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14 Reflection Nuggets- Tools for Thought

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Critical Thinking

Everyone thinks. Whether we are aware of it or do it consciously or not.

However, much of our thinking, left to itself, is biased, distorted, partial, uninformed or down-right prejudiced.

Yet the quality of our life and what we produce, make, or build depends precisely on the quality of our thoughts.

Careless thinking is costly, both in money and in quality of life. Excellence in thought, however, must be systematically cultivated.

Critical thinking is that mode of thinking - about any subject, content, or problem - in which the thinker improves the quality of their thinking by skilfully taking charge of the structures inherent in thinking and imposing intellectual standards upon them.

Two things are crucial:

1) Critical thinking is not just thinking but thinking which involves self-improvement.

2) This improvement comes from skill in using standards by which one appropriately assesses thinking.

To put it briefly, it is self-improvement (in thinking) through certain standards that assess thinking.

How Does Critical Thinking Help Us?

Everyone thinks - it is human nature to do so. However, how we think can lead to biased, distorted, partial, uninformed or down-right prejudiced deductions. This is where critical thinking can help us reach better-informed conclusions.

Critical thinking is the ability to think in an organized and rational manner to understand connections between ideas and/or facts. It helps us decide what to believe in. In other words, it's "thinking about thinking," where we identify, analyze, and then fix flaws in the way we think according to Facione (1990).

A well-cultivated critical thinker:

Raises vital questions and problems, formulating them clearly and precisely

Gathers and assesses relevant information, using abstract ideas to interpret it effectively to reach well-reasoned conclusions and solutions, testing them against relevant criteria and standards

Thinks open-mindedly within alternative systems of thought, recognising and assessing, as need be, their assumptions, implications, and practical consequences

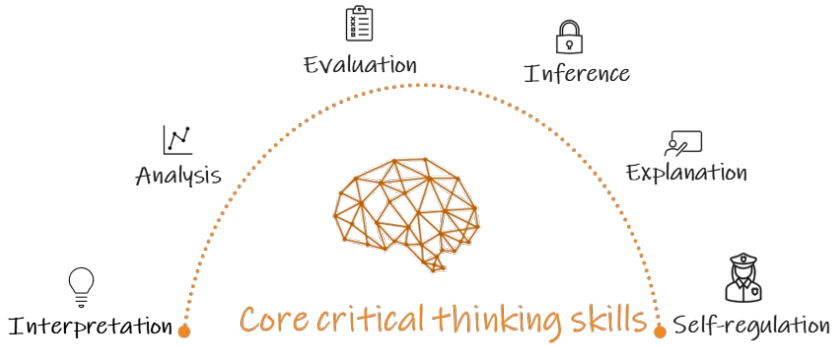
Communicates effectively with others in figuring out solutions to complex problems

Nuggets for Critical Thinking

Critical Thinking Model

One of the most popular models available to help you practice and hone your critical thinking skills is Dr. Peter Facione's model of critical thinking. Dr. Peter Facione's goal was to help sharpen critical thinking skills and cultivate critical thinking spirit.

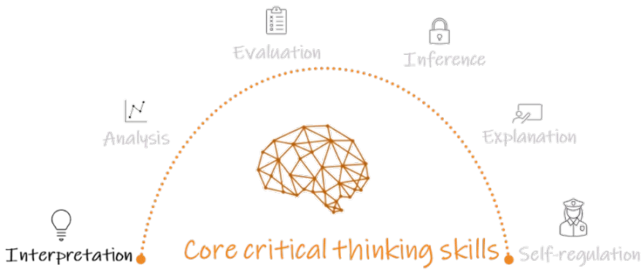
In his 1990 publication of the model, he proposed that there are **six core cognitive critical thinking skills** that we need to employ.



Cognitive skill: Interpretation

Definition of interpretation:

To comprehend and express the meaning or significance of a wide variety of experiences, situations, data, events, judgments, conventions, beliefs, rules, procedures, or criteria.



Interpretation sub-skills:

- Categorize
- Decode significance
- Clarify meaning

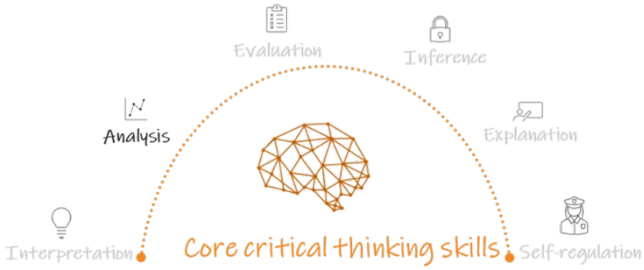
Questions to fire up our interpretation skill:

- What does this mean?
- What's happening?
- How should we understand that (for example, what he or she just said)?
- What is the best way to characterize/categorize/classify this?
- In this context, what was intended by saying/doing that?
- How can we make sense of this experience, feeling, or statement?

Cognitive skill: Analysis

Definition of analysis:

To identify the intended and actual inferential relationships among statements, questions, concepts, descriptions, or other forms of representation intended to express belief, judgment, experiences, reasons, information, or opinions.



Analysis sub-skills:

- Examine ideas
- Identify arguments
- Identify reasons and claims

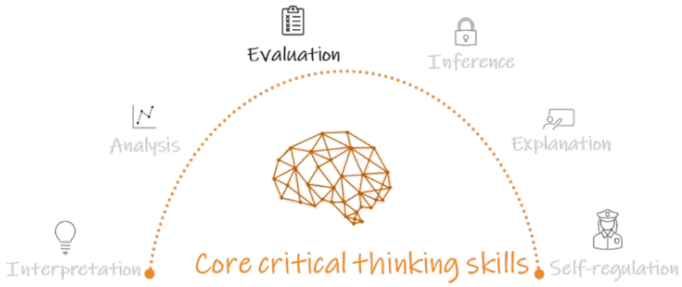
Questions to fire up our analysis skill:

- Can you tell me again your reasons for making that claim?
- What is your conclusion?
- What is it that you are claiming?
- Why do you think that?
- What are the argument's pros and cons?
- What assumptions must we make to accept that conclusion?
- What is your basis for saying that?

Cognitive skill: Evaluation

Definition of evaluation:

To assess the credibility of statements or other representations that are accounts or descriptions of a person's perception, experience, situation, judgment, belief, or opinion; and to assess the logical strength of the actual or intended inferential relationships among statements, descriptions, questions, or other forms of representation.



Evaluation sub-skills:

- Assess credibility of claims
- Assess quality of arguments that were made using inductive or deductive reasoning

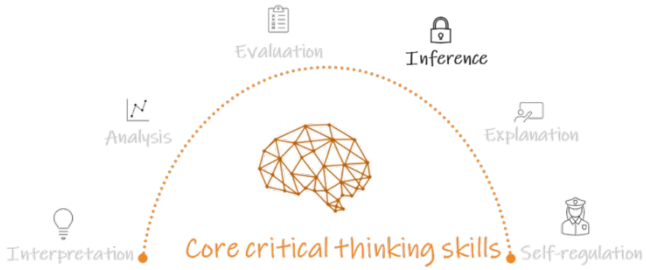
Questions to fire up our evaluation skill:

- How credible is that claim?
- Why do we think we can trust what this person claims?
- How strong are those arguments?
- Do we have our facts right?
- How confident can we be in our conclusion, given what we now know?

