ways of delivering the required outcomes. As we'll see in the next tool, there might be a way we can bypass the problem but still deliver the outcomes that are needed for customers, stakeholders or the next stage in the business process.

Transition

Essentially, the simplify the solution tool is about finding a less than perfect solution to the problem we are facing. That might be a temporary fix, or a partial fix of the more unacceptable consequences of the problem. In some cases the cheaper and easier solution might not be a "gold standard" solution but it might serve for as long as it is needed.

I'm not advocating always developing a just about adequate solution – sometimes we really do need a problem to be comprehensively resolved. But sometimes, when a problem is not critical to the success of the organisation, a minimum acceptable approach will do just fine – and be cheaper and easier to put in place.

End of lesson 8 and end of part 4: Problem Solving Tools with New People.

Slide

Part 5: Problem Solving Tools using Counterintuition.

Lesson 9 Tool 9: Bypass the Barrier

Slide

Problem Solving Tools using Counterintuition

Something which is counterintuitive is something which is contrary to common sense.

> "Contrary to intuition or to common-sense expectation."
>
> Oxford English Dictionary

"Gut feel" plays a big part in problem-solving for many people. Their "gut" tells them the solution and they don't feel they need any further analysis of the issue or of alternative courses of action. I've always been suspicious of gut feel. In some cases, I think it is just arrogance on the part of people who feel superior to the rest of the group. To me gut feel is a shortcut related to the five reasons why problem-solving fails that I covered in lesson 2. We're lazy; we spot patterns and make assumptions; and we jump to conclusions. Of course, gut feel, based on years of experience in a field can be valuable, but often it's just laziness from people who can't be bothered to explore a problem fully.

The three problem-solving tools that I have grouped together under the heading of Counterintuition are all ones where we seek to ignore the lazy same-old, same-old solutions and employ some uncommon nonsense to mix up our thinking and come up with new ideas. The three tools are:

- Bypass the Barrier
- Contrary Mary
- Impose Constraints

I'll cover Bypass the Barrier in this lesson and Contrary Mary and Impose constraints in the next lesson.

Slide

Tool 9: Bypass the Barrier

I hinted at the bypass the barrier tool in the previous lesson where the fourth question in Tool 9 – Simplify the Solution is: "Is there another way round the problem?"

The Bypass the Barrier tool involves the problem-solving team discussing if there is a way of delivering the objective of the process affected by a problem that doesn't involve going through the problem.

In other words, can we develop a work-around?

Sometimes we can't see the trees for the wood. We get so fixated on the problem that we don't stop to think if there is another way of achieving the objective without going through the problem step.

To be honest, the Bypass the Barrier tool is more an enhancement to some of the other tools in this course than a standalone tool. It contains elements that are recognisable from the higher-level view tool, as well as the solution focus, driver analysis and simplify the solution tools.

Whichever tools the problem-solving team are using, they can enhance their analysis of the problem and its potential solutions by considering the following questions:

1. **Can we change the process, or the wider environment so that the problem is no longer relevant?** Rather than tackle the problem itself maybe the business process itself can be reengineered, or other activities in the organisation changed, so that the problem issue or step is no longer required. Instead of solving the problem, we find another way delivering the required outcomes.

2. **Can we change the process so that some of the drivers of the problem are no longer relevant?** Where the problem-solving team use the Driver Analysis tool to identify the root causes of the problem, they should also consider potential solutions that avoid or eliminate one or more of the drivers of the problem.

3. **What alternatives to this process, or this part of the process, can we develop?** The group should brainstorm as many completely different ways of delivering the required outcomes as possible. There is *always* a plan b!

4. **Do we even need this process or this process step?** Encourage radical thinking. If this process was impossible, what would we do instead? It's easy to become reliant on the technologies and ways of working we have today, but other ways of working are possible, and might be used elsewhere. Take email for example. When I started in business there was no email and personal computing was in its infancy, but we still managed. We could still attract clients and create projects with them. We did the best we could with the resources we had available. Sure, it's much easier with email and the internet and cloud computing, but you could again find ways of working without them if you had to. The same must be true of any business process. There is always another way. It may seem slower and more cumbersome at first, but it is an option and you might be able to find ways to make it more efficient.

