



Creative & Critical Thinking for Auditors

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Objectives

- Describe and discuss the basic concepts of creative thinking.
- Identify and eliminate roadblocks and barriers to use of creative thinking in auditing.
- Distinguish between creative and critical thinking and explain their complementary roles in problem solving.

Objectives

- Describe key stages in applying creative and critical thinking to identify causes and solutions to performance problems.
- Use creative thinking principles and tools to boost your output of ideas.
- Apply critical thinking principles and tools to organize, evaluate, and prioritize ideas generated by creative thinking.

Creative Thinking for Auditors

- Is that an oxymoron?
- Being creative means “change”
- How adaptive are you?
 - Resist change?
 - Go along with change?
 - Thrive on change?
 - Initiate change?

Course Agenda/Topics

- Module 1. Creative Thinking - what is it and why?
 - Brain training
 - Barriers
- Module 2. Creative and Critical Thinking for Problem Solving
 - What is a problem –Root Cause Analysis
 - Critical Thinking – Making the Connections or Flawed Inferences
 - Cases: What problem are we trying to solve? Solutions?
- Module 3. Applying Creative Thinking Tools
 - Idea quota
 - SWOT analysis
 - Brain storming
- Module 4. Applying Critical Thinking Tools
- Module 5. Presenting Results From Creative Thinking Exercises

Module 1

Creative & Critical Thinking for Auditors

What's Happening in Our Profession?

- Audit expectation gap
- Need to be solution finders
- Need a more prospective/consultative approach – to be valued
- We can't solve yesterday's problems in a tomorrow world!
- Need to acquire new skills
- If the world is changing faster than your skills, processes and products – you will soon be irrelevant!

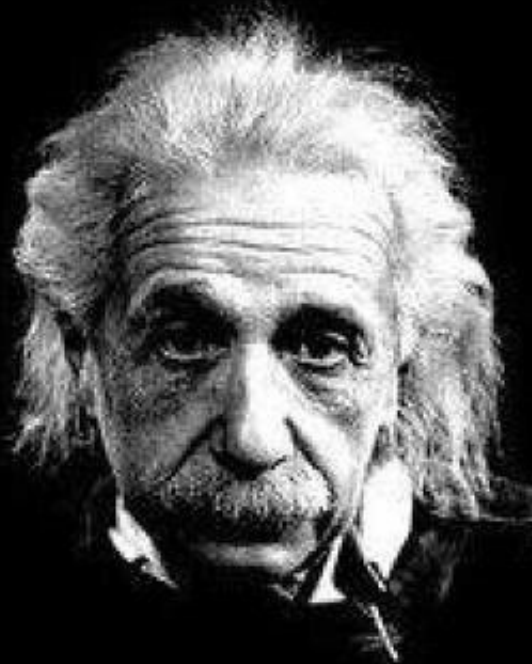


"In a fight between you and the world, bet on the world."

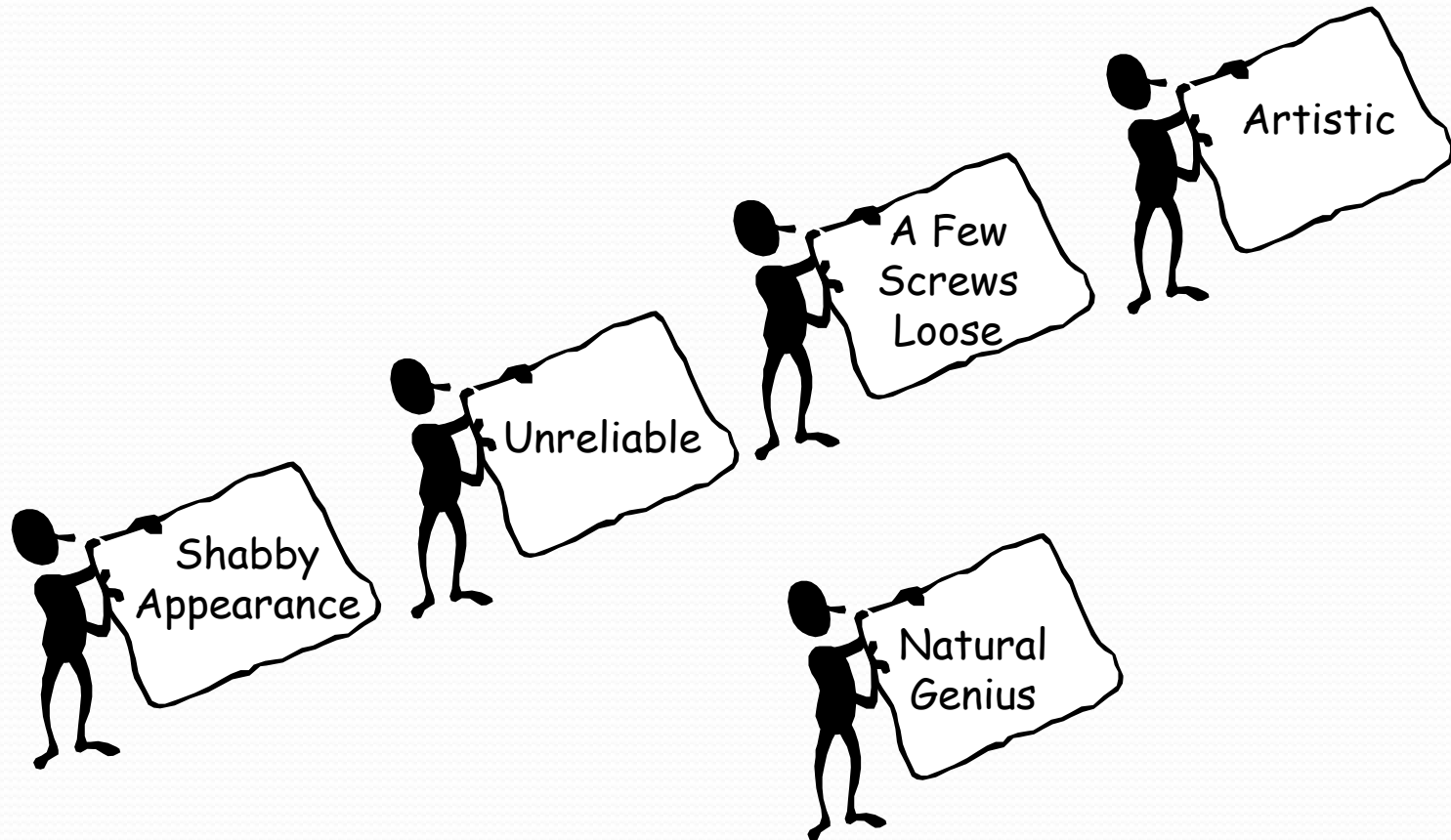
- Frank Kafka



"WE CANNOT
SOLVE OUR
PROBLEMS
WITH THE SAME
THINKING WE
USED WHEN WE
CREATED THEM"



Popular Misconceptions



You Don't Have to be Artistic to be Creative

- Art is the expression, not the process
- Creativity can be learned
- The process and practice is the key
- You can become adaptive and must encourage others to become adaptive as a Change Agent
- Help create a creative forward thinking environment



Road Blocks

- Trying to please others by following checklists/rules
- Pre-conceived expectations about findings
- Auditors are not expected to be creative
- Humorless environment responds sluggishly– unlikely to discover much
- Competitive instincts – is limiting to their examples and strengths
- Undeveloped memory- difficult to make connections
- Anchored to what is known, safe, comfortable



Exercise 1-1:

‘What An Audit Looks Like’

- Use paper provided by the instructor and the markers on the table to draw what an audit looks like to you.
- Each person will share their work with the class.

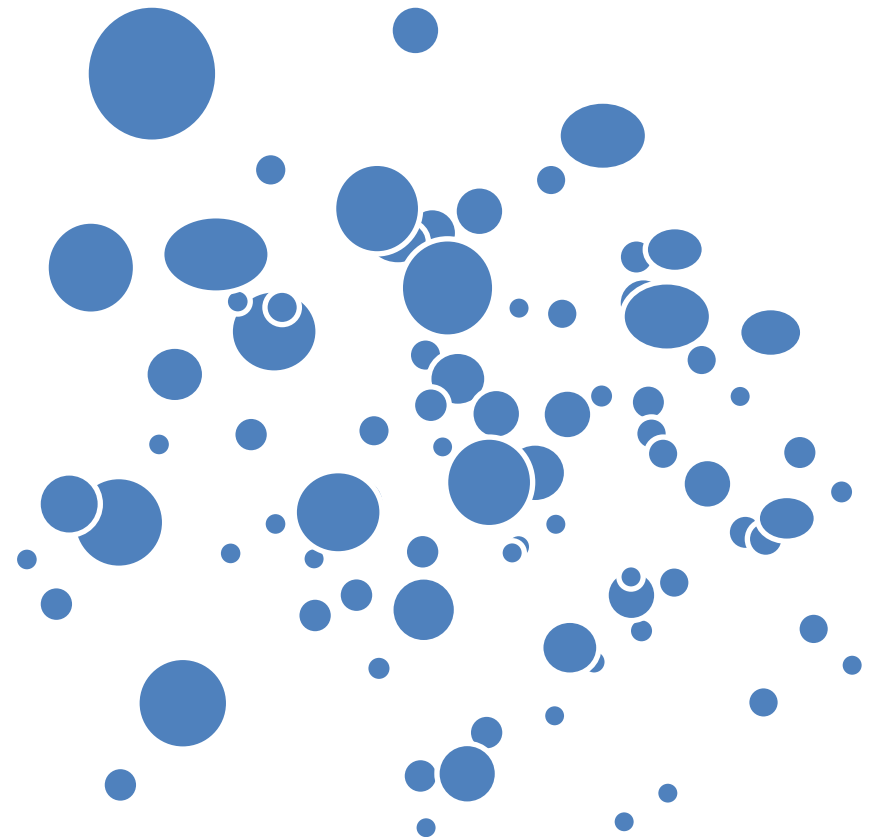
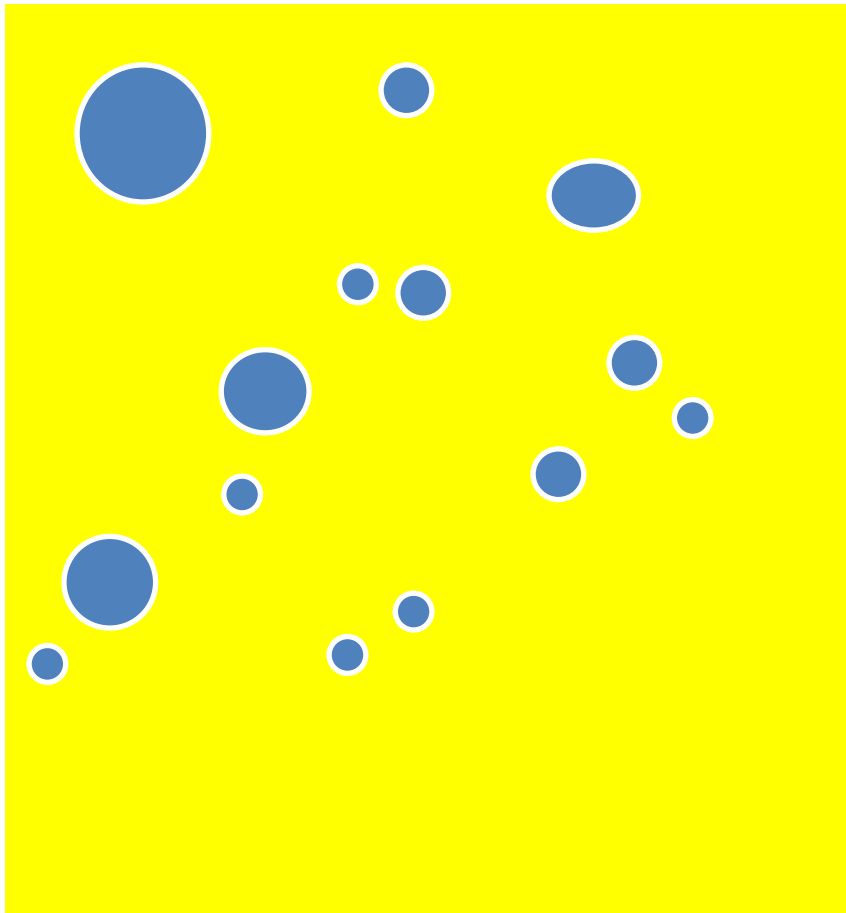


What is Creative Thinking?

1. Generating new ideas/ Improving on old ideas
2. Developing new perspectives.
3. Combining existing and new ideas to create new format.
4. Breaking away from structured thinking and using critical thinking.
5. Connecting current issues with other seemingly unrelated issues.
6. Seeing/perceiving new possibilities
7. Discovering/Defining the real problem: cause/solution

Reference Points that Stimulate Memory, Intuition, Creativity & Critical Thinking

the more Analogies the Better, Vs If the Only Tool You
Have is a Hammer, Every Problems Looks Like a Nail



The Objective of Creative Transformation

- **The “Status Quo” is Not an Option:**

We face large and growing structural deficits largely due to known demographic trends, infrastructure and rising health care costs. *(David Walker, former Comptroller General)*

- **Objective:** To create a more positive future by maximizing value and mitigating risk within current and expected resource levels.

- Discovery of root causes and implications
- Identify new knowledge and creative solutions – breaking away
- https://www.dropbox.com/s/hxok1qoa848iiwy/2016-02-09-LMCO_Rowan_Gibson.mp4?dl=0

- Somebody has to do something!! – YOU!



Failure in the Planning and Implementing World

- **Foresight Failure**

- Fail to anticipate a problem/opportunity
- When a problem arrives, we fail to perceive it
(our reference points are only what we already know)

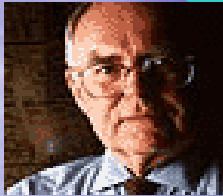
- **Management Failure**

- After we perceive the problem, we/they may fail to address it – *change is very difficult*
- We/they may address it, but use the wrong, or outdated techniques, and fail to solve it



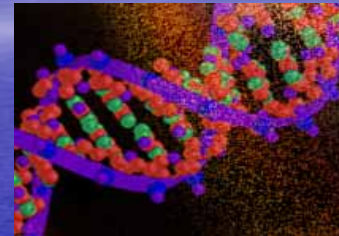
Creativity → Innovation → Change!

Rate of Technological Change



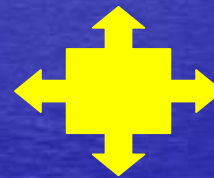
Moore's Law

The logic density of silicon integrated circuits doubles every 18 months



Monsanto's Law

The amount of useful genetic information doubles every 18-24 months.



Metcalfe's Law

Connect any number "n" of machines - whether computers, phones or even cars - and you get "n" squared potential value.

Dawkin's Law

The cost of sequencing DNA base pairs halves every 27 months.

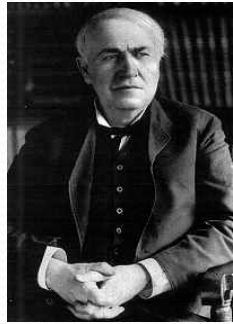
Source: D. Rejeski, Woodrow Wilson Center



The Illusion of Certainty



- *"The phonograph is of no commercial value."*
- Thomas Edison, 1880
- *"There is no reason for any individual to have a computer in the home."* - Ken Olsen, President of Digital, 1977
- *"Anyone who thinks the ANC* is going to run South Africa is living in cloud cuckoo land."* - Margaret Thatcher, 1987



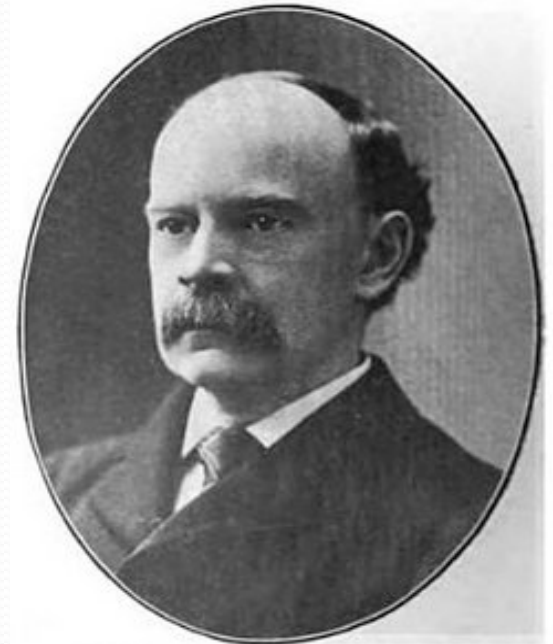
*African National Congress

Charles Duell – Progressive Thinker??

In 1889, Charles H. Duell was the Commissioner of US patent office.

- He is widely quoted as having stated that the patent office would soon shrink in size, and eventually close, because...

“Everything that can be invented has been invented.”