Cognitive skill: Inference

Definition of inference:

To identify and secure elements needed to draw reasonable conclusions; to form conjectures and hypotheses; to consider relevant information; and to reduce the consequences from data, statements, principles, evidence, judgments, beliefs, opinions, concepts, descriptions, questions, or other forms of representation.



Inference sub-skills:

- Query evidence
- Conjecture alternatives
- Draw logically valid or justified conclusions

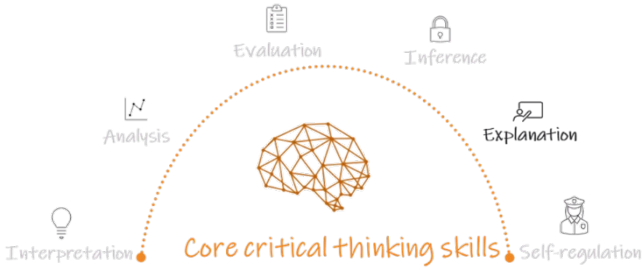
Questions to fire up our inference skill:

- Given what we know so far, what conclusions can we draw?
- Given what we know so far, what can we rule out?
- What does this evidence imply?
- If we abandoned/accepted that assumption, how would things change?
- What additional information do we need to resolve this question?
- If we believed these things, what would they imply for us going forward?
- What are some alternatives we haven't yet explored?
- Can we consider each option and see where it takes us?
- Are there any undesirable consequences that we can and should foresee?

Cognitive skill: Explanation

Definition of explanation:

To state and to justify that reasoning in terms of the evidential, conceptual, methodological, criteriological, and contextual considerations upon which one's results were based; and to present one's reasoning in the form of compelling arguments.



Explanation sub-skills:

- State results
- Justify procedures
- Present arguments

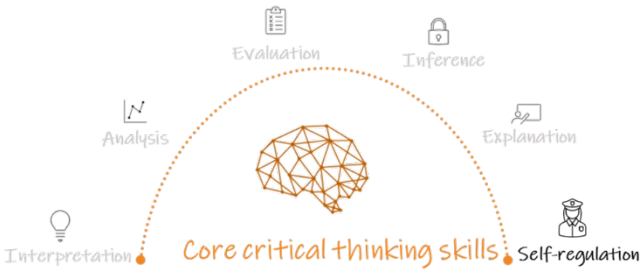
Questions to fire up our explanation skill:

- What were the specific findings/results of the investigation?
- Can you tell me how you conducted that analysis?
- How did you come to that interpretation?
- Can you take me through your reasoning one more time?
- Why do you think that was the right answer/solution?
- How would you explain why this particular decision was made?

Cognitive skill: Self-regulation

Definition of self-regulation:

Self-consciously to monitor one's cognitive activities, the elements used in those activities, and the results deduced, particularly by applying skills in analysis, and evaluation to one's own inferential judgments with a view toward questioning, confirming, validating, or correcting either one's reasoning or one's results.



Self-regulation sub-skills:

- Self-monitor
- Self-correct

Questions to fire up our self-regulation skill:

- Our position on this issue is still too vague; can we be more precise?
- How good was our methodology, and how well did we follow it?
- Is there a way we can reconcile these two apparently conflicting conclusions?
- How good is our evidence?
- OK, before we commit, what are we missing?
- I'm finding some of our definitions a little confusing; can we revisit what we mean by certain things before making any final decisions?

Nugget 1: Self-Evaluation

Self-evaluation is designed to assess your recent engagement in critical thinking behaviors, not your innate ability or cognitive skills. It focuses on dispositional practice, meaning:

- Have you actively and consciously applied critical thinking in your day-to-day activities over the last five days?
- The goal is to develop awareness of thinking patterns, not to diagnose abilities.

A reflective self-check is supported by research on metacognition (thinking about thinking), especially the work of Facione (2011) and Paul & Elder (2006). The emphasis is on habits of mind—curiosity, skepticism, open-mindedness—not just reasoning skills. It is important to remember, that self-checks are not a test of ability, but a reflection tool on practice frequency. It aligns with self-regulated learning models that focus on process, not outcome.

If you wonder about your disposition regarding critical thinking, you can do a short self-assessment to see whether you practiced critical thinking over the last five days. Remember that this self-assessment does not *measure* your critical thinking skills but rather highlights if you *practiced* critical thinking in the last five days.

Answer "Yes" or "No" to the 20 questions listed below by asking yourself: **"Can I name any specific instances over the past five days when I…"**

	"Can I name any specific instances over the past five days when I…"	**Yes/No**	**Points**
1.	was courageous enough to ask tough questions about some of my longest held and most cherished beliefs?		
2.	backed away from questions that might undercut some of my longest held and most cherished beliefs?		
3.	showed tolerance toward the beliefs, ideas, or opinions of someone with whom I disagreed?		
4.	tried to find information to build up my side of an argument but not the other side?		
5.	tried to think ahead and anticipate the consequences of various options?		
6.	laughed at what other people said and made fun of their beliefs, values, opinion, or points of views?		
7.	made a serious effort to be analytical about the foreseeable outcomes of my decisions?		
8.	manipulated information to suit my own purposes?		
9.	encouraged peers not to dismiss out of hand the opinions and ideas other people offered?		
10.	acted with disregard for the possible adverse consequences of my choices?		
11.	organised for myself a thoughtfully systematic approach to a question or issue?		
12.	jumped in and tried to solve a problem without first thinking about how to approach it?		
13.	approached a challenging problem with confidence that I could think it through?		
14.	instead of working through a question for myself, took the easy way out and asked someone else for the answer?		
15.	read a report, newspaper, book chapter, or watched the world news or a documentary just to learn something new?		
16.	put zero effort into learning something new until I saw the immediate utility in doing so?		
17.	showed how strong I was by being willing to honestly reconsider a decision?		
18.	showed how strong I was by refusing to change my mind?		
19.	attended to variations in circumstances, contexts, and situations in coming to a decision?		
20	refused to reconsider my position on an issue in light of differences in context, situations, or circumstances?		
		TOTAL POINTS	

If you have described yourself honestly, this self-rating form can offer a rough estimate of your overall disposition toward critical thinking in the past five days.

Give yourself 5 points for every "Yes" on odd numbered items and for every "No" on even-numbered items.

- If your total is **70 or above**, your disposition toward critical thinking has been generally positive over the past five days .
- Scores **between 50 and 70** show that you would rate yourself as displaying an ambivalent or mixed overall disposition toward critical thinking over the past five days.
- Scores of **50 or lower** indicate a self-rating that is averse or hostile toward critical thinking over the past five days.