5. **Can we break the problem down to reduce its impact?** Another way of bypassing the barrier might be to break it down into smaller elements which then cause less of a problem. Let me give an example. I once worked with a medium sized engineering firm. They made valves for industrial uses and all the values went through a large heat treatment kiln. This kiln was the bottleneck which prevented the business from expanding its market and it greatly reduced their flexibility to respond to customer requests. The solution was to purchase several much smaller kilns for each production process. Some of the company's products needed only a very limited heat treatment which could be handled in a much simpler and cheaper way. Other products needed a full heat treatment but

splitting the process into different product lines gave them more flexibility in responding to customer orders. The company's custom-made values required really complex construction and heat treatment steps but the volume of orders was relatively low so them having their own specialist kiln meant that other products were not held up by the long processing time. In the short term, the purchasing of five or six heat treatment machines was expensive, but it quickly paid for itself in the greater throughput of product that could be achieved and the much faster response to customer orders meaning they could become a supplier of choice to businesses that wanted a fast turnaround. Breaking the problem down almost completely eliminated its impact.

The Bypass the Barrier tools provides some additional analysis that we can use in conjunction with the other tools in this course to provide a greater range of critical thinking.

End of lesson 9

Slide

Lesson 10: Tool 10: Contrary Mary and Tool 11: Impose Constraints

Slide

Tool 10: Contrary Mary

I am sure that, at some point in your working life, you have come across that person that likes to argue the opposite of everyone else. It's probably a personality type – to be contrary – or perhaps its attention seeking. Some people just like to argue for the opposite of the consensus.

But in problem solving, that sort of argument can be beneficial as it helps us to break out of the groupthink consensus and think of other counterintuitive possibilities. I called this tool Contrary Mary in reference to the nursery rhyme Mary, Mary quite contrary. I mean nothing against people called Mary.

The point is that it is useful to appoint someone in the group – male or female – to be contrary mary to challenge all the assumptions and proposed solutions that the problem-solving team create. Alternatively, the whole team can plan a 15 minute segment every couple of hours to be contrary marys. This can be really good fun: the team scrutinising their own thinking to make sure they really have covered every angle.

Transition

Sometimes we swallow things that seem obvious or logical without questioning them, but often they're assumptions that are holding us back. Once we start to challenge our lazy thinking more possibilities open up.

Slide

Here are the steps for the Contrary Mary tool:

1. Ask for a volunteer to be Contrary Mary to push back against every assumption or conclusion that the team come to. Fulfilling this role is hard work and can lead to friction with other team members, so it is worth rotating the role perhaps halfway through a session. Remember Contrary Mary is not a gender specific role. I chose the name to be alliterative, not to suggest that one type of person is more antagonistic than others.
2. Alternatively, agree with the team that a "Contrary Mary" segment will built into the agenda for the session. It is useful to have such a segment around halfway through the session and another towards the end before the group plan their next meeting.
3. Prompted by Contrary Mary, or during the Contrary Mary segment, the team should scrutinise their Problem Statement. Is the problem itself based on assumptions that are open to challenge? Are the outcomes that the team wish to achieve really valid? What contrary viewpoints can be put forward and how should the team incorporate them in their work?
4. Next the problem-solving team should list all the assumptions they have made about the problem, or the process, or the organisation, or the wider environment. They then critically examine the validity of those assumptions. Do they really hold true, or is there some leeway which might lead to new thinking about the problem?
5. The team should also examine the ideas and analysis they have conducted. Does a conclusion or finding made really stem from the evidence? What other possibilities are there? Does one step really lead to the next? What other routes could there be?

Slide

Counterintuitive and contrary thinking add robustness to the problem-solving process by ensuring more possibilities are explored. It is easy for us to fall into certainties and seemingly obvious assumptions. The Contrary Mary tools helps us to challenge our thinking at every step. In summary, the key questions for Contrary Mary are:

- Is that really true?
- What if it wasn't true?

- Why does it have to be done that way?
- What are we taking for granted here?
- Is there another way?

In problem-solving challenge is a useful way of provoking better thinking. The Contrary Mary tool provides a structure for that challenge to take place and be accepted by the team, without it causing friction or damaging the group dynamic.

Slide

Tool 11: Impose Constraints

Another way to stimulate counterintuitive thinking and open up new avenues for the problem-solving team to explore, is to impose artificial constraints on the problem-solving process.