CHARLES HOLLAND DUELL
LAWYER
U. S. COMMISSIONER OF PATENTS 1898-1901

Four Lenses of Innovation

Rowan Gibson

Common Characteristics of people and approaches that have changed the world



- **Challenging Orthodoxy**

- *Questioning deeply held dogmas and common assumptions*

- **Harnessing Trends**

- *Spotting and Responding to unnoticed trends and discontinuities which could change the rules of the game*

- **Leveraging Resources**

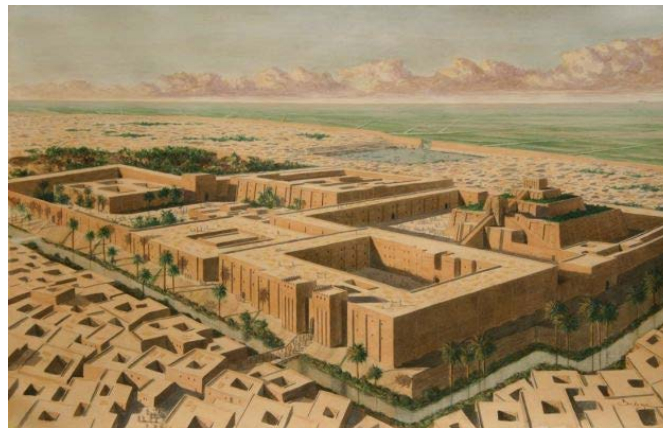
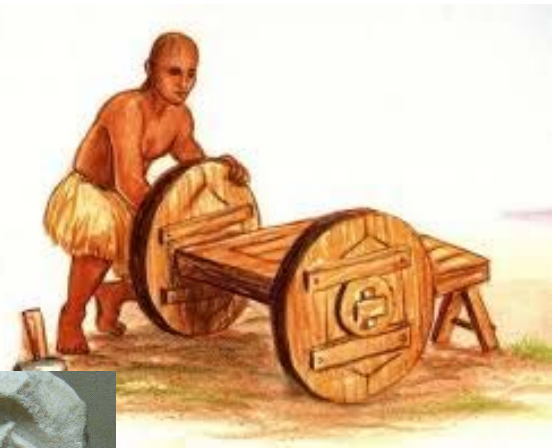
- *Repurpose available skills/assets to use unused capacity*

- **Understanding Needs**

- *Find out what they want/need before they know it to - address it*

Mesopotamia Innovations

- The wheel
- The Chariot. ...
- The Sailboat. ...
- The Plow: ...
- Time: ...
- Astronomy and astrology
- The inventions of Map
- Urban Civilization
- Mathematics
- Writing
- Prisons
- Calendars
- Schools



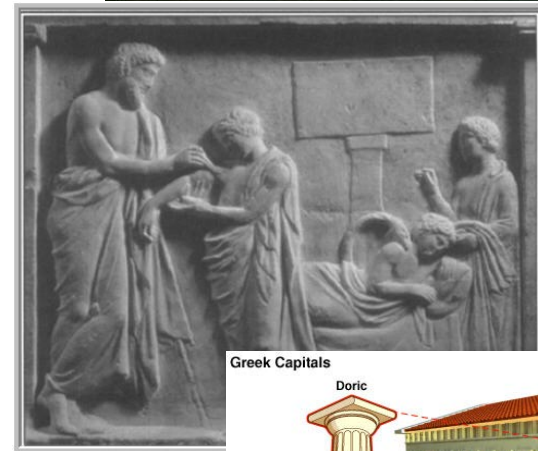
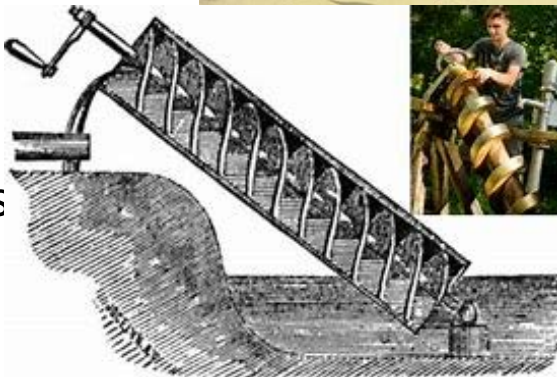
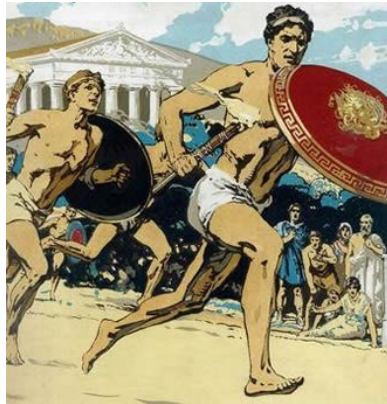
Egyptian Innovations

- The Pyramids
- Writing
- Papyrus Sheets
- The Ox-drawn Plough
- Irrigation
- Clocks
- Toothpaste/Eye Makeup
- Door Locks
- Mathematics
- Wine

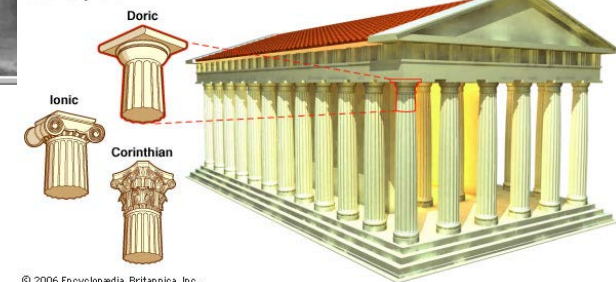


Greek Innovations

- Practice of Medicine
- Philosophy
- Democracy
- Modern Science
- Water Mill
- Cartography
- Olympics
- Geometry
- Money
- Lever/Cranes
- Cannons
- Screw
- Architecture
- Gyro



Greek Capitals



© 2006 Encyclopædia Britannica, Inc.

Rome and Innovations

- Numbers
- “Newspapers” (stone carvings)
- plumbing/Sewage Management
- Arches to build structures
- Central heating
- Aqueducts
- Surgical Tools
- Concrete
- Roads
- Laws and Judicial system
- Postal System
- Welfare
- Grids based land use layouts



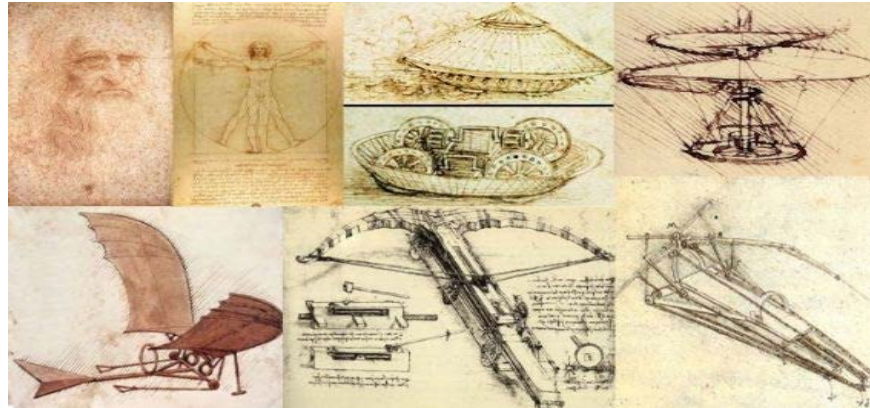
Dark Ages

- The Middle Ages, the medieval period of European history between the fall of the Roman Empire and the beginning of the Renaissance, are sometimes referred to as the "Dark Ages."



Renaissance

The Renaissance is a period in European history, covering the span between the 14th and 17th centuries. It is an extension of the Middle Ages, and is bridged by the Age of Enlightenment to modern history-Industrial revolution.



Creative Thinking Dulls with Maturity

Adults come up with 3-4 solutions to a problem

Children come up with over 60 solutions to a problem

WHY??



It's an Inherent Human Trait

- At the extremes of talent (Picasso, Bach, Jordan) maybe it is 'raw ability'
- Everyone else is coachable
- If you can be coached, it is a learnable skill
- Skill development takes time and practice

10 Creative Myths

1. “I am not creative”
2. “That's a stupid [or silly, or ridiculous] idea
3. “Creative people always have great ideas”
4. “Constructive criticism will help my colleague improve her idea.”
5. “We need some new marketing ideas for the upcoming product launch. Let's get the marketing people together and brainstorm ideas.”

10 Creative Myths

6. “In order for our innovation strategy to be a success, we need a system of review processes for screening ideas and determining which ideas to implement.”
7. “That's a good idea. Let's run with it”
8. “Drugs will help me be more creative”
9. “If it ain't broke, don't fix it.”
10. “I don't need a notebook. I always remember my ideas”



Preliminary Test – *Making Connections*

Find a word that goes with the other three in each set

1. Light, dress, head
2. Pool, sand, bite
3. Stub, pay, cashier
4. Cloth, kitchen, round
5. Sun, eye, spy
6. Nail, standing, wood
7. Book, ocean, store
8. Roller, plastic, sand

Preliminary Test

making the connections

- | | |
|--------------------------|-------|
| 1. Light, dress, head | Red |
| 2. Pool, sand, bite | Shark |
| 3. Stub, pay, cashier | Check |
| 4. Cloth, kitchen, round | Table |
| 5. Sun, eye, spy | Glass |
| 6. Nail, standing, wood | File |
| 7. Book, ocean, store | Shelf |
| 8. Roller, plastic, sand | Bag |

Another Test 1-2

- Form the following passage into a coherent paragraph
- You have two minutes

Another Test

bicycle creativity a taught gift
riding performing other is a can
not as a accounting it or skill
such like be skills

Solution

Creativity is a skill not a gift such as other skills like riding a bicycle or performing accounting it can be taught.

Scoring - Another Test

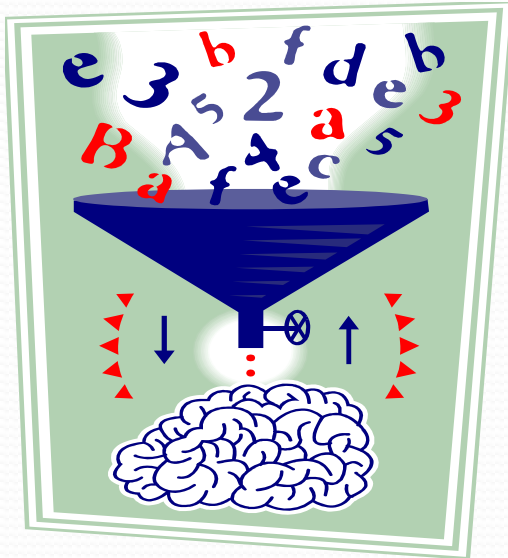
- Makes sense, few left-overs
 - Ability to solve under pressure
 - Strong verbal flexibility (perception of Ad. Exec)
- Kind of makes sense, some left-overs
 - Some ability, limited under time constraints
 - Practice under constraint needed
- Makes no sense, lots of left-overs
 - Problem solving difficulties under time pressure
 - Methodical person

(Perception of auditors)

Getting Started – Meet Your Brain!

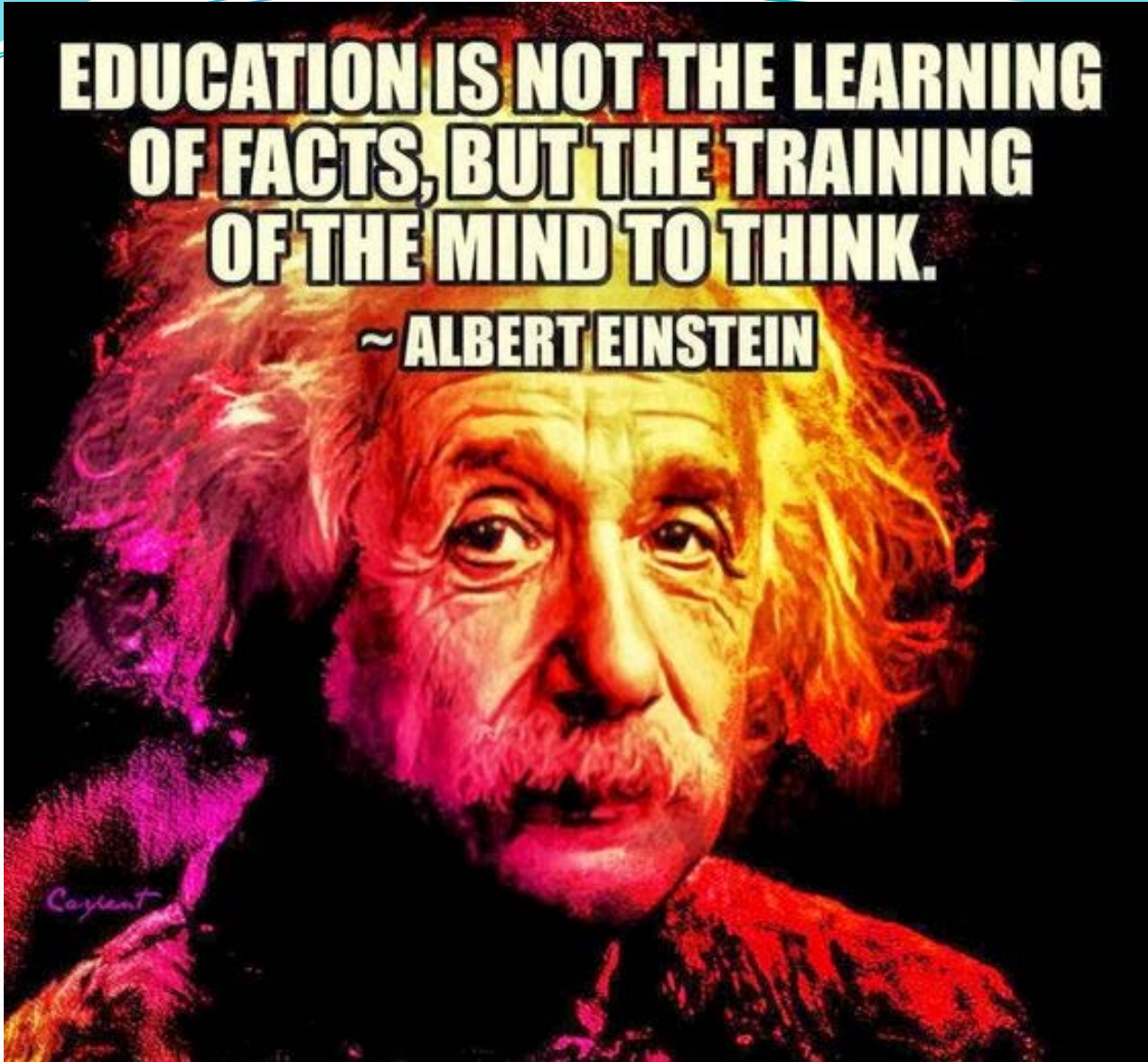


Left=Facts & Logic VS **Right**= Imagery & Intuition



**EDUCATION IS NOT THE LEARNING
OF FACTS, BUT THE TRAINING
OF THE MIND TO THINK.**

~ ALBERT EINSTEIN



Exercise 1-3: Personality Traits

1. What personality traits are stereotypical of auditors?

Exercise 1-3: Personality Traits

1. What personality traits are needed for creativity?

Lets Look at that List of Auditor Stereotypes

*“People will do anything for those who:
encourage their dreams,
justify their failures,
allay their fears,
confirm their suspicions and
help them throw rocks at their enemies.”*

From the list we developed – how do we motivate
people to do anything for us?

Now lets compare Creative Traits

Creativity Traits

Products:

- Fluency, Flexibility, Originality, Elaboration

Attitudes:

- Curiosity, Imagination, Complexity, Risk Taking

Behaviors:

- Flexible, Imaginative, Nonconforming, Novel Answers

Cultivating a Creative Culture the ingredients for innovation!

- Acceptance of ambiguity
- Tolerance of the impractical
- Low external controls
- Tolerance of risk
- Tolerance of conflict
- Focus on ends rather than means
- Open system focus



Personality Characteristics for Creativity

1. Willingness to take risks
2. Perseverance, Commitment
3. Openness to Experience
4. Tolerance for Ambiguity
5. Curiosity
6. Broad Interests
7. Value Originality
8. Intuition and deep emotions
9. Being Internally Occupied
10. Awareness of Own Creativity
11. Sense of Humor
12. Attracted by Complexity and Novelty
13. Artistic

10 Creative Habits

to think out of the box

- A passion for work
- Fidelity
- Love of the Problematic
- Sense of wholeness
- Boldness
- Consequence
- Sense of time
- Curiosity
- Memory
- Sense of openness

Do you see everything?

- Part of being creative is seeing things other people don't see.
- Sometimes we miss things that are right in front of our eyes.

Read the following Exercise 1-4

FINISHED FILES ARE THE RESULT OF YEARS OF SCIENTIFIC STUDY COMBINED WITH THE EXPERIENCE OF MANY YEARS.