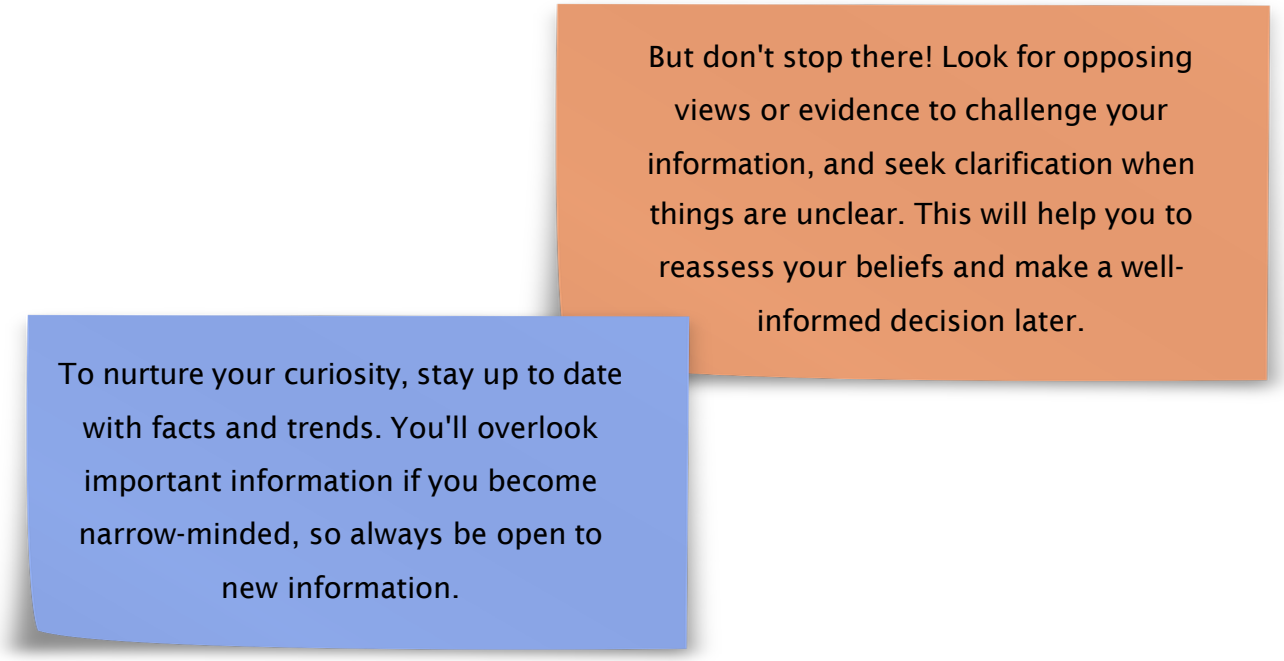
Interpret results on this tool cautiously. At best, this tool offers only a rough approximation about a brief moment in time.

Nugget 2: Being Curious

Critical thinkers are ***curious*** and ***logical*** which helps you question information and your own thinking.

Let's look at curiosity – what do we mean by it? Being curious is to be willing and able to explore alternative approaches and experimental ideas (Kashdan & Silvia, 2009).
Can you think through **"what if" scenarios**, **create plausible options**, and **test your theories**?

If not, you'll tend to write off ideas and options or opportunities too soon, so you may miss the best answer to your situation.



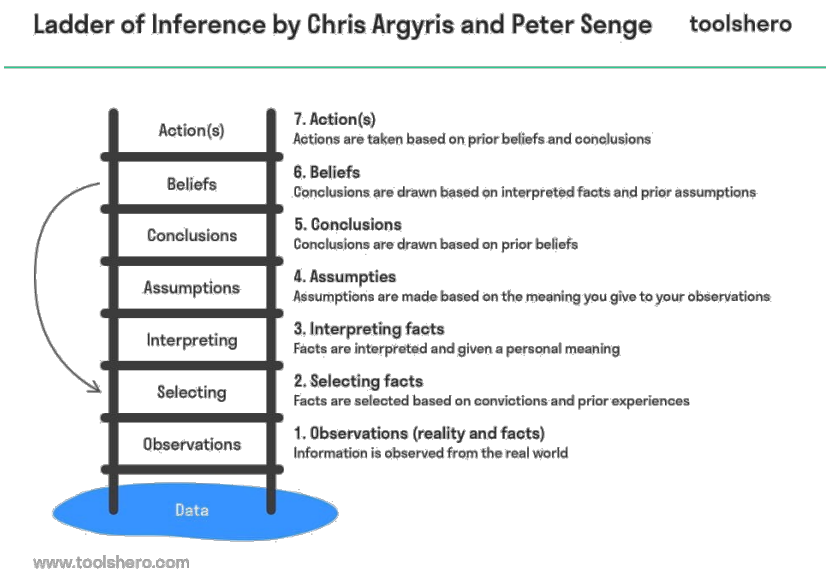
Nugget 3: The Ladder of Inference

Curiosity is a mindset, but how do we put it into application? How can we be structured in our curiosity? Here's a tool to help you do just this.

The Ladder of Inference by Argyris (1990) helps you apply your curiosity to someone else's perspective. And also, explain your point of view in a structured way to address others' curiosity.

The ladder can be used to explain our own thinking (going down the ladder) and, more importantly, be used to better understand the other person's perspective (going up the ladder).

You can use the ladder to be more curious about others' perspectives by asking questions to better understand their entire ladder of reasoning and not just the top of the ladder (conclusion).



The Ladder of Inference describes the thinking process we go through, usually without realizing it, to get from a fact to a decision or action.

The Ladder of Inference consists of seven rungs or steps, and the reasoning process starts at the bottom of the ladder.

1. Reality and facts

This level identifies what is directly perceptible. You observe all information and data from the real world.

2. Selecting facts

From this level, the facts and data are selected based on convictions and prior experiences. The frame of reference plays a role in this.

3. Interpreting facts

The facts and data are interpreted and given a personal meaning.

4. Assumptions

At this level, assumptions are made based on the meaning you give to your observations. These assumptions are personal and are different for every individual.

5. Conclusions

At this level, conclusions are drawn based on prior beliefs.

6. Beliefs

At this level, conclusions are drawn based on interpreted facts and prior assumptions.

7. Actions

This is the highest level. Actions are now taken based on prior beliefs and conclusions. The actions taken seem to be the best at that particular moment.

The Ladder of Inference Explained

Remember that some examples of the model show six rungs and not seven. This is because in most cases, *Selecting* and *Interpreting data* are combined into one step.

Nugget 4: Evaluating an Argument

Evaluate any argument with the following questions (open.edu):

- What ideas and information are presented, and how were they obtained?
- Are there unsupported assertions?
- Are reasons or evidence provided?
- Are the reasons and evidence given relevant?
- Is the method used to find the evidence sound?
- Is the evidence correct or valid?
- What assumptions have been made?
- Are you convinced about the conclusion(s) reached?

Answer to Evaluating an Argument

When you evaluate written material, you are aiming to form a judgment on the validity of the argument presented. You can do this by looking at the **coherence** of the argument and the **supporting evidence**:

Here is a complete list of questions to ask to ensure the argument is coherent and contains valid supporting evidence.

