

Patterns for Creative thinking

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Introduction

Creative thinking can be learned in the same way as analytical thinking. Many creative thinking tools are highly structured and the same methodical patterns occur again and again. This paper is a start to collect and connect the basic patterns of creative thinking. It will not present any new method but will try to generalize the commonalities of similar methods and approaches. There are many descriptions of creativity methods and tools out there. What motivates the description as patterns is the generalization of similar methods, the reasoning for the actual form in terms of forces, and the contextualization and connection of the methods/tools. Very often a specific method implies other methods to follow up or it can be combined with other methods. A pattern language captures such relations.

Now I said it – pattern language. My ultimate goal is to connect and interweave the patterns into a small and accessible language. Instead of laying out the full language at once, the approach will be to evolve it over the next two years. This means that in this process of evolution the patterns will change substantially. Since patterns support each other, we will find new links as the body of available patterns growth. Context and solution descriptions will become briefer once we can refer to other patterns. There will be overlapping patterns that require restructuring of the whole language. I am saying this to make you aware that these patterns are not the final word. They are young and fresh. I hope to grow them to a useful pattern language with your help.

Creative thinking and the development of new ideas and solutions is complimentary to rely on proven solutions as they are generally described in patterns. It is my belief that patterns are a necessity for creative thinking. I see at least the following connections:

- Patterns are about not re-inventing the wheel. It is hardly creative to come up with something that has been around for years. Knowing the patterns of your domain avoids re-inventing and you can invest your time in developing ideas that are really original.
- Patterns channel creativity. A pattern can be implemented a million times over without ever doing it the same way twice. Knowing a pattern provides all the creativity to unfold it in many ways. Yet by showing the boundaries, obstacles and consequences a pattern it provides clear but flexible directions.
- Patterns can be combined. By the combination of patterns new forms emerge.
- Patterns divide and conquer problems. If you have patterns you can rely on, you can be much more creative to design new parts. You can focus on changing a part or completely substitute it.

So, patterns are already powerful for creative thinkers. But creative thinking can be more effective if our brains are stimulated in the right way. That is what the pattern language will be about.

We will start with three patterns:

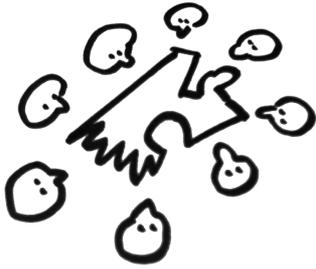
Multiple Perspectives is about seeing a situation more holistic

Idea Trigger is about stimulating thought into useful directions

Random Impulse is about giving your thoughts a new and unexpected direction

Each of the patterns should help to generate new ideas, improve existing ideas, or get a better understanding of ideas. “Idea” is a very generic term. What it really means to you depends on the field you are working on. An idea can be a solution to a problem, a product, method or process, concept, product name, or marketing campaign.

Multiple perspectives



You are looking at a situation, problem or proposed situation and you do not know what to make out of it. You have the feeling that something is wrong but you do not understand what it is. You are stuck in your thinking, in your way at seeing things. You have found an idea or solution but you don't know what its worth. You need a deeper understanding of a situation, a problem, or a proposed solution.

By looking at a thing only from one perspective, it is most likely that you will miss important facts, potential paths and undesired consequences.

If we see an object or a scene most clearly we are convinced that we see it the right way because it is so obvious. But think of a house that is painted red at the front and green at the back. If you look at it from the front you could swear that it is a red house. Anybody who claims to see a green house seems to be weird. Yet both views are correct. A lot of time can be wasted if each party sticks to its position without acknowledging any other possible views.

If you want to explore a landscape, then you have to walk around and not stick to a single position. You can use one position to deeply analyze the details but you will only find what is possible to see from that position.

The meaning of a thing or situation always depends of its context. A hammer can be the right or the wrong tool for a given task. By changing the context, we change the meaning of a thing. To understand all the potentials and liabilities, to see new paths and solutions, to give new meanings to a situation, to have original interpretations of a thing, we need to look at it from different angles.

Therefore,

Deliberately look at the problem from different perspectives. Focus on one perspective at a time and find as many details, insights and implications for that view. Ignore any potential contradiction to other perspectives.

Consider a problem or a potential solution from the perspective of another person:

What would a cook, gardener, actor, salesman, scientist, barber, secretary or taxi driver do or think? You can also choose your favourite hero, actor, book or movie character and ask for example: "What would Sherlock Holmes do?", "What would Superman do?", "What would Harry Potter do?", "What would X do?" You can also take the perspective of other species or artefacts: What would an alien, an elephant, a wizard, a robot, a tool (hammer, saw, pen), or piece of furniture do or think? By taking in another role you change your perspective at a whole and you start taking new approaches. You can choose your favourite roles or pickup

random ones. However, it is important to not always use the same roles, for this would again limit the ways of viewing.