Read the following

FINISHED FILES ARE THE RESULT OF YEARS OF SCIENTIFIC STUDY COMBINED WITH THE EXPERIENCE OF MANY YEARS.

How many “F”s do you see??



There are 6 Fs

FINISHED FILES ARE THE RE-
SULT OF YEARS OF SCIENTIFF-
IC STUDY COMBINED WITH THE
EXPERIENCE OF MANY YEARS.



Can Creative Thinking Be Learned?

- YES. You can learn to be creative with:
 - Use of intuition and imagination; (you)
 - Open-mindedness; (you)
 - Thinking outside the box; (you)
 - Exposure to concepts (this class);
 - Knowledge of tools (this class);
 - Practice (this class);
- *Experiences, Values, Attitudes, Perspective, Behaviors, Actions can all be re-learned and is a matter of choice!*

Look at the Box

PARIS
IN THE
THE
SRING
X

What Did the Box Say?



Look at it Again

PARIS
IN THE
THE
SRING
X

Maybe we saw the X, but what
about THE THE?

PARIS
IN THE
THE
SRING
X

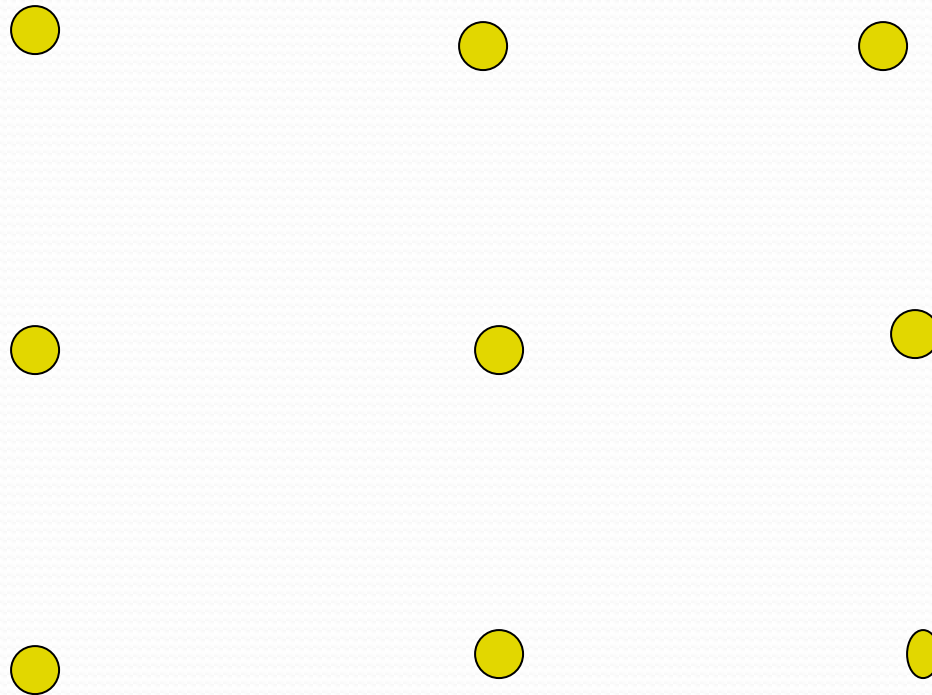
Young Woman or Old Woman?



Exercise 1-5: Stimulate Their Thinking

Help Them See New Possibilities

Connect the nine dots using only 4 straight lines without lifting your pen, and without retracing (that counts as extra strokes)



How Creative Thinking Can Help Auditors

- Provide breakthrough solutions in problem solving;
- Management is responsible for implementing corrective actions; but they have to motivated!
- Auditors are responsible for finding solutions, making effective recommendations, helping an organization move to a higher level of performance: these all add value to the organization
- Auditors are the first line in the detection of fraud through clever schemes to deceive.

Creativity Can Help Auditors

- Ask the right questions; Start with good problems!
 - What does success look like?
 - Who are the stakeholders? What are their interests?
 - Who benefits? And How?
 - What's working/not working?
 - Ask Who, What, Where, When, How, **Why (or why not?)**
 - Ask **'Why'** three times, get to root cause;
 - Root cause analysis: look for components

Creativity Can Help Auditors

Show the value of auditing to the organization.

- Can't afford to be dispensable part of the overhead that is subject to budget cuts;
- Build reputation for quality, efficiency, effectiveness; challenge status quo in a consultative manner; **Add NEW Value!!**

Why Do We Hesitate?

- Fear of being judged, being wrong, taking risks or being exposed;
- Auditors, like most adults, tend to “box” themselves in, wanting to feel safe; **pressure to conform**. We retreat to the riskless comfort zone.
- Creativity suffers as a result;
- Auditors do the audit for the audit manager – not the stakeholders

Roadblocks to Creativity

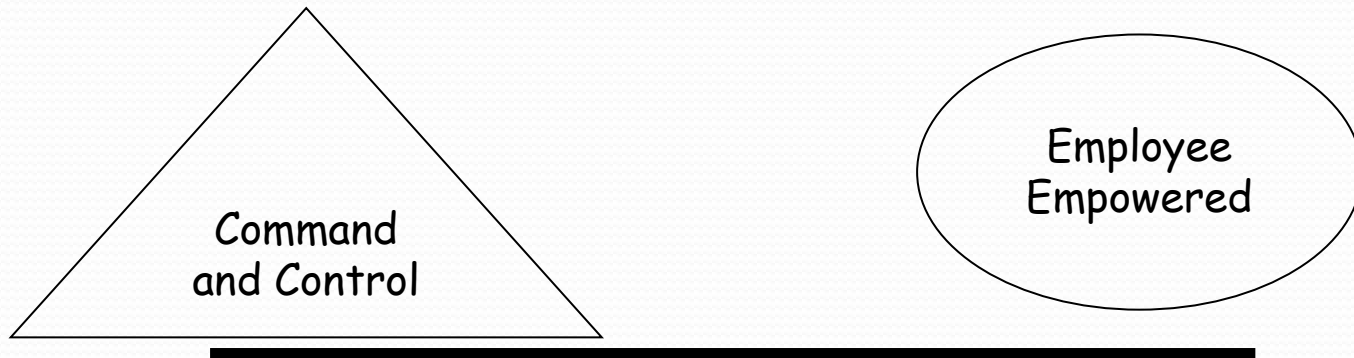
- Trying please or gain acceptance of management
 - **Following checklists**
 - **Doing it the way it always been done**
- Having strong expectations about what will or won't be found
 - **Miss or dismiss non conforming data**
 - **Anomalies are overlooked**
 - **Rigid thinking**
- No expectation of creativity – is self fulfilling
- Humorless people respond sluggishly and unlikely to discover much
- Failure to discover what IS working and **why**
- Failure to consider new opportunities (**why not?**)

Roadblocks and Barriers

1. Organizational Culture
2. Problems Approach vs. Solutions Approach
3. Resistance to change
4. Groupthink
5. Use past as reference to the future – self fulfilling

Barriers:

1. Organizational Culture



- What are some characteristics of each?
- Where's the decision-making? The creativity?
- What is the current trend?
- How long does it take to move?
- What helps? Hurts?

Barriers:

1. Organizational Culture

Command and Control

- Bureaucratic, authoritative
- Decisions made by the boss
- Less 2-way communication
- Less tolerance for ideas and change
- Inflexible and stifling
- Creativity is discouraged

Do you know any organizations like this?

Organizational Culture

Employee Empowerment

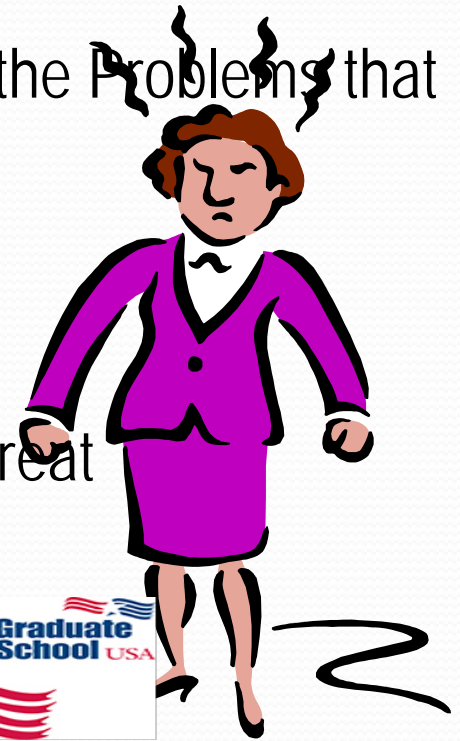
- EE judgment and initiative is welcome
- Change is normal, Risk is acceptable
- Increased communication and team work
- Motivates people and inspires creativity
- Creativity is encouraged & rewarded

Organizations like Apple, Google, Facebook

Barriers 2:

Problem Approach

- Spotlights What's Wrong or Not Working
- Looks for Someone to Blame
- Causes Defensiveness
- Stifles Creativity
- Causes More Problems as Attention is Drawn to the Problems that Already Exist
- Drains off Valuable Energy
- Keeps Us Stuck in Boxes
- Uses Negative Words and Phrases – Creates Threat
- Focus is Retrospective – How do fix the past?



Graduate
School USA

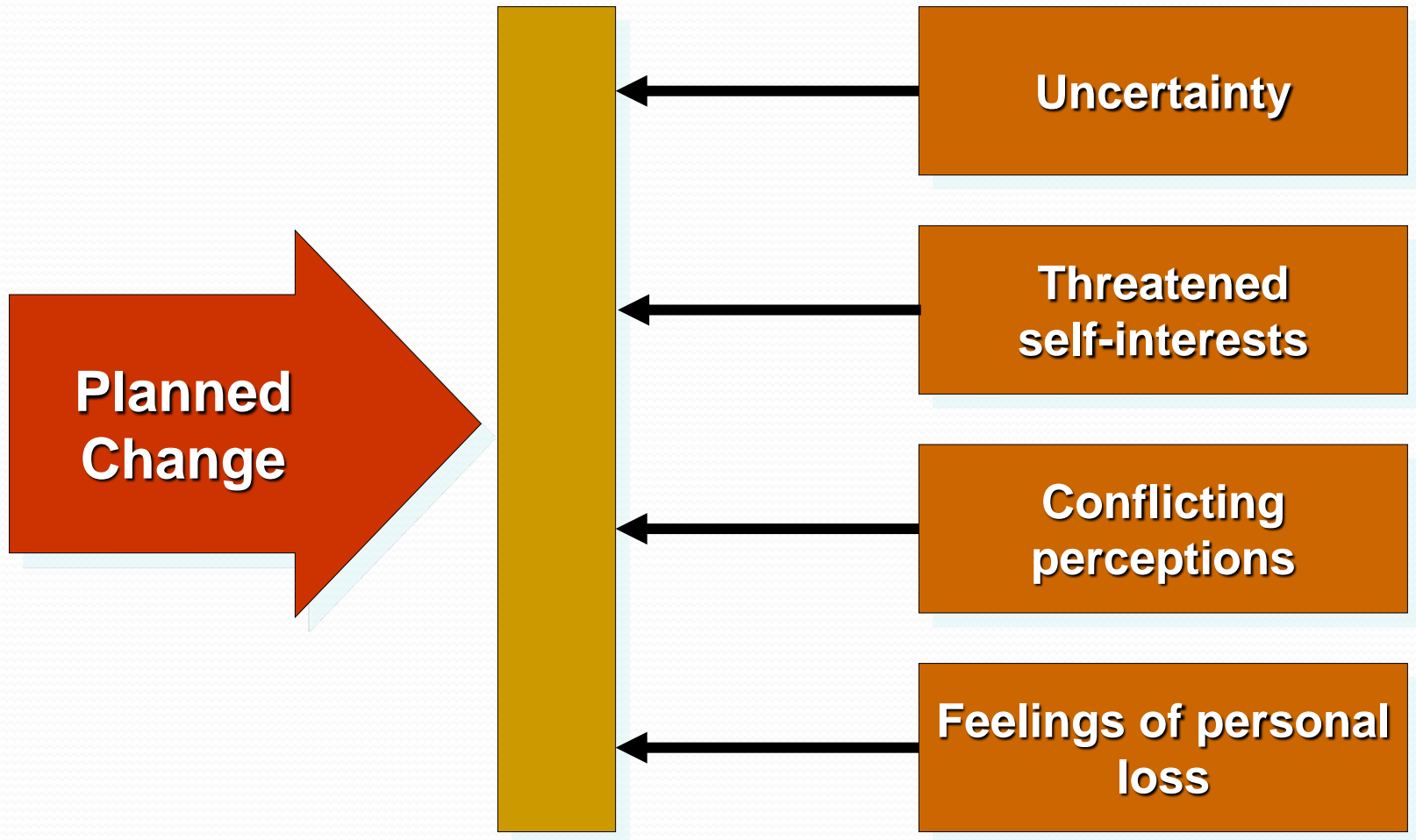
Solutions Orientation



- Puts the Spotlight on What's Already Working
- Develops Openness and Involvement
- Naturally Moves Toward the Goal
- Creates Energy and Enthusiasm
- Creates Open Communications and
- Continuous Renewal
- Develops Atmosphere Best Suited for Generating Creative Solutions
- Use Positive Words/Phrases – Creates Motivation
- Focus is Prospective – How do we improve the future?



Barrier 3: Reasons for Resistance to Change



Barriers 3:

Resistance to Change

- People resist change because of:
 - Uncertainty about the extent and effects of change.
 - Threats to self-interests, power, and influence.
 - Different perceptions of change effects and outcomes.
Threatens Beliefs/Values
 - Feelings of loss in disrupted social networks, power, security, and familiarity with existing procedures.

Understanding Resistance to Change (cont'd)

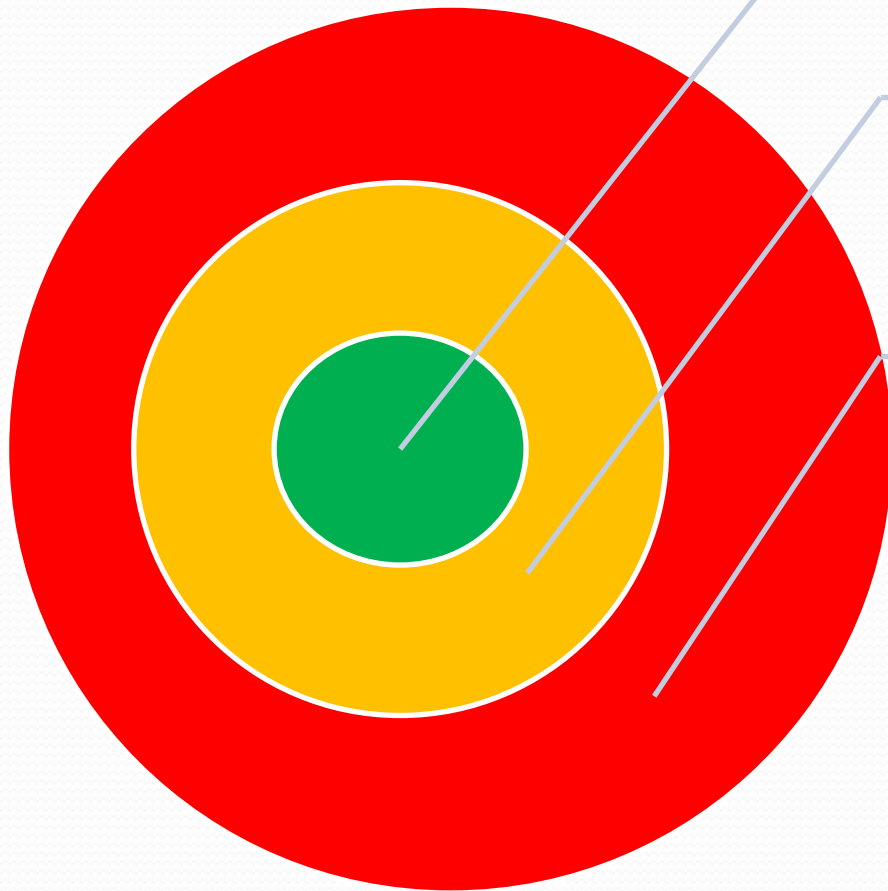
- Overcoming Resistance to Change
 - Encourage active participation in the change process.
 - Provide education and communication about the change process.
 - Facilitate the change process by painting positive images of how things could be!
 - Demonstrate recommendations as opportunities, not as criticism – Show What's In It For Them!

Resistance To Change & Creativity

- People Stay Anchored to What is Familiar (retreat to comfort of their beliefs and perceptions of the world)
- People will use 2 -3 Times the Energy Staying with What They Are Invested In, When it Is Not Working, Than Investing in Something New! (Daniel Kahneman)

Resistance To Change & Creativity

- People Learn More By Successes & Failures of Others Than Their Own Failures
 - So Exploit Successes & Failures of other to Motivate change.
- Organizations Won't Do What They Don't Value or Believe.
- People Are Over Confident In What They Think They Know...Because it is comfortable.