Coherence of the argument:

- Check the line of reasoning – is it coherent and logical? Are there any flaws in its progression?
- Look at the conclusions drawn – are they supported adequately by the claims made throughout the argument? Are they 'valid', and do they make sense?
- Have the authors justified their claims by supporting them with acceptable sources of evidence?
- Are any assumptions made, and if so, are they acceptable?
- Have all alternative claims been considered?
- Is there any bias in the claims and supporting arguments?
- Is there any indication that a claim made is merely the author's opinion rather than based on evidence?
- Does the claim make sense when compared to the evidence used?

Supporting evidence:

- Does the evidence support all of the claims made? Is it comprehensive?
- Is the evidence appropriate for the topic?
- Is the evidence recent, and is that important for your purposes?
- How does this evidence compare with that provided by other people – is it conflicting, or does it complement other evidence? Does it co-exist, adding something extra to the topic?
- Are there any methodological issues about the collection of the evidence that might impinge upon its usefulness?

Nugget 5: Reflection Questions

Socratic questioning tradition (Paul & Elder, 2006) as well as the 5W1H Method (Rudd et al., 2000) is traditionally used in problem analysis and inquiry-based learning. Open-ended questioning is used to uncover assumptions, clarify ideas, and stimulate deeper thinking.

Who

… benefits from this?
… is this harmful to?
… makes decisions about this?
… is most directly affected?
… have you also heard discuss this?
… would be the best person to consult?
… will be the key people in this?
… deserves recognition for this?

When

… is this acceptable/unacceptable?
… would this benefit our society?
… would this cause a problem?
… is the best time to take action?
… will we know we've succeeded?
… has this played a part in our history?
… can we expect this to change?
… should we ask for help with this?

What

… are the strengths/ weaknesses?
… is another perspective?
… is another alternative?
… would be a counter-argument?
… is the best/worst case scenario?
… is most/least important?
… can we do to make a positive change?
… is getting in the way of our action?

Why

… is this a problem/challenge?
… is it relevant to me/other?
… is this the best/worst scenario?
… are people influenced by this?
… should people know about this?
… has it been this way for so long?
… have we allowed this to happen?
… is there a need for this today?

Where

… would we see this in the real world?
… are there similar concepts/situations?
… is there the most need for this?
… in the world would this be a problem?
… can we get more information?
… do we go for help with this?
… will this idea take us?
… are the areas for improvement?

How

… is this similar to _____?
… does this disrupt things?
… do we know the truth about this?
… will we approach this safely?
… does this benefit us/others?
… does this harm us/ others?
… do we see this in the future?
… can we change this for our good?

Critical Thinking Questions

Who	… benefits from this? … is this harmful to? … makes decisions about this? … is most directly affected? … have you also heard discuss this? … will be the key people in this? … would be the best person to consult? … deserves recognition for this?
What	… are the strengths/ weaknesses? … is another perspective? … is another alternative? … would be a counter-argument? … is the best/worst case scenario? … is most/least important? … can we do to make a positive change? … is getting in the way of our action?
Where	… would we see this in the real world? … do we go for help with this? … are there similar concepts/situations? … will this idea take us? … is there the most need for this? … can we get more information? … in the world would this be a problem? … are the areas for improvement?
When	… is this acceptable/unacceptable? … would this benefit our society? … would this cause a problem? … is the best time to take action? … will we know we've succeeded? …has this played a part in our history? … can we expect this to change? … should we ask for help with this?
Why	… is this a problem/challenge? … is it relevant to me/other? … is this the best/worst scenario? … are people influenced by this? … should people know about this? … has it been this way for so long? … have we allowed this to happen? … is there a need for this today?
How	… is this similar to _____? … does this disrupt things? … do we know the truth about this? … will we approach this safely? … does this benefit us/others? … does this harm us/ others? … do we see this in the future? … can we change this for our good?

Nugget 6: Critical Thinking Checklist

Critical thinking is not just a cognitive skill – it is a habit of mind, a disposition toward inquiry, and a commitment to reflective, reasoned judgment. In today‘s complex and information-rich environments, the ability to think critically is essential for making sound decisions, solving problems, and evaluating claims in both professional and everyday contexts.

Since critical thinking is more than just problem-solving and involves questioning assumptions, assessing evidence, clarifying concepts, and reflecting on one‘s own reasoning, a checklist can be helpful as a practical metacognitive tool to help:

- Monitor your thinking (*are you engaging in reasoning processes consciously and thoroughly?*)
- Identify gaps or biases (*are you overlooking counterarguments or failing to evaluate the credibility of sources?*)
- Promote reflective practice (*are you learning from past decisions and improving your reasoning over time?*)

By regularly using a critical thinking checklist, you can develop stronger self-regulation skills, as highlighted in metacognitive research (Zimmerman, 2002). It also fosters a disposition toward curiosity, open-mindedness, and intellectual humility – key traits found in good critical thinkers (Paul & Elder, 2006).

Critical Thinking Checklist

Here's a checklist you can apply in your field to help ensure you critically think and evaluate your work.

- ❑ **Refine** generalizations and avoid over-simplifications
- ❑ **Compare** analogous situations: transfer insights into new contexts
- ❑ **Develop** your perspective: create or explore the implications of beliefs, arguments or theories
- ❑ **Clarify** issues, conclusions or beliefs: clarify and analyse the meaning of words and phrases
- ❑ **Develop** criteria for evaluation: clarify values and standards
- ❑ **Evaluate** the credibility of sources of information
- ❑ **Question deeply**: raising and pursuing the root causes
- ❑ **Analyse or evaluate** arguments, interpretations, beliefs, theories, actions or policies
- ❑ **Generate** and assess multiple solutions
- ❑ **Reason dialogically**: compare perspectives, interpretations, or theories
- ❑ **Reason dialectically**: evaluate perspectives, interpretations, or theories
- ❑ **Construct** an accurate interpretation of understanding the elements of thought in, and evaluating, the reasoning of a text
- ❑ **Building** your critical writing skills: creating, developing, clarifying, and conveying, in written form, the logic of your thinking

Nugget 7: The Five Whys

We are all faced with some problems at various stages of our lives. However, problems are just symptoms of deeper issues. To fix a problem quickly may be a convenient solution – but it doesn't stop you from making the same mistakes twice. This is why it's essential to find the root cause of the issue and deal with it properly. The Five Whys technique (Ohno, 1988) is a great tool to help you dissect a problem and reveal its underlying causes.