When we impose constraints on what we can do, we are forced to develop up new ideas and new proposals. That's what the Impose Constraints tool helps us do.

Adding a constraint to the group's discussions will disrupt the normal patterns of thinking and force them to consider new avenues.

It's an easy tool to apply:

- The time to use the impose constraints tool is at the idea generation stage, after the group have defined the nature and scope of the problem and analysed it in detail.

Slide

- Once the group have completed an initial brainstorm of ideas for possible solutions for the problem, the impose constraints tool can be used to access new ideas and new angles on the problem.
- Here are some constraints to try with the team:
    - The problem must be solved with current resources - there is zero budget available to spend on a solution. If zero budget proves too restrictive, try discussing solutions with a limited budget – say $500 – something that will challenge thinking
    - The process must be fully operational again within 2 weeks (or similar tight timescale). A time constraint will move the group from pie-in-the-sky technological solutions to consider more realistic ideas.
    - The solution must *not* involve new technology. Often ideas for solving a problem revolve around new IT equipment or new software – both of which

are expensive. Limiting the team to currently available technology encourages a search for more practical solutions.

- The solution must *not* involve more people in the process. Just as new technology can seem a tempting magic bullet solution for a problem, throwing more people into a process is also a temptation. But that is a lazy proposal that adds cost and probably doesn't actually improve the process but rather adds resource to do the rework.
- The solution must remove a step or element. It's good to challenge the problem-solving team to come up with a solution that removes a problematic step or element. Thinking about the company manufacturing valves in the previous lesson, they didn't manage to complete remove the heat treatment step, but they reduced its impact by developing separate heat treatment steps for each production process. I wonder whether there is a solution that might remove heat treatment all together – new materials perhaps, or new methods of sealing valves.

The Impose Constraints tool is particularly useful to introduce when the thinking in a problem-solving group seems tired or lazy. For example, when the team get fixated on buying new kit. Imposing constraints adds some tension and forces the group to explore new pathways for a solution.

End of lesson 10 and end of Part 5: Problem Solving Tools using Counterintuition

Slide

Part 6: Using the Problem-Solving Tools

Lesson 11: The Problem-Solving Team

Slide

The Problem-Solving Team

One danger in problem-solving is that we form a team of the people in the organisation that we like and get on with. The members of that sort of team are likely to think along similar lines and the sessions can quickly descend into a coffee, cake and a chat, rather than a rigorous problem-solving powerhouse.

Effective problem-solving teams are diverse mixing thinking styles, experience, and viewpoint.

In my view, an effective problem-solving team is one with six to ten members, although I recognise that smaller organisations may only be able to spare three or four members for the team. The team should comprise a mixture as follows:

- At least one member familiar with the work in the area where the problem lies.
- At least one member who is going to be involved in the implementation of any solution.
- At least one member who has no connection with the problem process or step, and, therefore, no preconceptions about it.
- At least one member who is able to represent the group to the decision makers who will authorise the solution.
- At least one member who has great experience of the organisation and how it works and, so, can bring the bigger organisational picture to the discussions.
- At least one member of the engineering or production or operations departments who brings process expertise.
- One member of the team who has an understanding of process and organisational costings is advantageous.
- Having one member from sales and marketing can be beneficial, as can a member from planning or quality assurance.

I realise that these requirements could add up to quite a sizeable team but, of course, it is possible that one person can combine several of these requirements.

The key is diversity of experience and of ideas.

Slide

Project Timescale

It is impossible to be definitive about how long a problem-solving team will take to do its work and work through the problem-solving stages of:

1. Define the Problem
2. Analyse the Problem
3. Generate Ideas
4. Test the Solutions
5. Decide: Select and implement a Solution

The timescale of the project depends on the size of the organisation and the size and nature of the problem being tackled. That said, most problem-solving teams I have worked with in mid-sized organisations have met for half a day or a day a week for three or four months to develop a detailed implementation plan. So that is around 8 to 16 days of group sessions. Obviously, with a serious problem, the group might meet full time, or at least 3 days a week, for several weeks.

Bigger more complex problems will take longer, but I think 8 to 16 days of team problem-solving work is a reasonable rule of thumb to deal with a fairly significant issue.

This is a significant investment for the organisation, so we have to look at how we assess the benefits against this investment.