**Safe, Known,
Familiar,
Comfortable**

**New, Creative,
Change, Unfamiliar
Resistance**

**Audacious,
Disruptive,
Threatening**

Ask Empowering Questions, Not Deflating or Accusatory Questions – Getting people to think

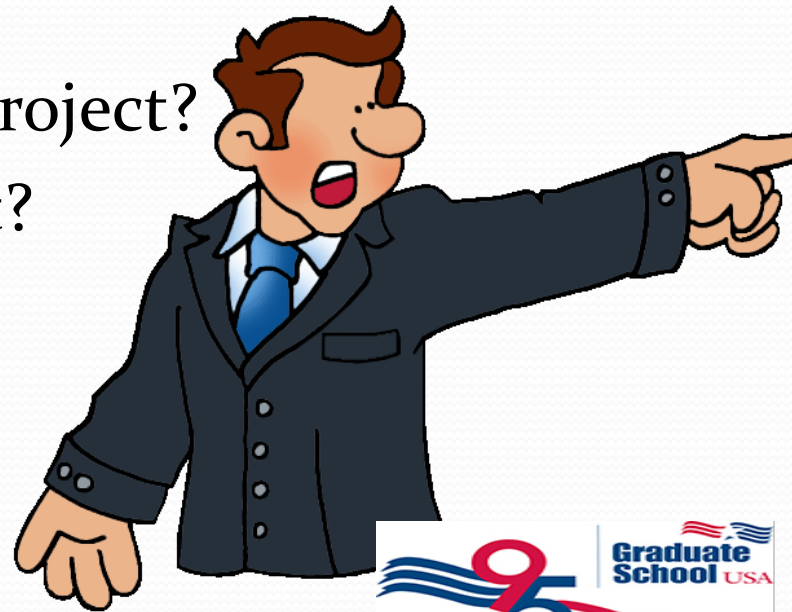
Empowering questions make it participatory!

- How do feel about the project/process so far?
- How does this process work and what are the objectives? Who will most benefit by this work?
- How would you change it? What is the first thing you'd do?
- What are the challenges and barriers?
- How do you know when you/organization succeeds?
- What are you most pleased with or proud of?

Ask Empowering Questions, Not Deflating or Accusatory Questions

Disempowering questions create defensiveness, stifle creativity

- Why are you behind schedule?
- What's the problem with this project?
- Why did (or didn't) you do that?



Barriers 4:

Groupthink

- Conformity makes behavior predictable
- Groupthink is a peril of group behavior
 - Pressure for unanimous decisions
 - Intolerance for dissent
 - Feeling intimidated by stronger personalities
 - Fear of being singled out if you disagree
 - Overly optimistic by ‘numbers’ in the group

Why Do We Hesitate?

- Fear of being judged, being wrong or being exposed, dismissed;
- Auditors, like most adults, tend to “box” themselves in, wanting to feel safe; **pressure to conform.**
- Creativity suffers as a result;

Avoiding Groupthink

- Be aware of its existence and dangers;
- Encourage critical thinking;
- Seek outside opinions—
 - The Yellow Book talks about “collective knowledge and alternative points of view”

Exercise 1-6: Avoiding Group Think

A-1 Space Survival

Stuck on the Moon



This life and death situation depends upon how well you can prioritize items for survival on the moon

Items:	Your Rank	NASA Rank	Error	Team Rank	Team Error
Magnetic Compass	_____	_____	_____		
First aid kit	_____	_____	_____		
Signal Flares	_____	_____	_____		
FM receiver/transmitter	_____	_____	_____		
Food Concentrate	_____	_____	_____		
Heating Unit	_____	_____	_____		
Map of Moons Constellations	_____	_____	_____		
Matches	_____	_____	_____		
Dehydrated Milk	_____	_____	_____		
Oxygen Tanks	_____	_____	_____		
Parachute	_____	_____	_____		
2 Pistols	_____	_____	_____		
Self Inflating Raft	_____	_____	_____		
Nylon Rope	_____	_____	_____		
5 Gallons of Water	_____	_____	_____		
TOTAL SCORE	_____	_____	_____	_____	_____

Idea Squelchers

- We've never done it before
- It won't work
- Too modern/too old fashioned
- Its not in the budget
- You've got to be kidding
- What bubble head thought that up?
- We tried that once
- We like the way it is now
- Let's wait and see
- That's not your job
- It's not in the (program, policy, plan, budget)
- It's too late
- Don't rock the boat
- That's not our department
- I'll bet some professor suggested that

2018 Yellow Book Standards

- Chapter 6: Field Work Standards for Performance Audits—Planning
- Standard 6.11(a): *“Auditors should assess audit risk and significance within the context of the audit objectives by gaining an understanding of the following: the nature and profile of the programs and the needs of the potential users of the audit report....”*

2018 Yellow Book Standards

- Standard 6.15: “.. *The auditor’s understanding may come from knowledge they already have about the program or knowledge they gain from inquiries, observations and reviewing documents while planning the audit...*”
- The planning process is an opportunity for the audit team to **brainstorm** about potential issues.

Module 2

Creative and Critical Thinking

- Successful problem solving depends on using **both** creative and critical thinking, not just one or the other.
- Using left brain thinking to get the facts and organize them, then right brain thinking to ask what does it mean, and what could it mean and why?
- Ask WHY at least 3 times to get to the root cause
 - Examine the components to find what can be changed

Creative Thinking

- Process of generating ideas
 - About potential causes to a problem;
 - About potential solutions;

Critical Thinking

- Process of taking many different ideas and drawing them together to identify an underlying cause to a problem or the most appropriate solutions;
 - Organizing, analyzing possibilities;
 - Ranking or prioritizing possibilities;
 - Choosing the best or most appropriate solution;
 - Asking and Answering “WHY”



Who is Roger Bannister?



It **always** seems
impossible until it's **done**.

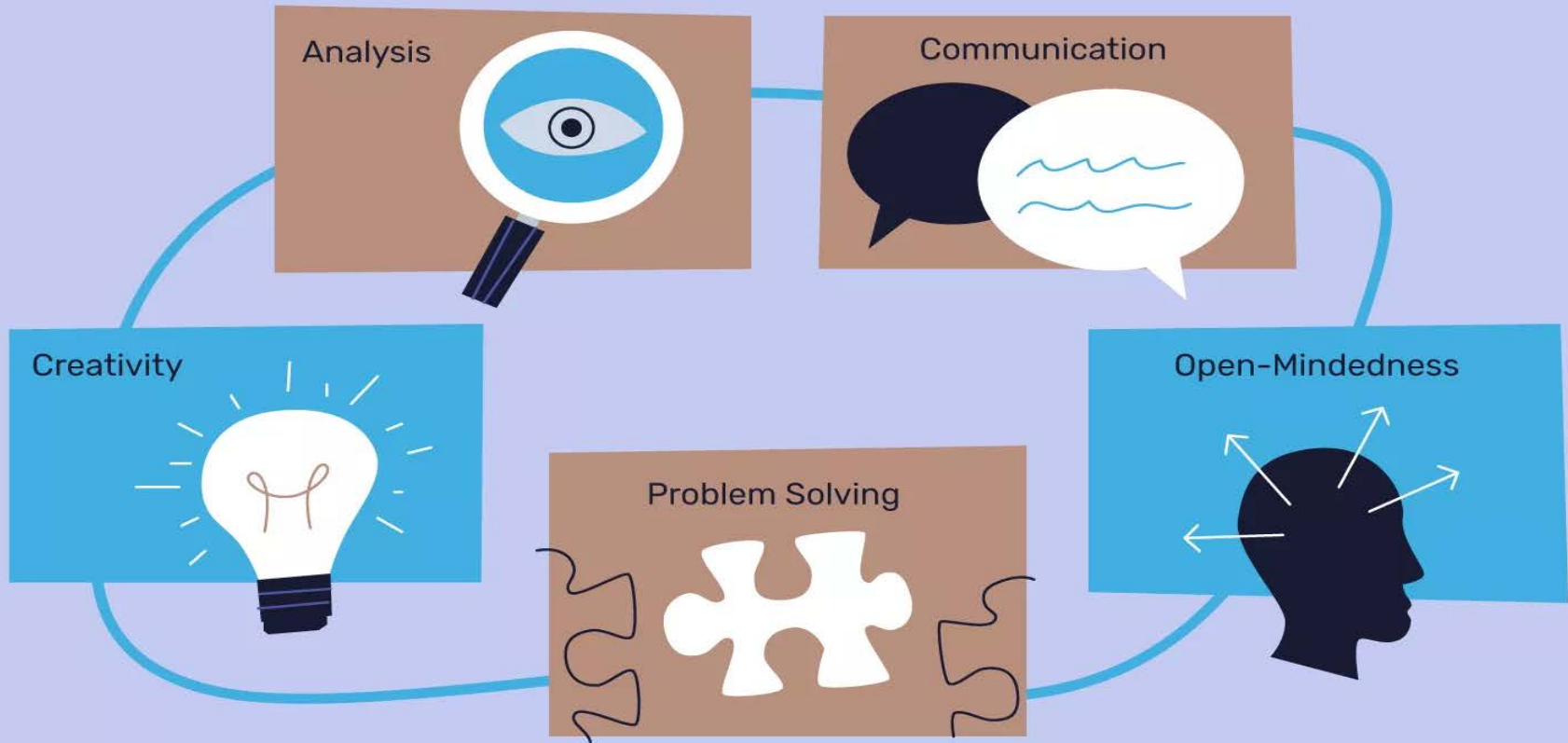
- *Nelson Mandela*

Critical Thinking

- is the ability to think clearly and rationally about what to do or what to believe. It includes the ability to engage in reflective and independent **thinking**. Someone with **critical thinking skills** is able to do the following: make the logical connections between ideas.

Critical Thinking

Critical Thinking Skills



Critical Thinking Skills: Analytical

Part of critical thinking is the ability to carefully examine something, whether it is a problem, a set of data, or a text. People with analytical skills can examine information, and then understand what it means, and what it represents – Implications

- Asking thoughtful questions
- Data analysis
- Information seeking
- Interpretation
- Judgment
- Questioning evidence
- Recognizing differences and similarities
- Skepticism

Critical Thinking Skills: Communication

- You need to be able to communicate with others to share your ideas effectively. You might also need to engage in critical thinking with a group. In this case, you will need to work with others and communicate effectively to figure out solutions to complex problems
- .
- Asking important questions
- Assessment
- Collaboration
- Explanation
- Expressing opinions and ideas
- Interpersonal
- Presentation
- Teamwork
- Verbal communication
- Written communication

Critical Thinking Skills: Creativity

- Critical thinking often involves some level of **creativity**. You might need to spot patterns in the information you are looking at or come up with a cause or solution that no one else has thought of before. All of this involves a creative eye.
- Cognitive flexibility
- Conceptualization
- Curiosity
- Imagination
- Making abstract connections
- Making inferences
- Predicting
- Synthesizing
- Visionary

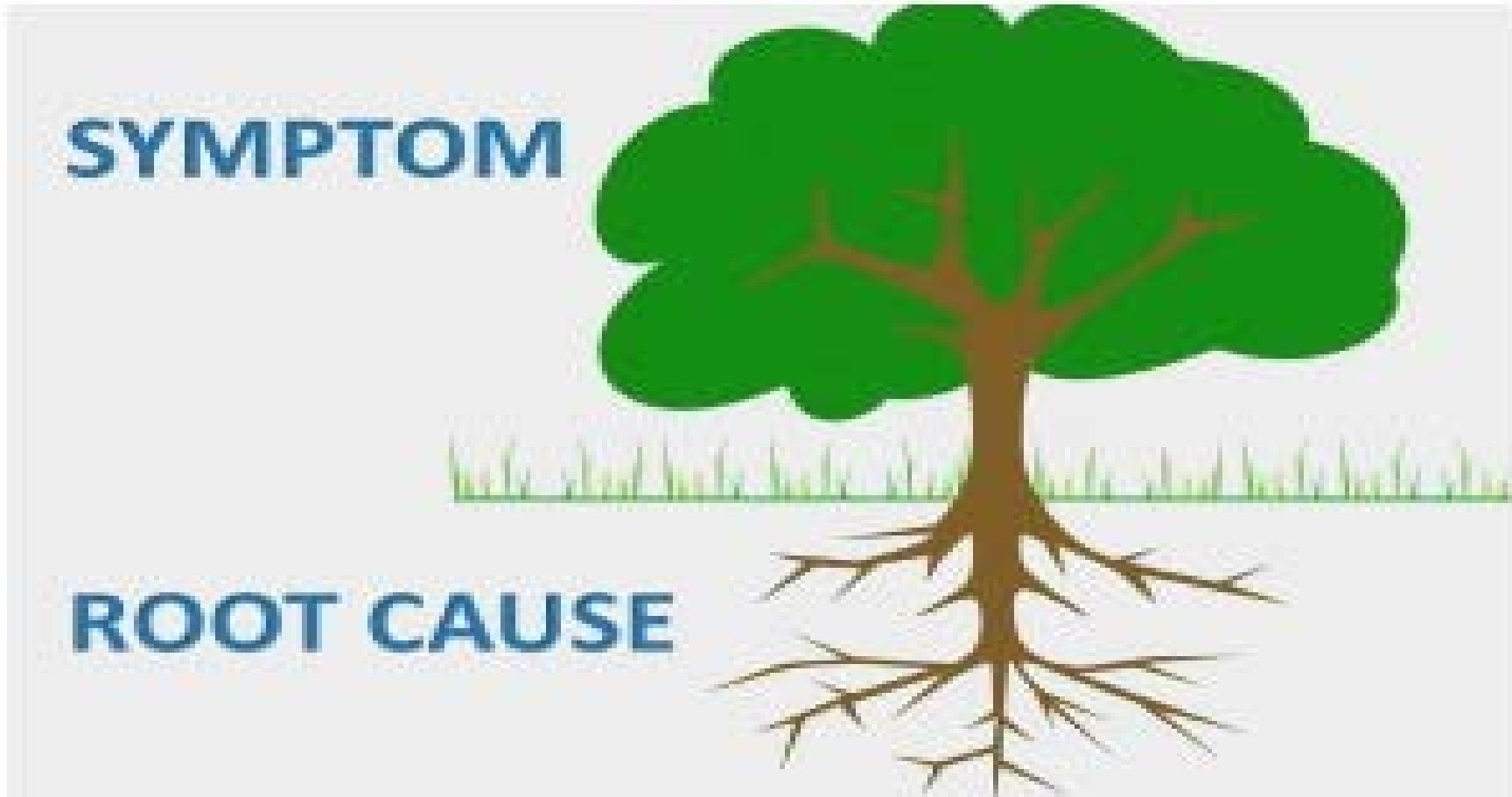
Critical Thinking Skills: Open Minded

- To think critically, you need to be able to put aside any assumptions or judgments and merely analyze the information you receive. You need to be objective, evaluating ideas without bias.
- Embracing different cultural perspectives
- Fair
- Humble
- Inclusive
- Objective
- Observation
- Reflection
- Not anchored to Dogma