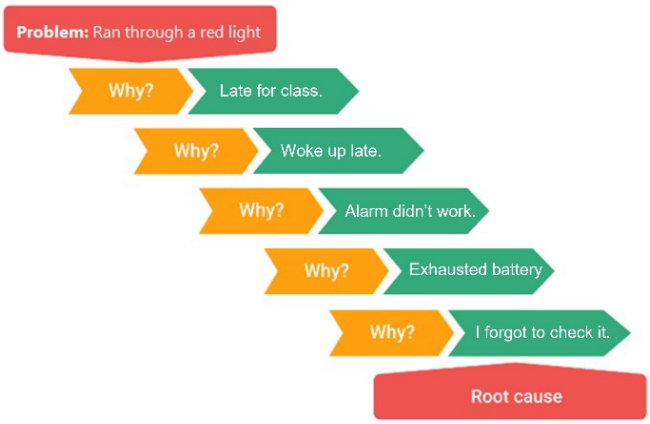
Here are the steps involved in using this technique.

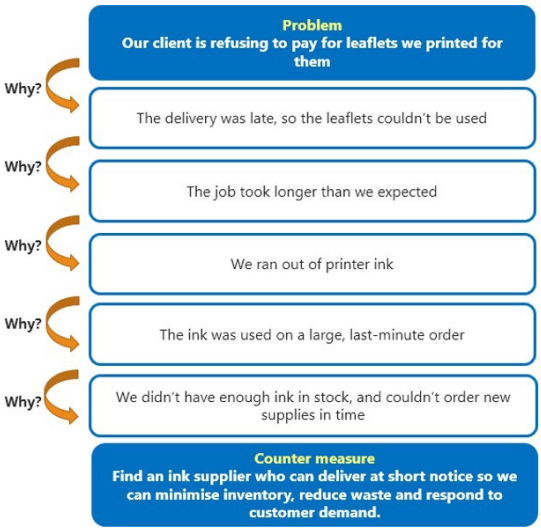
Define the problem
This helps you define the scope of the issue you are going to investigate, which is important because investigating a wide scope problem may be a time-consuming exercise with blurred boundaries. Try to be as focused as possible to find an effective solution in the end.

Ask why
Ask "Why" five times or until you can identify the root cause of the initial problem.

Take action
After you detect the root cause(s), you need to take corrective actions. After some time, check if your actions actually had a positive impact. If not, repeat this process.

Refer to these examples to better understand how the Five Whys technique works





Nugget 8: Four Reflection Corners

The Four Reflection Corners technique is a simple yet powerful reflective tool designed to help individuals analyze situations, projects, or personal experiences from multiple perspectives. By categorizing thoughts into four quadrants—based on what you have/don't have and want/don't want—this method allows you to:

- Identify current resources and strengths
- Pinpoint unmet needs or goals
- Recognize unwanted conditions or obstacles
- Clarify areas that are not relevant or problematic

This framework based on Jannis and Mann (1977) encourages a structured reflection process, fostering metacognition, emotional regulation, and problem-solving clarity.

Ask yourself the following questions to evaluate, e.g., the current project/situation/event more critically and gain a new perspective.

What do I have and want	**What don't I have and want**
What do I have and don't want	**What don't I have and don't want**

The Four Reflection Corners

What do I have and want	**What don't I have and want**
What do I have and don't want	**What don't I have and don't want**

Nugget 9: Inversion Thinking

People don't like to change their minds. Once a decision or a hypothesis is made, you like that decision. You also do not want to be inconsistent in your beliefs, attitudes, and ideas. However, this could also influence evaluating potential downsides or pitfalls. You might not give it your full effort. That is why inversion thinking presents a different way of looking at things. In 1995, Charlie Munger popularized inversion thinkging in decision-making and mental models. He frequently quotes the mathematician Carl Jacobi who used to say:" Invert, always invert." (Umdenken). However, inversion thinking also found its place in modern cognitive science and business thinking (Kahneman, 2011; Klein, 2007).

So, in order to experience inversion thinking yourself, simply ask yourself the following questions:

1. **How could my research/project/idea fail?**
2. **What can I do to avoid that?**

Picture by Alexandre Dulaunoy

Example: What could destroy Coca-Cola? What to do to prevent this to happen?

- Unpleasant aftertaste

  What to do: *Customers have to be able to consume one Coke after another without any negative impact from the aftertaste*.

- Losing any part of the trademark.

  What to do: There must be no "Peppy Cola." The Coca-Cola trademark needs to be protected above all else.

- Making huge or sudden changes to the flavor.

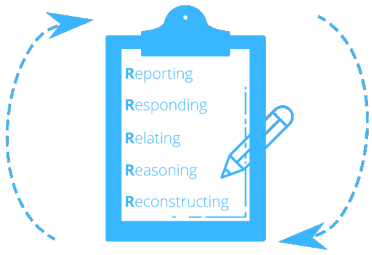
  What to do: If you did this, competitors would probably copy the old original flavor and sell it to the angry customers who loved it.

Inversion Thinking

How could _____ fail? (i.e., your research, proposal, course, etc.)	What can you do to avoid that?

Nuggets for Self-Reflection

Nugget 10: The 5R framework for reflection



This framework, developed by Bain et al. (2002), focuses on five core stages, each addressing one aspect of reflection. By thinking about all five stages individually, you will engage with all the essential components of reflection, enabling you to produce a critically engaged reflection based on your experience. This model can also help for structure reflective writing.

The five stages are:

- **Reporting** of the context of the experience
- **Responding** to the experience (observations, feelings, thoughts, etc.)
- **Relating** the experience to knowledge and skills you already have
- **Reasoning** about the significant factors/theory to explain the experience
- **Reconstructing** your practice by planning future actions for a similar experience

This model lends itself well to structuring both the thinking process and the write-up of a reflection. To get this model's full benefit, you will have to know the characteristics of each of the 5 R's. Being able to recognize the language that is relevant for each step will also benefit you if using the model for academic reflection.

The 'Reporting' and 'Responding' can sometimes interlink and be presented as one level. This highlights that while there is a natural progression through the stages when producing written reflections, you might want to write more freely without a clear boundary between the areas.

Some helpful questions, as well as key components, are outlined below for each of the stages. You don't have to answer all of them, but they can guide you to what sort of things make sense to include in that stage. You might have other questions that work better for you.

Reporting:

Here, you can present the context with little or no comment or interpretation of the experience.

Helpful phrases are: 'I saw...', 'I noticed...', 'I/they said...', 'I had...' and words indicating time such as yesterday, last week, etc.

Helpful questions are: What happened? What are the key aspects of this situation? Who was involved? What did I do?

Responding:

Here, you can present your reaction or response to the situation. This can be thoughts, feelings, and observations.

Helpful phrases are: 'I felt...', 'I thought...', 'I believe...', 'I think...'. It can be useful to use transitional language to connect experiences with feelings and thoughts, for example, 'next', 'subsequently', 'afterwards', 'finally', 'leading to' etc.

Helpful questions are: How did what happened make me feel? What did I think? What made me think and feel this way?

Relating:

Here, you can relate your experience of the reported situation with your knowledge and skills from outside of the situation.

Helpful phrases are: 'This reminds me of...', 'This is like when...'. It can be useful to use comparative language such as 'previously', 'similarly', 'unlike', etc.

Helpful questions are: Have I seen this before? What was similar/different then? Do I have skills and knowledge to deal with this?

Reasoning:

Here, you can make sense of the situation in terms of significant factors and, if relevant (for example, if requested in assessments), the theoretical literature relevant to your experience.