Slide

Quantifying the Benefits of Improvement

The cost of our investment in problem solving is easy to determine. Let's say we have a team of 8 people meeting for a total of 12 days to tackle with a significant business issue. That could easily amount to an investment of over $13,000 in wages and salaries. Now we want to show that the improvements the team has implemented are worth that.

1. The main benefit of the work that the problem-solving team have done will be eliminating the identified problem and, therefore, restoring the business process to its full capacity. The revenue or contribution difference between the restricted process *with* the problem and the restored process is, of course, the main benefit of the team's work, and this can be set off against the time cost of the team to give a sort of payback period.
2. It may be that using the problem-solving tools to expand their thinking has enabled the process to be improved beyond its original state. The extra contribution generated by the capacity created will give a payback period to recover the costs of convening the team.
3. Next ,we have any reduction in scrap and rework generated by the improvements put in place. The saving in material costs and energy costs can be set against the investment in the team's time.
4. We might also see a reduction in inventory: less WIP or less finished goods. This has a cashflow benefit which can be quantified.
5. The changes the team made to the business process may mean that customer orders are fulfilled more quickly bringing better customer satisfaction and more

orders. These will generate more contribution and the value of these additional orders is a key benefit of the improvements made.

There are other benefits too which may be more difficult to quantify but which, nonetheless, have an impact on the organisation. For example, employee morale may improve because their problems are being tackled. Less employee turnover means less recruitment and training costs.

I am sure that once you begin to focus on quantifying the benefits of problem-solving you will quickly see them outstrip the investment in the time spent by the team.

End of lesson 11

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Lesson 12: What to use When

The 11 tools I've presented in this course are designed to add something new to problem-solving sessions. If the group get a bit stuck or a bit tired of using the standard tools, then the tools presented here open up opportunities for fresh thinking and new ideas.

Any of the tools can be used at any time in a session, but to add a bit of structure if it is needed, I have identified the parts of the problem-solving process where each tool is most useful.

- For Problem Definition and scoping, the **Higher-Level View** tool helps the team to step back and gain an understanding of a problem in the context of the surrounding environment and interconnecting processes.
- Several of the tools can help with Problem Analysis.
    - The **Driver Analysis** tool examines the root causes of the problem in detail to identify what its drivers are - the issues that are triggering the problem.
    - **Perceptual Positions** is a great tool for exploring the nature of a problem from different points of view, by role-playing different personality attributes.
    - The **Contrary Mary** tool will help jolt the team out of group-think by deliberately arguing against assumptions and preconceived ideas
- The **Word Association** tool can be used for both Problem Analysis and Idea Generation and review. It's a fun tool to deploy when things get a bit stuck and you need to shake people's thinking up.
- Also useful for Idea Generation and Review are the Solution Focus, Impose Constraints and Bypass the Barrier tools.

    - The **Solution Focus** ignores the problem itself and looks forward to a time when it has been eliminated, asking the problem-solving team to develop plans for that future.
    - The **Impose Constraints** tool generates more ideas by adding a constraint to the group's discussions to disrupt the normal patterns of thinking and force them to consider new avenues.
    - **Bypass the Barrier** is similar and challenges the team to find another way round the problem.
- Once we have generated ideas, we get to the idea refinement and planning stage. Three of our tools can help here:
    - The **Combine ideas** tool provides a structure to examine the ideas that have been generated to see if they can be combined to make stronger a proposal.
    - **Intelligent Design** is about designing a solution where it is easy to carry out the work correctly and hard to make mistakes.
    - The **Simplify the Solution** tool challenges the team to find a simpler way out of the problem, asking the question "What is the minimum solution that we could accept?"

And there we have it, 11 tools to challenge the braincells of a problem-solving team and open up fresh thinking. These tools are great when you need a change from the standard problem-solving tools that the team may have seen many times over. They're fun and they're different. I am sure any problem-solving team you work with will enjoy them.

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Thank you for taking **Turn your Thinking Around: New Approaches to Problem Solving**. I hope the course has helped you identify new problem-solving tools that will help you in your work. I hope and believe they are different to the tools you'll find on most web pages and in most books.

I wish you luck with the tools. Thank you for taking this course. I'm Ross Maynard and I hope you'll join me on more of my courses. Goodbye.