Critical Thinking Skills: Problem Solving

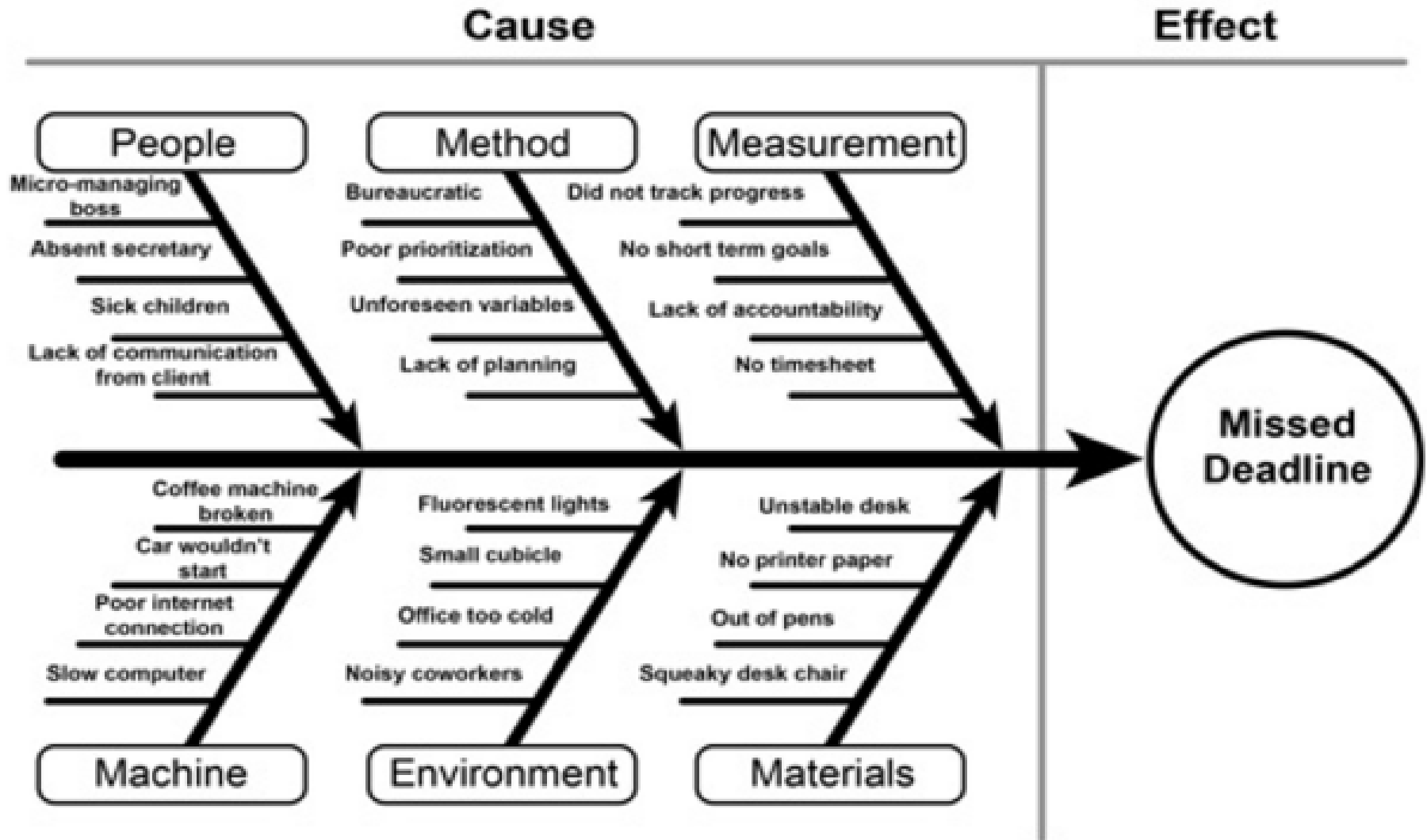
- Problem solving is another crucial critical thinking skill that involves analyzing a problem to consider causes, generating and implementing a solution, and assessing the success of the plan. After all, employers don't simply want employees who can think about information critically. They also need to be able to come up with practical solutions.
- Applying standards
- Attention to detail
- Clarification
- Collaboration
- Decision making
- Evaluation
- Grounded
- Identifying patterns
- Innovative
- Logical reasoning

Root Cause Analysis: Buried Beneath the Surface - the Trunk is the core problem

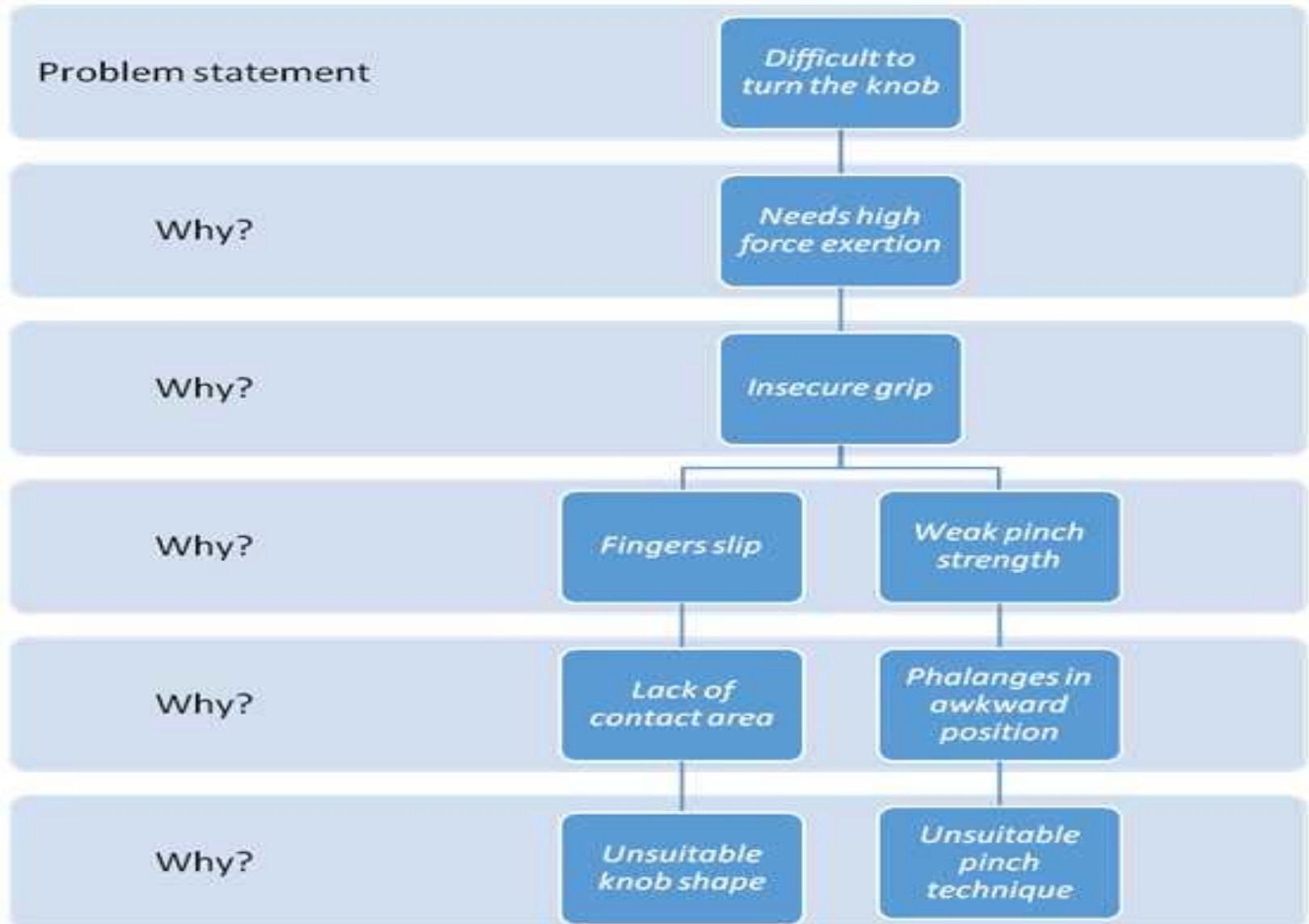


- Recommendations Should Address the Root Causes

Root Cause Analysis



5 Whys of Root Cause Analysis



Exercise 2-1 Applying Critical and Creative Thinking

- Scenario: Air Traffic Controller Fatigue in the midnight to 5:00 am shift has recently been publicized in the media. What can be done to address the problem?
 - Assumptions for the case: Work is scheduled in three 8 hour shifts: morning afternoon, and midnight. Controllers rotate shifts working three weeks on each shift. If a controller can't make their assigned shift, one of the on-duty controllers might work a double shift.
- 1. what are the problems? 2. why are important? 3. solutions? 4. how do they address the problem?*

What is A Problem?

- A problem is commonly defined as a gap between expectations (desired state) and reality; a gap between an expected level of performance and the actual level of performance.
- For auditors, an audit finding qualifies as a problem and its cause.
- Recommendations should address the Cause

Problem Components

- As with an audit finding, the components of a problem are:
 - Criteria (*the desired state!*)
 - Condition (*compared to the right criteria*)
 - Effect
 - Underlying Cause
 - Solution

Problem Analysis

- The following steps are generally most applicable to the work of auditors:
 - Problem Identification (criteria vs. condition gap)
 - Problem Definition (scope of the problem)
 - Problem Consequences (effect – immediate & extended)
 - Problem Solution (recommendations)
 - Solution Implementation (management)
 - **What Problem Are You Trying to Solve??**

The Secret to Creativity and Critical Thinking in Problem Solving



1. Start with good problems

Turn those problems into thought provoking questions (objectives) and challenges

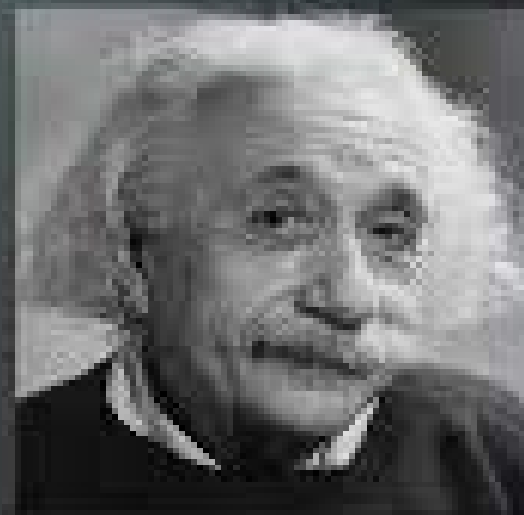
2. A well defined Problem is half way solved!!

Ask the Right Questions

– What Problem Are You Trying to Solve?

Identify the Problem

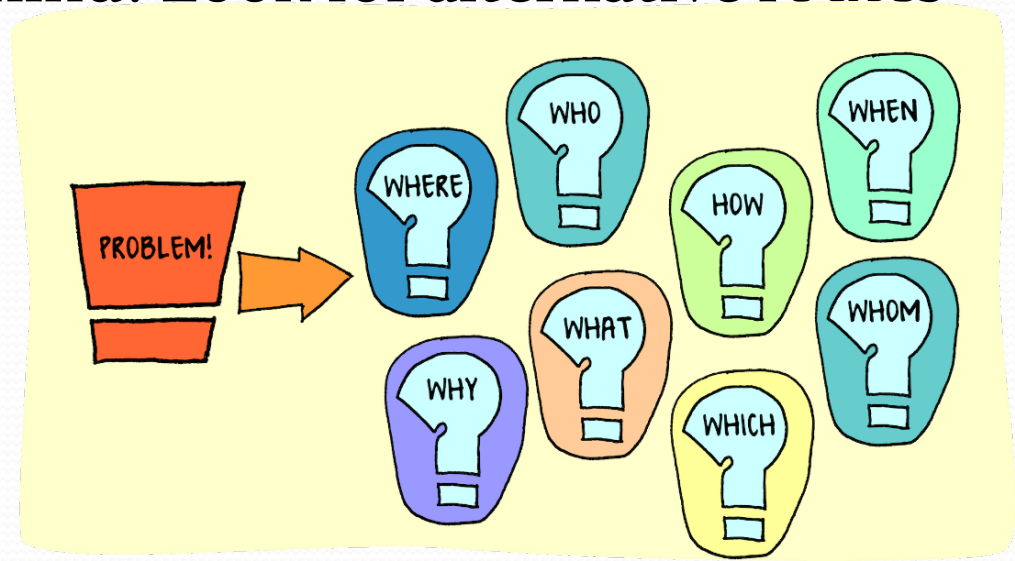
"If I had only one hour to save the world I would spend fifty-five minutes defining the problem and only five minutes finding the solution."



Albert Einstein

Critical Thinking is About Asking Good Questions

- Is there a problem? Why?
- What problem are we trying to solve?
- How do we know?
- What does success look like?
- Start with the end in mind! Look for alternative routes and short-cuts.



A real life case study in root cause analysis:

The 5 Whys

**PROBLEM: THE WASHINGTON MONUMENT
WAS FALLING APART.**

Why? Because harsh chemicals were used to clean it.

Why? Because of all the bird droppings.

Why? Because birds feasted on all the spiders there.

Why? Because spiders feasted on all the gnats there.

Why? Because gnats were attracted to the lights at dusk.

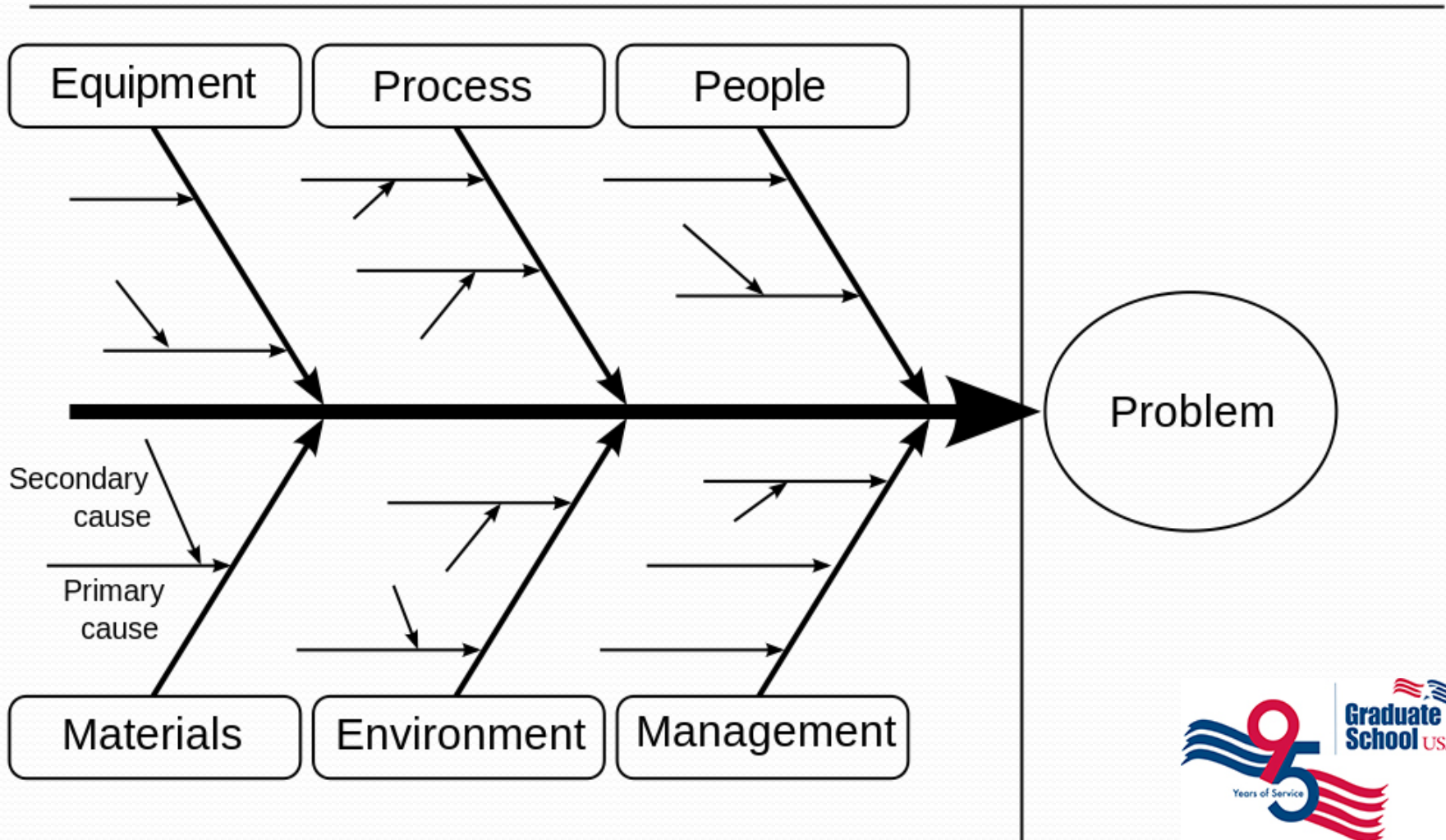
Why? Because the monument was 1st to turn its lights on.

**SOLUTION: TURN THE LIGHTS ON 30
MINUTES LATER!**

Root Cause Analysis- Fishbone

Cause

Effect



2018 Yellow Book General Standards – Professional Judgment

Professional skepticism includes **being alert to evidence that contradicts other evidence** obtained or information that brings into question the reliability of documents or responses to inquiries.(par 3.110)

Professional judgment represents the application of the **collective knowledge, skills, and abilities of all personnel involved with an engagement** (par 3.112)

Identify Potential Fraud and Significant Abuse

- Consider and assess risks due to fraud that could significantly affect the audit objectives and the results of the audit
- **Be alert to situations or transactions that could be indicative of fraud or significant abuse**
 - Be aware of inherent risk areas
 - Be alert to “red flag” indicators
 - Be aware of potential significant abuse
 - Maintain an attitude of professional skepticism

Findings – Elements of a Traditional Finding

- **Criteria** – *what should be or could be*
- **Condition** – *what is, (usually in comparison to criteria)*
- **Effect** – *so what (consequences)*
- **Cause** – *why*

2018 Yellow Book

6.25 Criteria

- For inclusion in findings, criteria may include the laws, regulations, contracts, grant agreements, standards, measures, **expected performance, defined business practices, and benchmarks against** which performance is compared or evaluated.
- **Criteria identify the required or desired state or expectation** with respect to the program or operation. Criteria provide a context for evaluating evidence and understanding the findings, conclusions, and recommendations in the report.