Helpful phrases are: 'I understand that...', 'I realize', 'For me, the most significant aspect...'. It can be useful to use analytical language such as 'critically', 'imply', 'support' (as in supporting evidence), etc.

Helpful questions are: What is the most important aspect of this situation and why? Is there any theoretical literature that can help me make sense of the situation? How do different perspectives (for example, personal, as a student, or professional) affect the way I understand the situation? How would someone who is knowledgeable about these types of situations respond?

Reconstructing:

Here, you make a conclusion about your future plans based on the previous four sections.

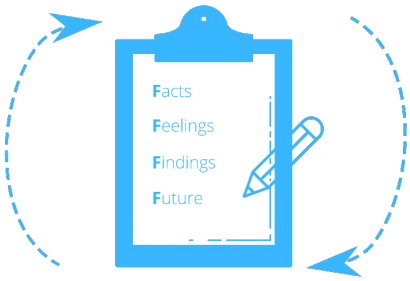
Helpful phrases are: 'I will now...', 'I realise', 'I have learned that...', 'As a next step, I need to...'. It can be useful to use words indicating the future as 'will', 'may', 'could', etc.

Helpful questions are: How would I need to do this differently in the future? What might work and why? Are there different options? Are my ideas supported by theory? Can I make changes to benefit others? What might happen if...?

The 5R Framework of Reflection

The 5R framework for reflection guides you through Reporting, Responding, Relating, Reasoning, and Reconstructing to make sense of a learning experience.

Nugget 11: The four F's of active reviewing



This framework is designed by Dr. Greenaway, an expert on training teachers and facilitators. By working through the four levels of this model, you will have critically examined the situation you want to review and reflect upon while thinking about how to use what you have learned in the future.

The four F's are:

- **Facts:** An objective account of what happened
- **Feelings:** The emotional reactions to the situation
- **Findings:** The concrete learning that you can take away from the situation
- **Future:** Structuring your learning such that you can use it in the future

For each of the sections several helpful questions are outlined below. You don't have to answer all of them, but they can guide you about what sort of things make sense to include in that section. You might have other prompts that work better for you.

Facts

The first F represents hard facts. Here you can examine the sequence of events and key moments. If you are working through the model with other people, it can be interesting to see if you agree on the facts. Be careful that facts do not turn into opinions, for example, 'Then X did the wrong thing' instead, say 'X did this, and it had this effect'.

Helpful questions:

- Make a short news report covering: What? Who? Where? When? [Save Why? and How? for 'Findings']
- Did anything unexpected happen? Any surprises? Did anything very predictable happen?
- What was most memorable/different/interesting? What were the turning points or critical moments? What happened next? What happened just before?
- What most influenced your attitude and behaviour?
- What didn't happen that you thought/hoped would happen?

Feelings

Here is where you can describe the feelings in the situation. Feelings can guide you to fully understand the situation so your learning is better grounded in the experience.

It is possible to start accidentally evaluating and judging in this section; however, try to stay with your feelings. Be cautious not to use 'felt' as a judgement, for example, 'I felt they were wrong', or 'my feeling was that it was a good choice'. The latter can be rewritten as 'I felt confident while making the choice.

Helpful questions:

- What are some of the feelings you experienced?
- At what point did you feel most or least involved?
- What other feelings were present in the situation?
- At what points were you most aware of controlling/expressing your feelings?
- What were your personal highs and lows?

Findings

Here, you can start investigating and interpreting the situation to find meaning and make judgements. The main questions are 'how' and 'why.'

Helpful questions:

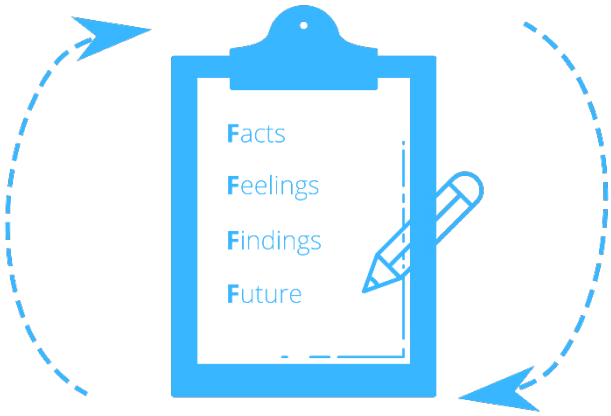
- Why ... did or didn't it work? ...did you take on that role? ...did you do what you did? ...did you not do something else? etc.
- How ... did your feelings influence what you said and did? ...did you get the outcome that happened? etc. Were there any missed opportunities or regrets?
- What would you like to have done di22erently / more of / less of? What was most / least valuable?
- Was there any feedback / appraisal?
- What have you found out?

Future

Here, you take your findings and consider how to implement them in the future.
Helpful questions:

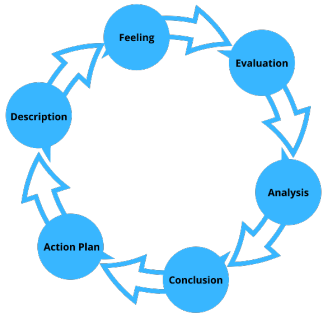
- How do you imagine using what you have learned?
- What has already changed?
- What choices do you have?
- How does it look to use the findings?
- What plan can you make for the future?

The Four F’s of Active Reviewing



The four F's of reviewing helps you to review an experience and plan for the future by moving through four levels: Facts, Feelings, Findings, and Future.

Nugget 12: Gibbs' Reflective Cycle



Gibbs' Reflective Cycle was developed by Graham Gibbs in 1988 to give structure to learning from experiences. It offers a framework for examining experiences and, given its cyclic nature, lends itself particularly well to repeated experiences, allowing you to learn and plan from things that either went well or didn't. It covers six stages:

- **Description** of the experience
- **Feelings** and thoughts about the experience
- **Evaluation** of the experience, both good and bad
- **Analysis** to make sense of the situation
- **Conclusion** about what you learned and what you could have done differently
- **Action plan** for how you would deal with similar situations in the future, or general changes you might find appropriate.

This model is an excellent way to work through an experience. This can be either a stand-alone experience or a situation you go through frequently, for example, meetings with a team you have to collaborate with. Gibbs originally advocated its use in repeated situations, but the stages and principles apply equally well to single experiences. If done with a stand- alone experience, the action plan may become more general and look at how you can apply your conclusions in the future.

For each of the stages of the model, a number of helpful questions are outlined below. You don't have to answer all of them, but they can guide you about what sort of things make sense to include in that stage. You might have other prompts that work better for you.

Description

Here, you have a chance to describe the situation in detail. The main points to include here concern what happened. Your feelings and conclusions will come later.

Helpful questions:

- What happened?
- When and where did it happen?
- Who was present?

- What did you and the other people do? What was the outcome of the situation?
- Why were you there?
- What did you want to happen?

Feelings

Here, you can explore any feelings or thoughts you had during the experience and how they may have impacted the experience.

Helpful questions:

- What were you feeling during the situation?
- What were you feeling before and after the situation?
- What do you think other people were feeling about the situation?
- What do you think other people feel about the situation now?
- What were you thinking during the situation?
- What do you think about the situation now?

Evaluation

Here, you have a chance to evaluate what worked and what didn't work in the situation. Try to be as objective and honest as possible. To get the most out of your reflection, focus on the positive and the negative aspects of the situation, even if it was primarily one or the other.

Helpful questions:

- What was good and bad about the experience?
- What went well?
- What didn't go so well?
- What did you and others contribute to the situation (positively or negatively)?

Analysis

The analysis step is where you have a chance to make sense of what happened. Until now, you have focused on details about the situation. Now you have a chance to extract meaning from it. You want to target the aspects that went well or poorly and ask yourself why. If you wish to include academic literature, this is the natural place to include it.

Helpful questions:

- Why did things go well?
- Why didn't it go well?
- What sense can I make of the situation?
- What knowledge – my own or others (for example academic literature) can help me understand the situation?

Conclusions

In this section, you can make conclusions about what happened. This is where you summarize your learning and highlight what changes to your actions could improve the outcome in the future. It should be a natural response to the previous sections.

Helpful questions:

- What did I learn from this situation?
- How could this have been a more positive situation for everyone involved?
- What skills do I need to develop to handle a situation like this better?
- What else could I have done?

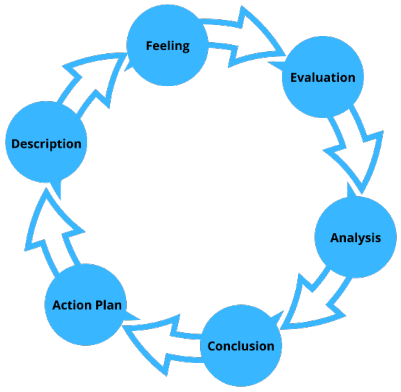
Action plan

At this step, you plan for what you would do differently in a similar or related situation in the future. It can also be extremely helpful to think about how you will help yourself to act differently – such that you don't only plan what you will do differently but also how you will make sure it happens. Sometimes just the realization is enough, other times reminders might be helpful.

Helpful questions:

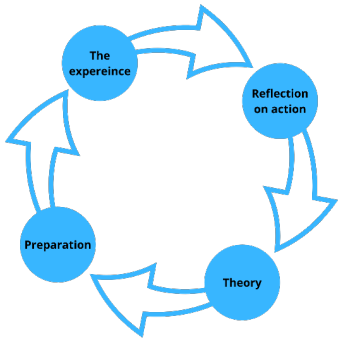
- If I had to do the same thing again, what would I do differently?
- How will I develop the required skills I need?
- How can I make sure that I can act differently next time?

Gibb’s Reflective Cycle



Gibbs' Reflective Cycle leads you through six stages of exploring an experience: description, feelings, evaluation, analysis, conclusion, and action plan.

Nugget 13: The Integrated Reflective Cycle



The Integrated Reflective Cycle (Bassot, 2013) is a model of reflection that will guide you through four steps to make sense of and learn from an experience. The model will allow you to explore feelings, assumptions, and your own professional practice.

- **The Experience:** Describe the experience
- **Reflection on Action:** Look at the experience and identify what went well and what could be improved. You explore your thoughts, feelings, and assumptions here and ask yourself why.
- **Theory:** Think about the experience in the larger context of professional literature and your own learning and personal experience.
- **Preparation:** Using your reflection to prepare yourself for future experiences.

The model is inspired by a range of other frameworks, including Gibbs' reflective cycle, and shares some characteristics with it. In contrast to Gibb's reflective cycle, the integrated reflective cycle contains fewer steps that may make it simpler to work through while still bringing out the same realizations and learning.

The 'Reflection on Action' step contains what some models would break up into feelings, results, and evaluation.

A variety of helpful questions are outlined below for each of the sections. You don't have to answer all of them, but they can guide you to what sort of things make sense to include in that section. You might have other questions that work better for you.

The Experience

Here, describe the situation in as much detail as you find necessary. Think about whether it is for yourself or for someone else to read. If it is for someone else, it is important you define the context clearly.

Helpful questions

- What happened?
- What were the contributing factors?
- Who else was there?
- What did I/others do?

Reflection on Action

Here you start to make sense of what happened. You should question yourself and your assumptions to understand what led you to your actions – this will allow you to challenge the status quo of your actions and assumptions.

Helpful questions

- What was I trying to achieve?
- Why did I act as I did?
- What assumptions did I make?
- What were the consequences for me and the other people involved?
- How did I feel?
- How did the other people feel, and how could I tell?

Theory

Here, you can conclude your learnings. You can use your own realizations and theoretical literature to make sense of the experience. Discussing how your experience has influenced your understanding of your professional or theoretical knowledge can be useful.

Helpful questions

- What has this experience contributed to my professional or theoretical knowledge?
- What have I learned that I can apply to a similar situation in the future?
- What have I learned in general?

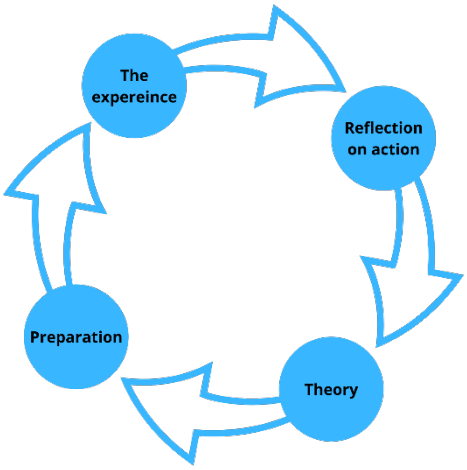
Preparation

Here, you can take everything you have discovered in the previous sections to create a plan to better prepare for the future.

Helpful questions

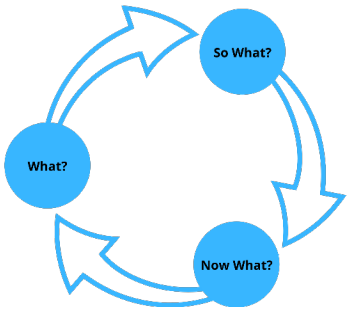
- What will I do next time in a similar situation?
- How could I do better next time?
- What will I now consider for next time?
- What other strategies could I adopt to move forward?

The Integrated Reflective Cycle



The Integrated Reflective Cycle takes you through four steps to consider the experience, your actions, relevant theory, and preparation for the future.

Nugget 14: What? So what? Now what?



By moving through three reflective stages, you explore an experience, its implications, and what that means for the future.

Driscoll (1994) developed this model of reflection based on three simple questions – What? So what? Now what? – originally asked by Terry Borton (1970). The model provides one of the simplest frameworks for reflection. In practice you should ask yourself the three questions after a critical incident that has taken place and you want to extract learning from.