2018 Yellow Book

6.27 Cause:

- The cause is the factor or factors responsible for the **difference between the condition and the criteria, and may also serve as a basis for recommendations** for corrective actions.
- Common factors include poorly designed policies, procedures, or criteria; inconsistent, incomplete, or incorrect implementation; or factors beyond the control of program management. Auditors may assess whether the evidence provides a reasonable and convincing argument for **why** the stated cause is the key factor contributing to the difference between the condition and the criteria.

2018 Yellow Book

6.28 Effect or potential effect:

The effect or potential effect is the **outcome or consequence resulting from the difference between the condition and the criteria**. When the audit objectives include identifying the actual or **potential consequences of a condition that varies (either positively or negatively)** from the criteria identified in the audit, **effect is a measure of those consequences**. Effect or potential effect (either positive or negative) may be used to demonstrate the need for corrective action in response to identified problems or relevant risks.

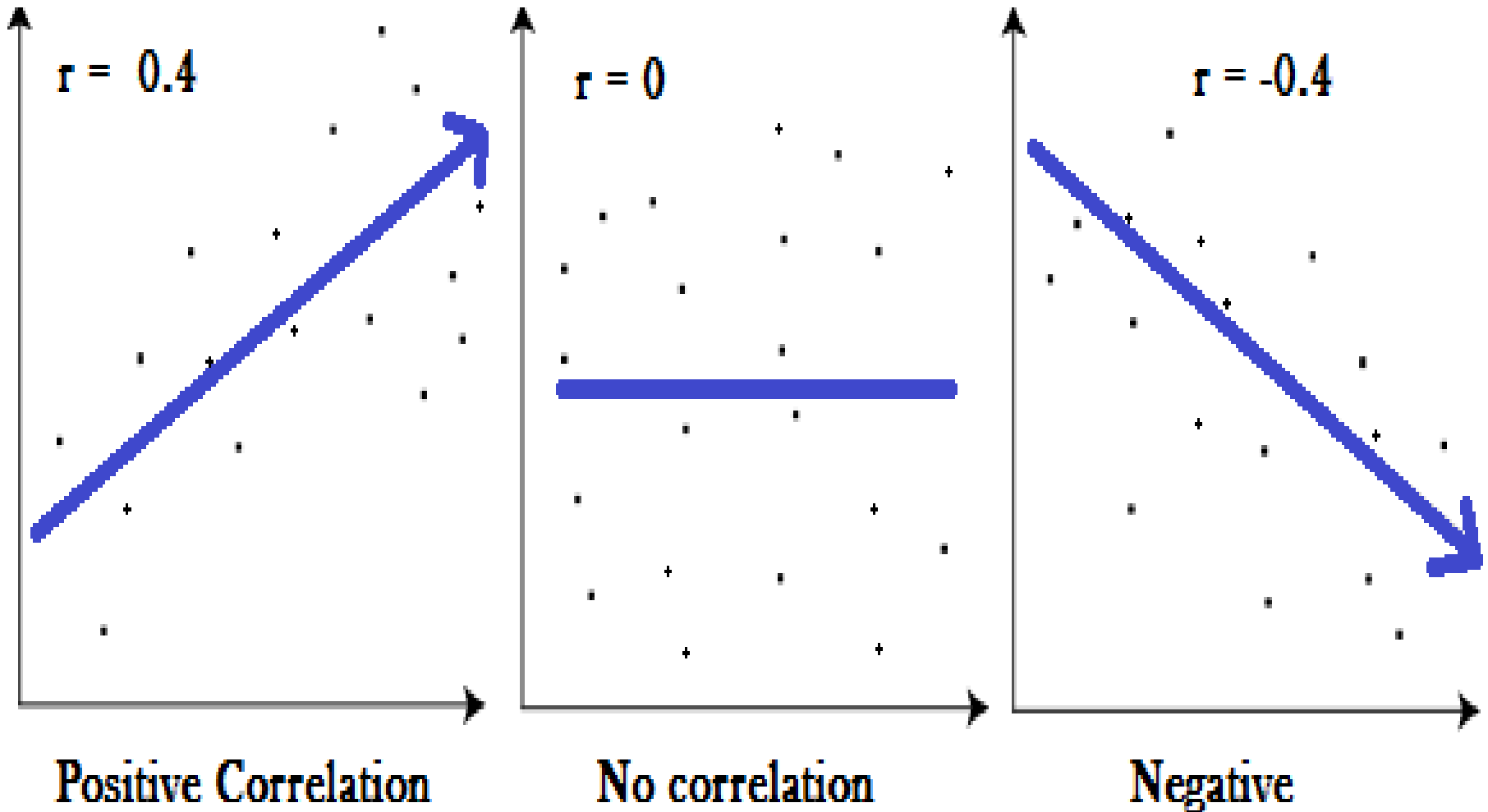
Cause and Effect

Correlation Vs. Causality

- Easy to make correlation of things that look like they move perfectly together.
- Everything is correlated to the rising of the sun
 - Does the sun CAUSE everything to happen?
 - Does any variable CAUSE the sun to rise?
- Finding the True Cause – and the resulting Impacts is hard to prove.
- Therefore we could be making recommendations that do not really address the cause – just incidental symptoms or casual relationship

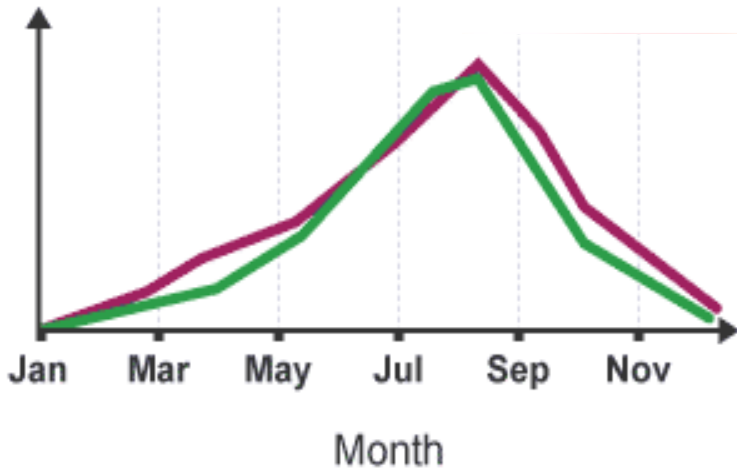
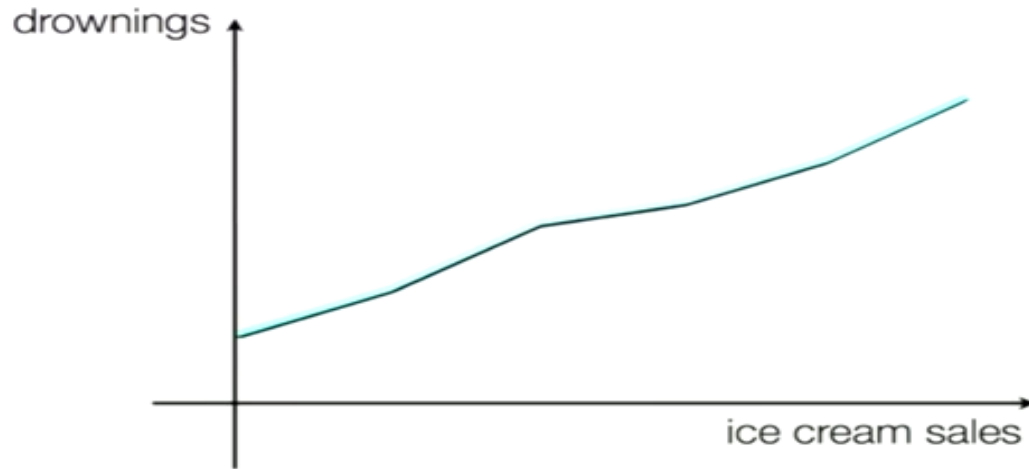
Correlation-Yes/No; Cause Maybe?

Critical Thinking is Looking Beyond the Data

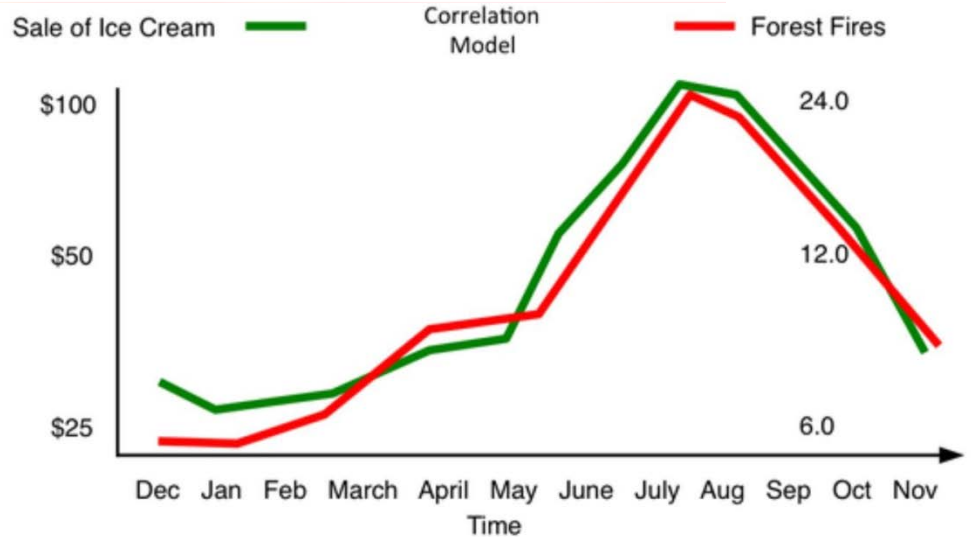




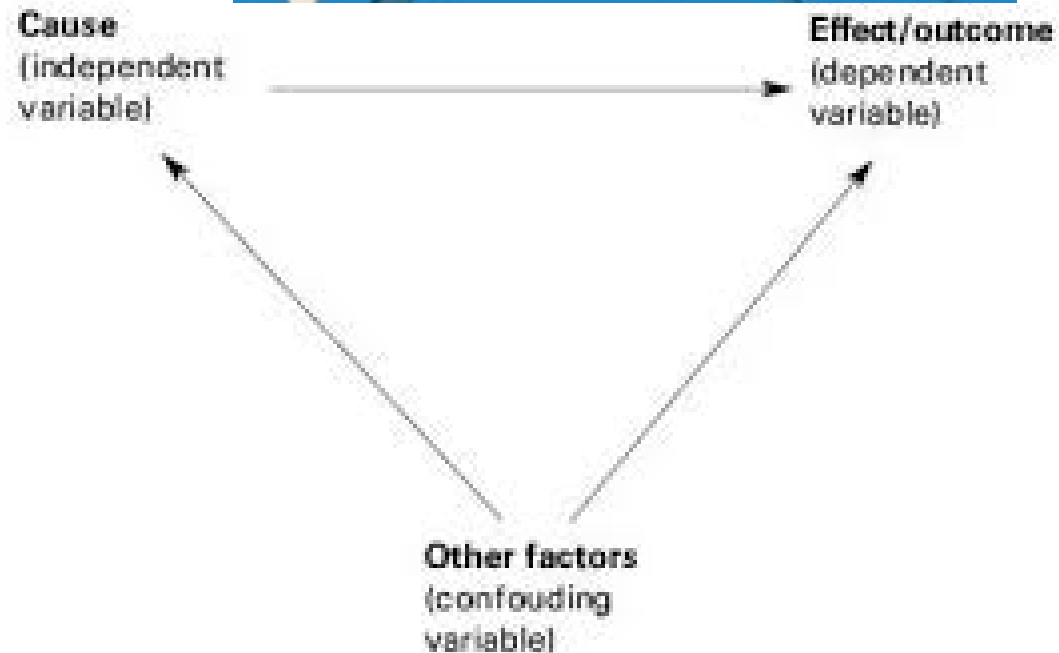
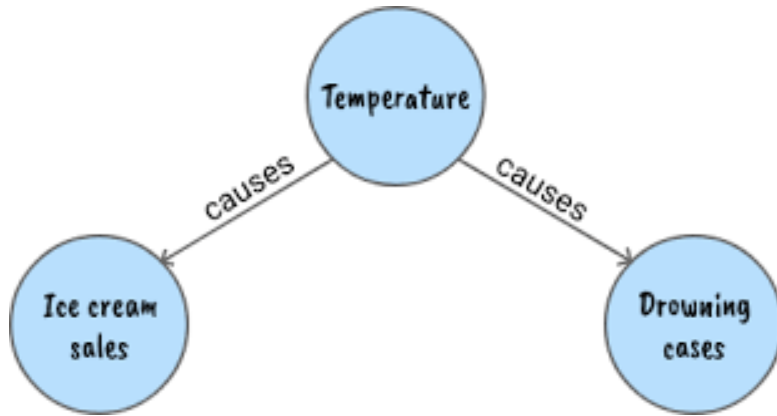
Does Ice Cream Cause Drownings, Shark Attacks and Forest Fires??



Ice cream sales
 Shark attacks



Flaws in Critical Thinking: Inferring the Wrong Root Cause



Effect of Bias in Critical Thinking and Decision Making

- A bat and a ball together cost \$1.10
- The bat costs a dollar more than the ball
- How much does the ball cost?

How Many Said .10?

- Are you sure?
- How would you prove it?
- This is the bias in inference of critical thinking and decision making
- Everyone does it – and they have confidence
- “The problem in critical thinking is not the failure to agree – but the failure to disagree” *Daniel Kahneman*
- This is where we critically assess what we believe is true – if we can control our impulses and need to be right. Impulse is easy – going contrary is hard.
- The better you are trained – the more your impulses are correct (like driving).

The Answer

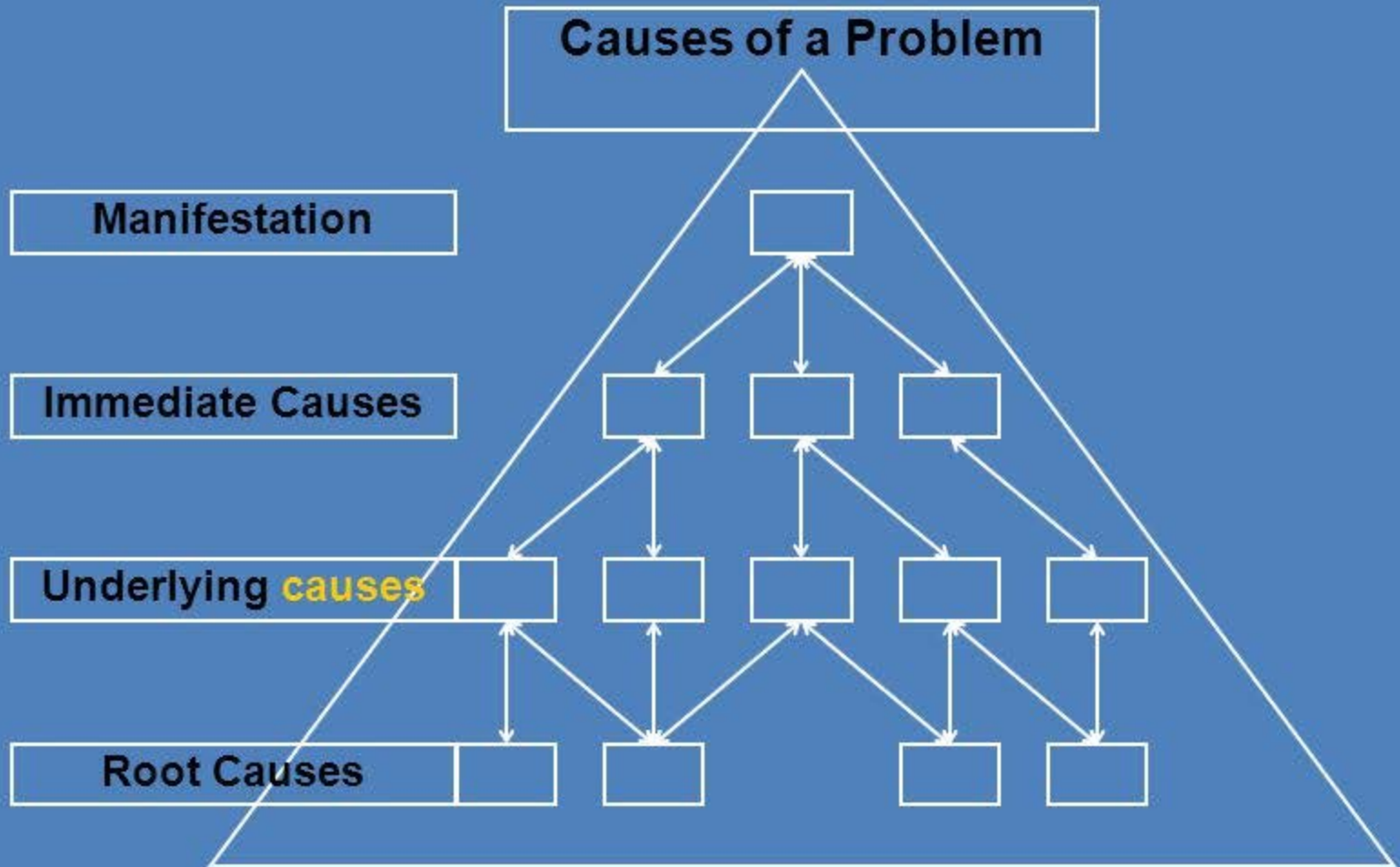
- The Ball cost .05

WHY??