- '**What?**' helps you describe the situation you want to learn from. You should identify the facts and feelings of the situation.
- '**So What?**' allows you to extract the meaning of 'What?'. Moreover, you should question what knowledge you and others had, and what knowledge or theories could help you make sense of the situation.
- '**Now what?**' allows you to create an action plan for the future based on the previous questions.

The simplicity of this model is both a great strength and a possible limitation. It is easy to remember and can be applied to any field or experience. However, the reflection does not achieve a meaningful and critical depth by just answering the three main questions.

It can be helpful to work through the question prompts outlined below for each stage to ensure that you have depth and breadth. You don't have to answer all of them, but they can guide you to what sort of things make sense to include in that stage. You might have other questions that work better for you.

Some people might also recognize this model as work done by Rolfe et al. (2001). This is also correct, as many theorists have changed and adapted Borton's original approach.

What?

The experience of the situation

Helpful questions to answer could be: What ...

- ... is the context?
- ... is the problem/situation/difficulty/reason for being stuck/reason for success?
- ... was I/we/others trying to achieve?
- ... was the outcome of the situation?
- ... was my role in the situation?
- ... was the role of other people in the situation (if others were involved)?
- ... were the consequences for me? And for others?
- ... was good/bad about the experience?

So what?

The implications of the situation

You might want to supplement your knowledge and thoughts with other people's ideas, references, and theories. This can show what helped shape your thoughts and further explore them. This comes down to how much you are looking to formalize your reflections. This can especially be important if the reflection is assessed.

Helpful questions could be: So what...

- ... does this tell me/teach me/imply about the situation/my attitude/my practice/the problem?
- ... was going through my mind in the situation?
- ... did I base my decisions/actions on?
- ... other information/theories/models/literature can I use to help understand the situation?
- ... could I have done differently to get a more desirable outcome?
- ... is my new understanding of the situation?
- ... does this experience tell me about the way I work?

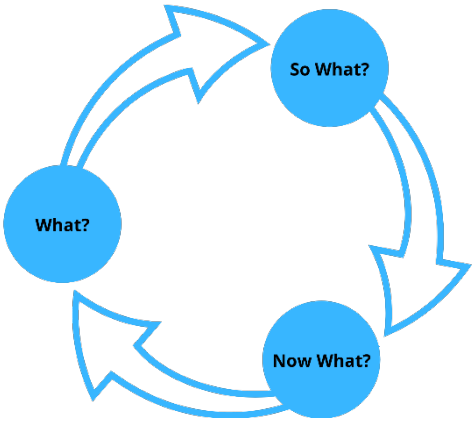
Now what?
The action plan

Ensure that you are concrete in your action plan and not only saying generic comments such as 'I will do things differently/better.' The more concrete you can be regarding what you want to do, how you will do it, and how you will remind yourself, the easier and more likely it will be to implement.

Helpful questions could be: Now what...

- ... do I need to do in the future to do better/fix a similar situation/stop being stuck?
- ... might be the consequences of this new action?
- ... considerations do I need about me/others/the situation to make sure this plan is successful?
- ... do I need to do to ensure I follow my plan?

What? So What? Now What?



By moving through three reflective stages, you explore an experience, its implications, and what that means for the future.

What?

So what?

Now what?

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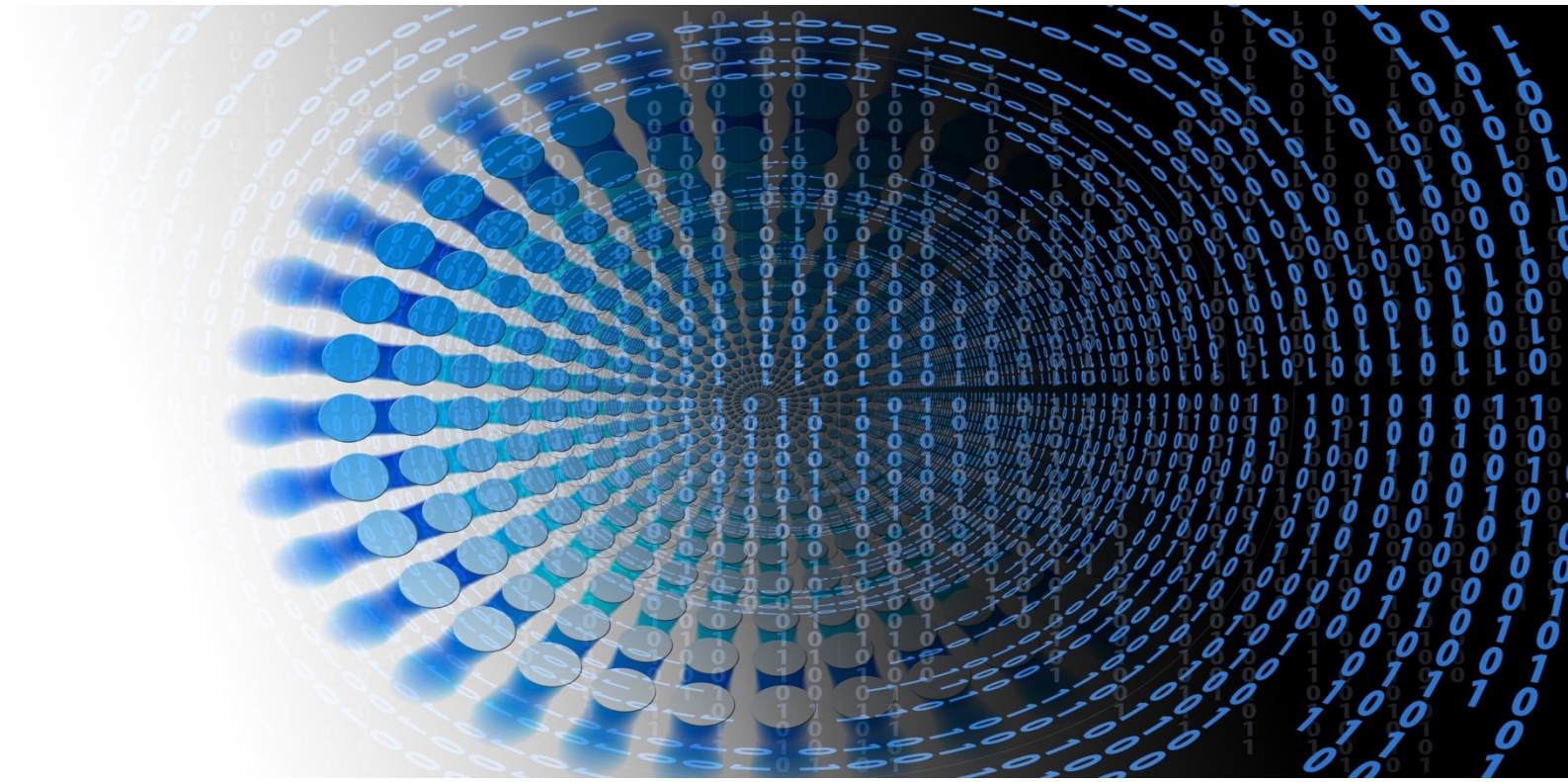

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