If the ball cost .10, the bat cost \$1 more, the bat would have to cost \$1.10 ($\$1 + .10 = \1.10) and the bat and the ball together would cost \$1.20

If the ball cost .05, the bat cost \$1.05 ($.05 + \$1.00 = \1.05). Ball and bat together = \$1.10

CAUSALITY ANALYSIS



Creative and Critical Thinking in Each Phase of the Audit

- Planning
 - Goals – the big picture – map your stakeholders –what needs attention?
 - SWOT – input from stakeholders; developing compelling questions
 - Objectives – Focused and SMART
- Fieldwork
 - Approaches for collecting info – seek alternate points of view
 - SWOT –developing good questions – different perspectives
- Reporting
 - SWOT – putting things in perspective - looking forward
 - Conclusions – Causes and implications (so what?)
 - Findings (*should not just be the easy symptoms! – Discover Why*)
 - Recommendations (*should answer WHY*)
- Presenting
 - Alternative points of view – through the eyes of the stakeholder
 - Opportunities, possibilities, implications and consequences

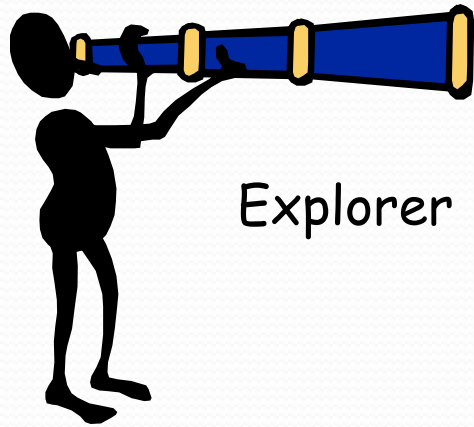
Exercise 2-2 Applying Creative and Critical Thinking in the Planning Process

- Retention and Recruiting of Registered Nurses:

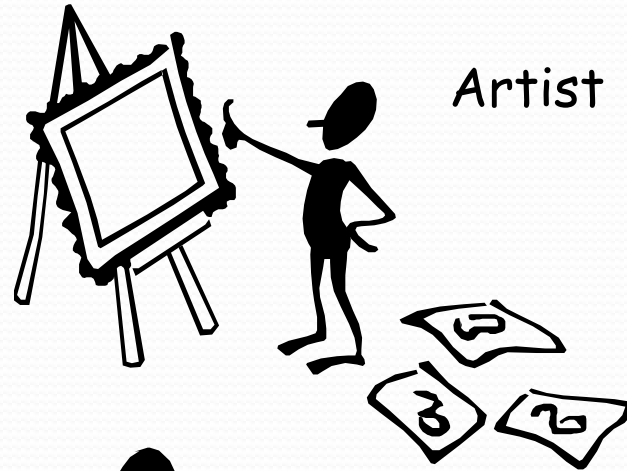
Scenario: It is well documented that Veterans Administration hospitals have problems with retaining and recruiting Registered Nurses (RNs). But it is not known for sure if all hospitals are experiencing problems with either, just one, or both retaining and recruiting RNs. It is known that many long-term RNs have been retiring. It is also known that hospital actions to replace and recruit RNs must be approved by the Headquarters Human Resources Department.

1. What are the problems? 2. Causes. 3. Approaches. 4. Solutions

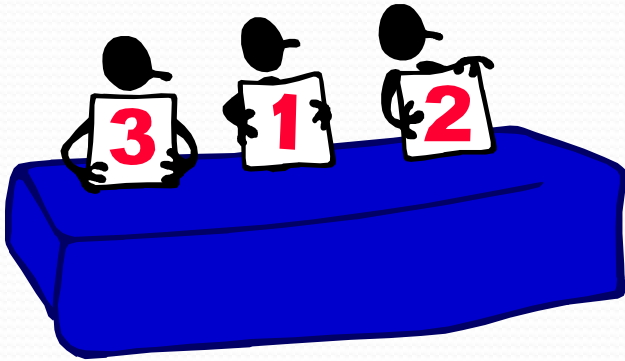
Phases of the Creative/Critical Thinking Process



Explorer



Artist

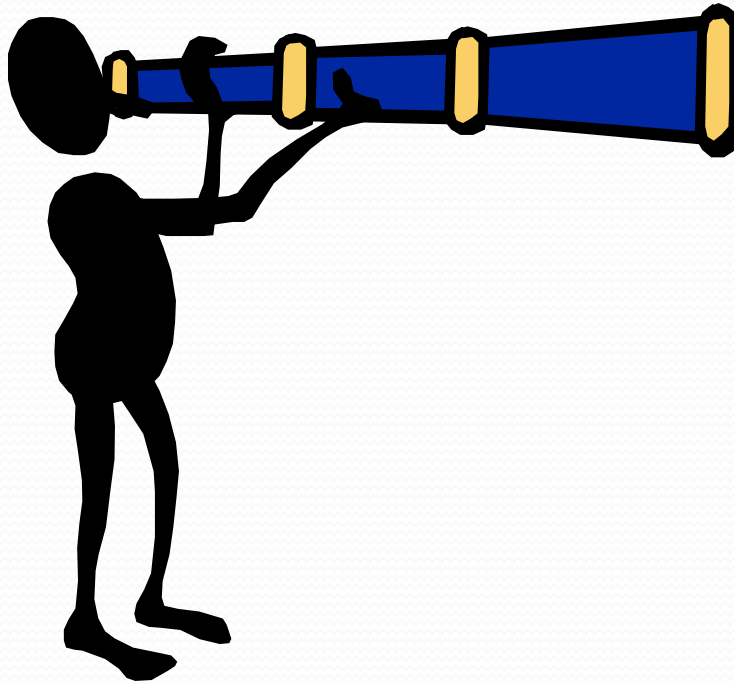


Judge



Warrior

Module 3: Using Tools to Generate New Ideas - The Explorer



Module 3:

Tools & Techniques to Inspire Creativity

- Brain Storming/Piggy backing
- Idea Quota
- Scenarios
- Benchmarking
- Decision Trees
- Escaping Entrenchment (break the rules)
- Visualization, mapping – Possibilities, use pictures
- What If, Why and Why not Questions
- Synthetics or GAP (gain another perspective - joining unrelated concepts - draw from another discipline)
- Describe the Problem or Issue to Someone Else
- SWOT Analysis

SWOT Analysis

Strengths, Weaknesses, Opportunities, Threats

The boxes will expand to fit text. Save and Close when done. All responses are anonymous.

<i>Strengths</i> (What is best about the OIG, what is working well)	<i>Opportunities</i> (What could or should the OIG do to be more successful)
1. <input type="text"/>	1. <input type="text"/>
2. <input type="text"/>	2. <input type="text"/>
3. <input type="text"/>	3. <input type="text"/>
4. <input type="text"/>	4. <input type="text"/>
5. <input type="text"/>	5. <input type="text"/>
<i>Weaknesses</i> (What is not working well, what are OIG problems)	<i>Threats</i> (What could go wrong or become a barrier for the OIG)
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2. <input type="text"/>	2. <input type="text"/>
3. <input type="text"/>	3. <input type="text"/>
4. <input type="text"/>	4. <input type="text"/>
5. <input type="text"/>	5. <input type="text"/>

SWOT Participants

- All stakeholders can participate:
 - External
 - Internal
 - Management
 - Staff

All input can be of use to the auditor at planning and fieldwork stages:

Exercise 3-1 SWOT Analysis



Idea Quota

- Set a quota: a number of ideas
- If it's too easy, add to the quota
- The key is to think of enough ideas to meet the full quota
- Prioritize and implement



Exercise 3-2 Idea Quota

- You all just lost your jobs, What are you going to do now (assume you will need income)?
- List 10 things that you will do!

Exercise 3-3 Brain Writing

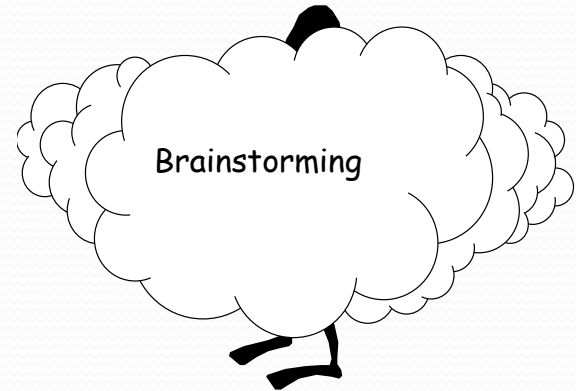
- Distracted Driving

Brainstorming

- Members meet face-to-face to generate many alternatives/ideas
- Piggy-back ...generates energy & excitement!
- Group members are not allowed to evaluate alternatives until all alternatives are listed.
- Ideas are organized – categorized
- When all are listed, then the pros and cons of each are discussed using objective criteria and a short list is created
- *Now do it from different stakeholder points of view*

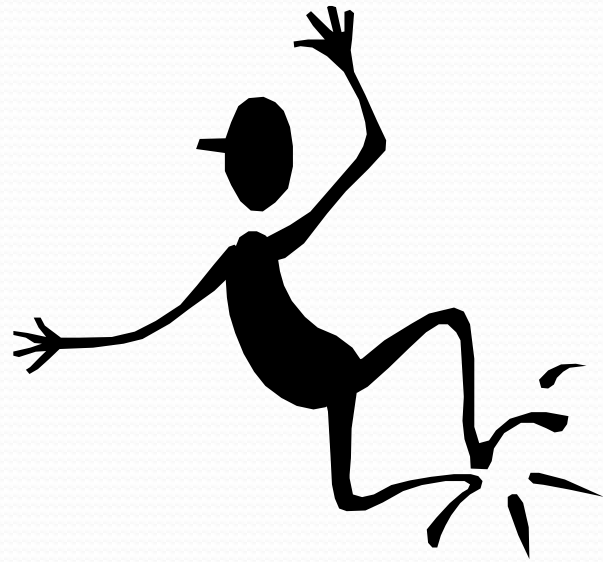
Brainstorming

- Focus on the **quantity of ideas** - don't evaluate or judge as you go
- Combine similar thoughts
- Evaluate



Brainstorming Boosters

- Change Scenery
- Use New Tools
- Use Outsiders
- Insert Humor
- Take Breaks
- Be Crazy
- How do you get new ideas?



Look for new ideas in new places

“Make it a practice to keep on the lookout for novel and interesting ideas that others have used successfully. Your idea has to be original only in its application to the problem you are working on.”

*“I know a 1000 ways of how a light bulb won’t work”
- Thomas Edison*

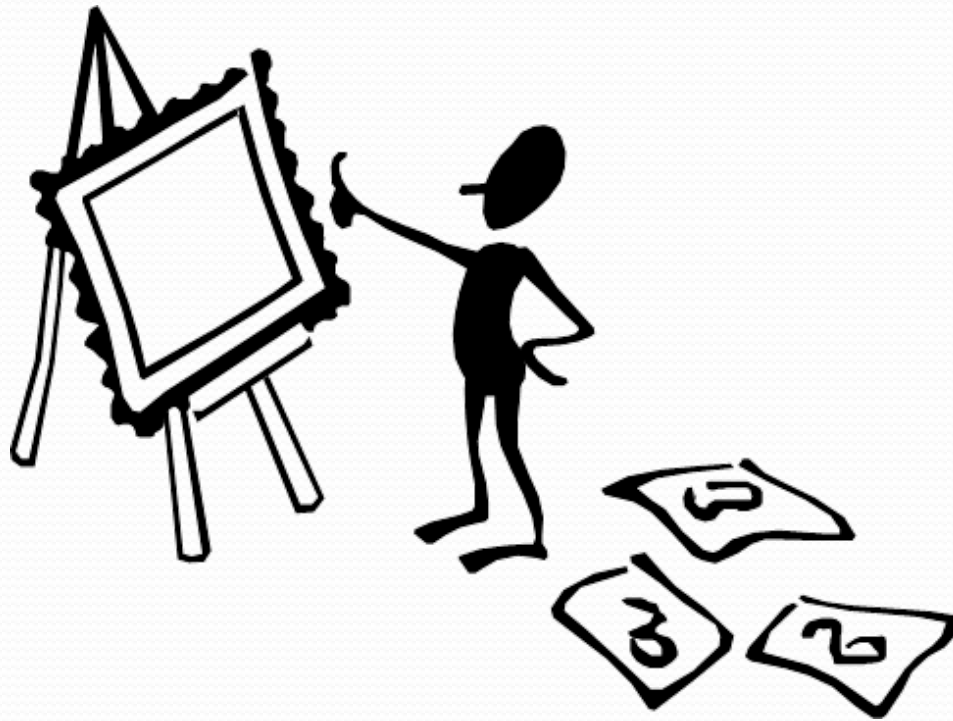


Exercise 3-4: Conduct a Brainstorming Session - Groups

- How to reduce the time to complete an audit?
- How to make audits more effective?
- How to measure the success of an audit organization?
- How to make audit reports more interesting, reader friendly?
- How to create an auditor development program?

Module 4: Organizing The Ideas

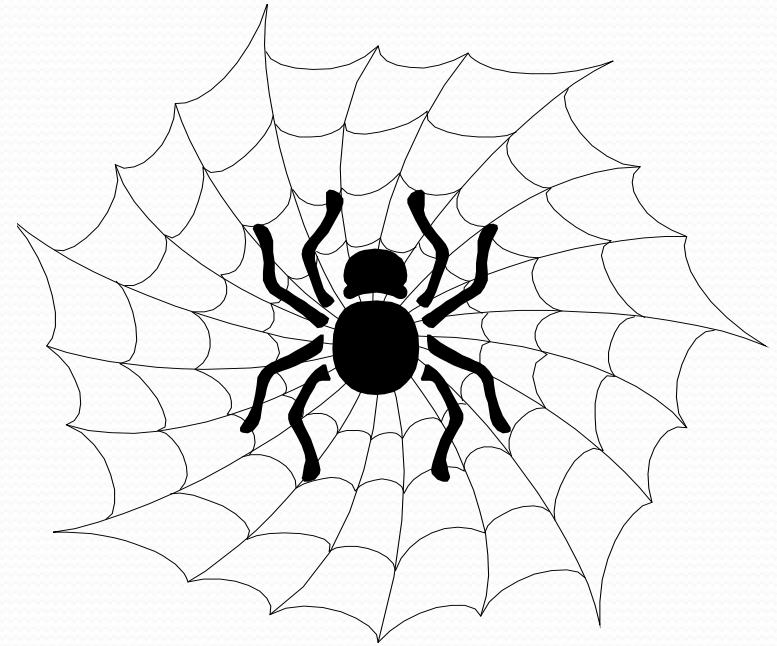
The Artist



Module 4: Organizing, Judging and Selling Your Ideas

Organize: Spider Diagram/Numbering Scheme

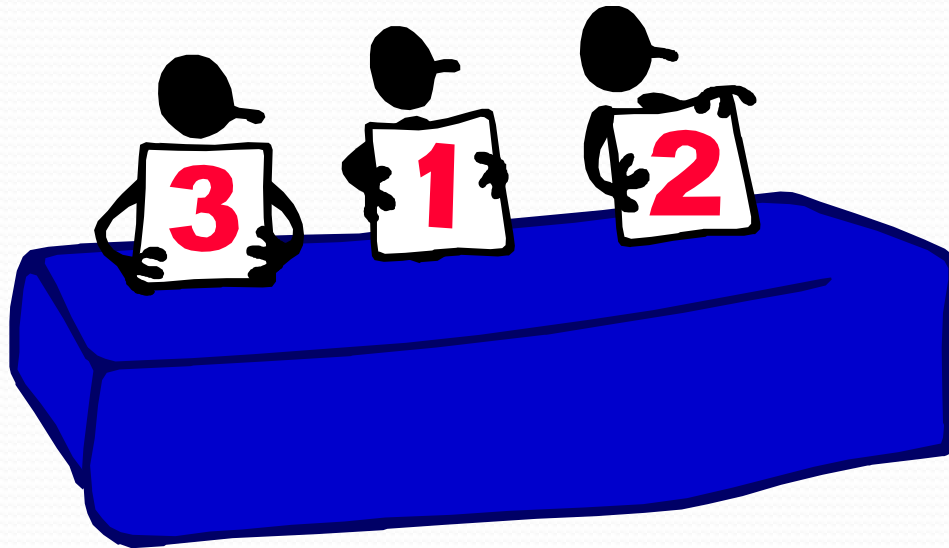
- Use to organize ideas by grouping or combining related themes/aspects
- Visually keeps discussions focused on connections



Example: How do you ensure audit reports are accurate?

Evaluating your ideas

The Judge



Evaluating & Ranking Your Organized Ideas/Solutions

Develop Criteria (quality, timeliness)

Identify the Aspects

Identify the Costs/Benefits

Identify the Implications

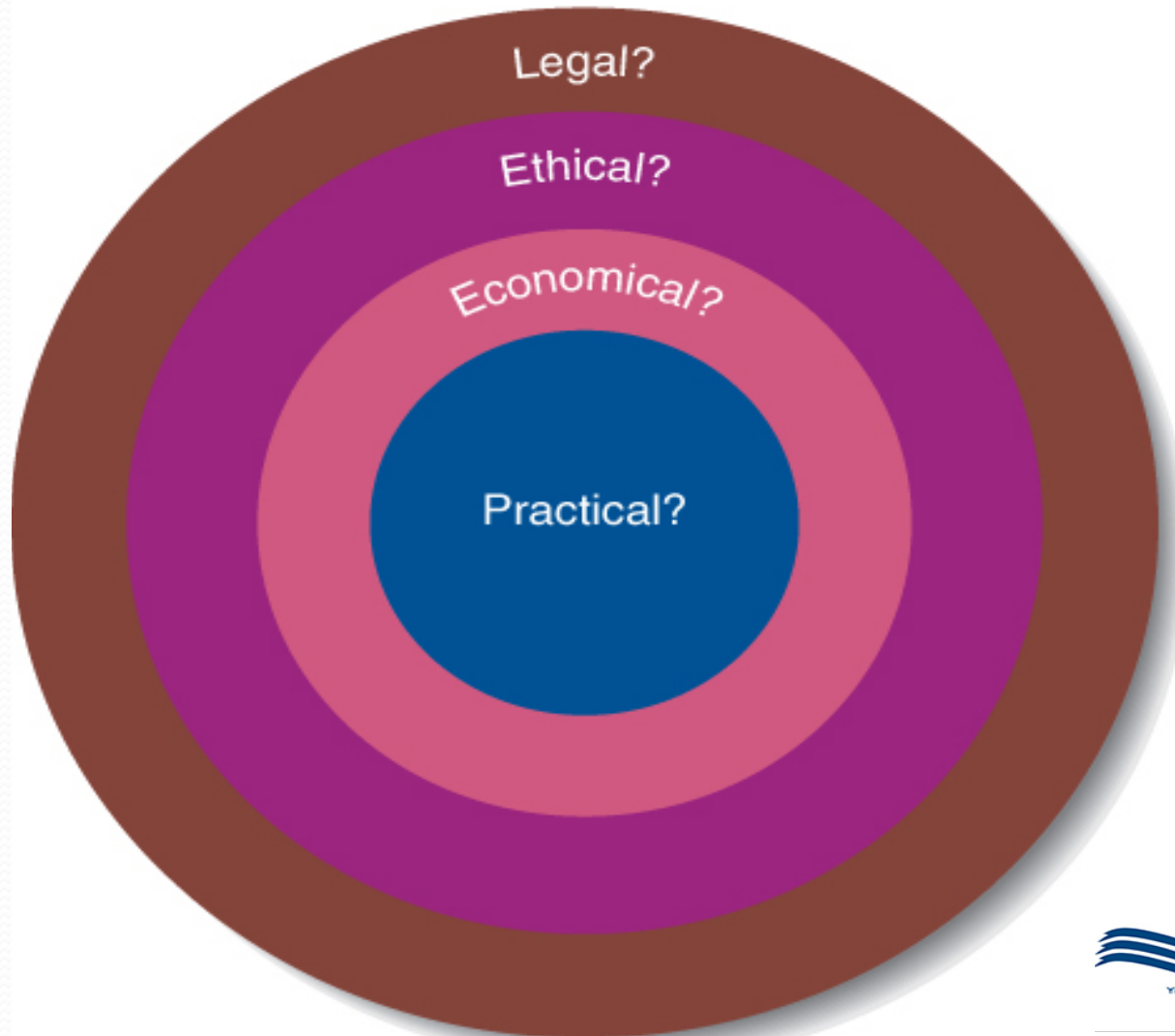
Identify Stakeholder Interest

Use a weighting/rating system



General Criteria for Evaluating Possible Courses of Action

Is the possible course of action:



Weighted Multi-voting

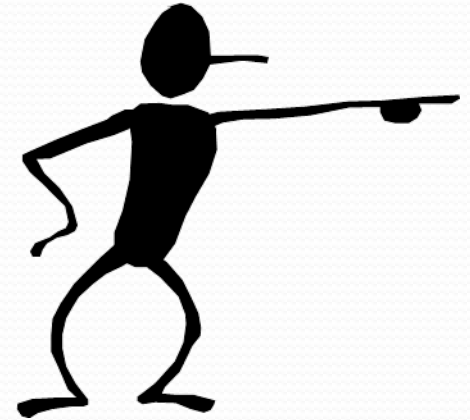
- Each team member individually rates the categories with points.
- Points are distributed to the categories with more points to a preferred category.
- Points are tallied to arrive at the final ranking.

Module 5: The Warrior

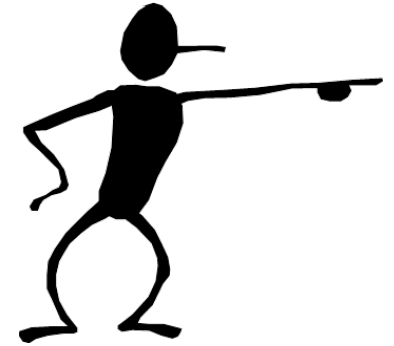
Presenting Results from Using Creative and Critical Thinking Tools

Making the Case for Change and Action

- Using the Power of Persuasion!
- The Power of Why!
- Presenting Challenges as Opportunities!



Characteristics of a Warrior



- Establish a Realistic Action Plan
- Be Persistent and Determined
- Be Diplomatic and Tactful (Sometimes)
- Sell your ideas in terms of what your audience values (WIIFM)
- Be prepared for questions

Selling Your Ideas/Recommendations

Ways of Crafting A Compelling “Why”

Appeal to both Left and Right Brain

Use the power of persuasion

- Tailor the “why” message to the audience’s values
- Make it short, simple clear – demonstrate “so what”
- Be candid, honest and forthcoming, genuine
- Make it a dialogue, not a monologue
- Create the hook that persuades buy-in (positive language)
- Frame it in a strategic way (big picture/stakeholders)
- Use WIIFM and MMFGAM
- Who benefits and how, or what is at risk



Look for the Power of the Possible

A
PESSIMIST
SEES THE
DIFFICULTY
IN EVERY
OPPORTUNITY

AN
OPTIMIST
SEES THE
OPPORTUNITY
IN EVERY
DIFFICULTY

SIR WINSTON CHURCHILL
(1874 - 1965)



Memory Builders

MEMORY IS THE PROCESS OF RETENTION AND RETRIEVAL OF INFORMATION THAT HAS BEEN PERCEIVED THROUGH ANY OF OUR FIVE SENSES.

HERE ARE SEVERAL SIMPLE MEMORY IMPROVEMENT TIPS THAT CAN HELP IN SHORT TERM MEMORY ENHANCEMENT, AS WELL AS WITH LONG TERM MEMORY TRAINING.

Memory Builders

- **HOW IS INFORMATION TRANSFERRED FROM OUR "WORKING MIND" TO ITS MORE PERMANENT COUNTERPART?**
- **Attention.** You pay attention to it. You observe it, as opposed to merely giving it a passing glance.
- **Repetition.** You repeat it. You repeat it. You get the point.
- **Association.** You associate it, to an existing piece of data in your mind, thereby offering yourself a "cue" to bring it up later as needed. *Foundation of Creative Thinking*
- **Visualization.** You picturize it. Visual memory is stronger than its verbal counterpart.

STRATEGIES TO IMPROVE MEMORY

1. BRAIN EXERCISES

- Just like physical exercises strengthen your muscles, keep you heart running and improve your health, brain exercises strengthen the connections between your brain cells, build new ones and improve memory. Playing music – doing puzzles – memorizing lists, numbers - reading

2. PHYSICAL EXERCISES

- Physical exercises help in improving memory. How? By oxygenating your brain. If its good for your heart – its good for your brain.

3. MEDITATION

- There is something you can do without moving your body at all, that will still help your memory. Research evidence suggests that regular meditation alters the brain structure in ways that can improve memory.

4. LEARN SOMETHING NEW

- Learn a foreign language. A new sport. Develop new hobby. Cook new food. Decorate your home in new ways. Travel to new places. Socialize, and make new friends. Read new books.
- Anything that engages your senses and makes your mind work, will improve memory by stimulating your brain circuits to grow.

STRATEGIES TO IMPROVE MEMORY

5. EAT FOR MEMORY

- A well-balanced diet, with variety of grains, fruits, vegetables, and limited to moderate protein is the right prescription for your memory.
- Monounsaturated fats (eg. olive, canola, peanut oils), polyunsaturated fats rich in Omega-3 fatty acids (read fish/fish oil) have also been in news for their memory benefits.

6. SLEEP, FINALLY

- A good night's sleep is one of the most essential, yet basic, things you can do for improving memory. Lack of sufficient sleep is, in fact, one of the commonly reported causes of memory loss.

7. MEMORY VITAMINS

- You can take memory vitamins regularly to keep your memory fresh everyday. B Vitamins can be considered closest to what you can call the memory vitamins. B6, B12 and Folic Acid are all known to protect the brain cells and improve memory. B Vitamins are found in bread, whole-grain cereals, egg, milk, potatoes and bananas.
- Antioxidants found in berries, citrus fruits and green, leafy vegetables are good.

A new type of thinking is essential if mankind is to survive and move toward higher levels. ~ Albert Einstein

If we cannot break out of old patterns of thinking we cannot move to the higher level needed to solve the sustainability problem. This level is what we call **a whole new way of thwinking**. It's why this site is named Thwink.org.



How can we start thwinking **inside** the box so we can move toward a higher level of thinking?

1 of 13

A new type of thinking is essential if mankind is to survive and move toward higher levels. ~ Albert Einstein

Thinking **inside** the box begins with the search for root causes. Suddenly everything changes. **Solving problems becomes a lot easier** when you start using root cause analysis, because all problems arise from their root causes.



Thinking inside the box is also called **glass box** modeling, as opposed to a **black box** and no model of how the system behaves. You can see inside a glass box but not a black box.

The root causes of difficult problems are so hard to find that a formal problem solving **process** is required. Let's take a look at one that can do the job.

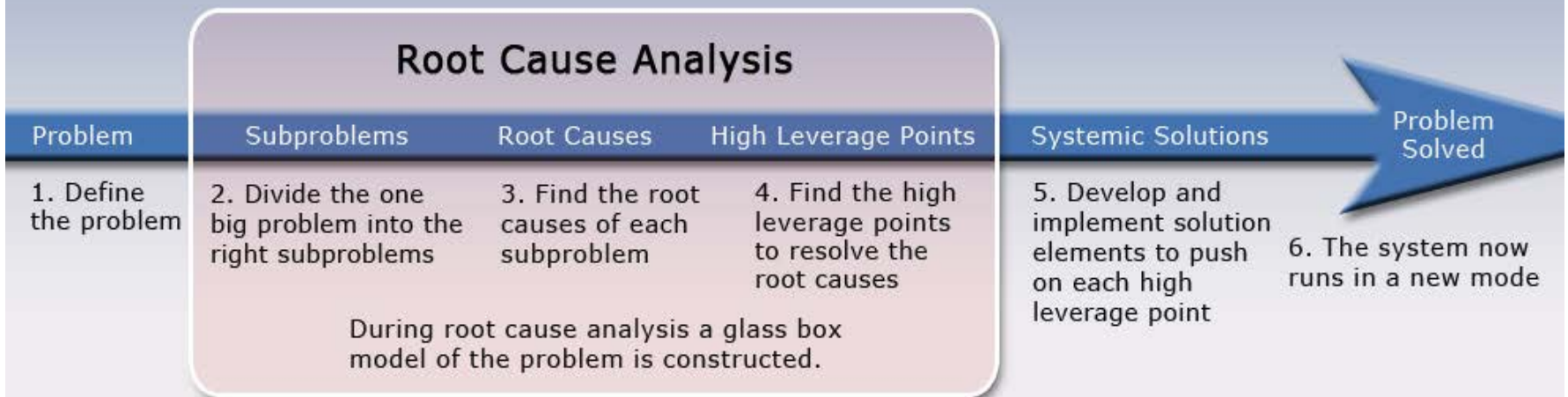
4 of 13

Asking Why at least 3 times – What is the problem
 define symptoms, sub-problems-root causes
 Identify solutions that address the root causes

A new type of thinking is essential if mankind is to survive and move toward higher levels. ~ Albert Einstein

Here's what a new type of thinking could look like.
 It's **a process that fits the problem.**

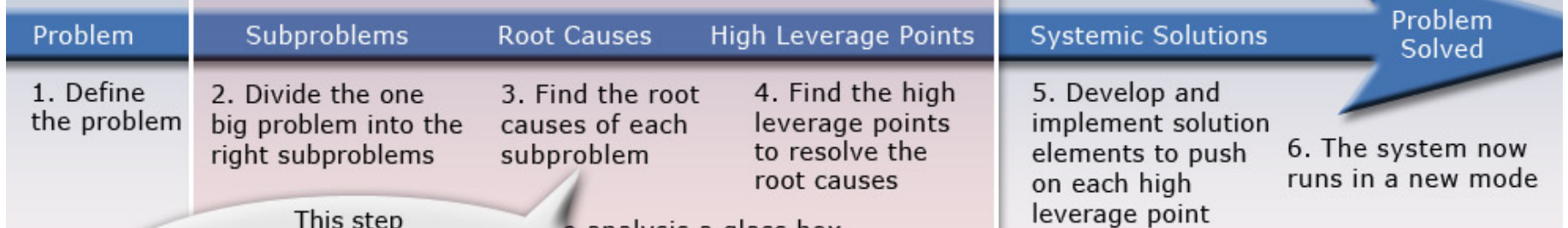
Root Cause Analysis



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Most problem solvers are unaware of how critical it is to resolve root causes. It's a bizarre foreign concept, so most public interest activists **skip root cause analysis** entirely. They jump intuitively from step 1 to step 5. That works for easy problems. But for difficult problems the result is **symptomatic solutions** that fail instead of systemic solutions that succeed.

Root Cause Analysis



This step **makes or breaks** your entire problem solving effort. Get it right and the rest is relatively easy. Get it wrong and no amount of hard work and cleverness will prevail.

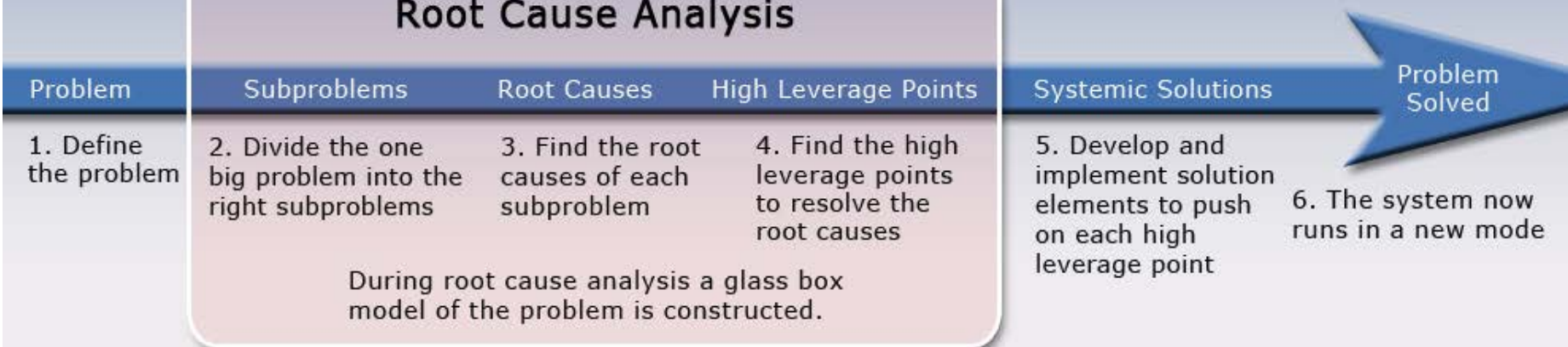
Root cause analysis a glass box system is constructed.

Think how much easier your work will be once you've done step 3.

It all boils down to two questions only you can answer:

1. Is **resolving root causes** the only way to solve difficult problems?
2. Do you want your **solutions** to resolve specific root causes so you can solve your most difficult problems **fast and efficiently**?

Root Cause Analysis



If your answers to both questions are yes, then you and your organization have **a game changing opportunity.**