In a project it is also often very important to identify all major stakeholders and slip into each of their roles and views: How do customers, actors, developers, money owners, project managers or designers think about an idea? Would they put the same values to it?

Changing the perspective also means that you should systematically change your attitude to an idea. Be first a dreamer, then a realist, and finally a spoiler (also known as the Disney method). First think about any thing you wish, without limits. Forget all restrictions from society, physics or your budget. Think “what if?” Once you came up with fantastic ideas you can start thinking about which ones could be realized and how to achieve them – be a realist. Finally be critical to your plans. Think about any challenges, negative consequences and holes. Use this view to improve your ideas and select the most promising paths.

Another way of picking different views on the same solution is to use Edward de Bono’s Six Thinking Hats. Each hat has a different colour and symbolizes a different view:

- **White hat / analytical thinking:** What information and facts do we have? Which information is missing? How reliable are the data?
- **Red hat / emotional thinking:** What is your gut feeling? What is your first impression? Express your thoughts without any justification!
- **Yellow hat / optimistic thinking:** What are the positive outcomes of an idea? Which factors are in favour for a proposal? Even sceptics have to find good points about a suggested solution.
- **Black hat / critical thinking:** What could go wrong? What are negative consequences? Even if you are convinced of the success of an idea, think about every potential show stopper.
- **Green hat / lateral thinking:** Think out of the box and generate alternative ideas or derive new ideas from the existing approach.
- **Blue hat / moderator:** Put on the blue hat to set the goals, decide which hat to use next and sum up the outcomes of a discussion.

In a group you should share the same view at the same time. By parallel thinking, all members of the group give their best to elaborate that view rather than defending a single position.

To change the perspective requires some effort because we are often fixed on our current view. Changing the perspective potentially means that we have to adjust our beliefs. The value of deliberately changing the perspective is that all views are anticipated. There should be no competition about who has the best or most correct view. Rather, the competition should be who finds the most aspects for each view.

Even if you are willing to change the perspective it is often very hard to think of a good new perspective. You can use IDEA TRIGGERS to suggest a new perspective.

Taking many perspectives also costs more time. If you are working in a group you can split different perspectives between the members. In this case it is important that all views are equally valued. The purpose is not to proof that one group has the best perspective.

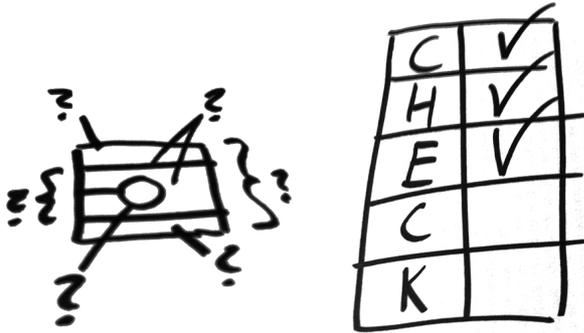
Business Example: A company wants to improve its meeting culture. To assess their current meetings, a group of employee pretends to be from Mars and questions every single activity in a meeting. They wonder why people are sitting in chairs if this makes them tired. They

wonder why people make 30 minute presentations while people get bored. From an alien's perspective it might be more fruitful to stand during meetings and limit presentations to 3 minutes. To still capture everything in 3 minutes, the team comes up with the idea to split a 30 minute presentation into 10 presentations of 3 minutes each, alternating between different presenters and discussions. People also have to get up more frequently and prevents them from nearly sleeping in their chairs.

Education Example: A university committee discusses the tendency that students try to cheat in exams using smartphones. One member suggests that one could officially allow smartphones in exams to make it fair for all students. To evaluate the idea, the committee puts on the six thinking hats. Under the white hat they collect information how many cases of fraud they know about, which other universities allow smartphones in exams and how many exam questions are affected. Under the yellow hat the group points out that fast access for facts from the web is a key competence; the group also agrees that web queries still take time and a student can hardly look up all the questions. Under the black hat the same members of the group point out that the students will prepare less for the exams in the hope that they can find everything on the web. They also fear that learning becomes more superficial. Under the green hat the group discusses new question types that actually require some web inquiries during the exam.

Personal Example: A boy wants to design a hamster cage that does not take too much space in his room but provides much space for the hamster. He asks different friends what they think could be the best approach. He deliberately asks friends with different hobbies. His friend Ben is a fan of skyscrapers. Ben suggests that one could build multiple storeys in a cage. Susanne is fascinated by wizards. She suggests that a wizard would just shrink and grow the size of the cage. This leads to the idea that one could design a cage where parts can be pulled out like a drawer. Since hamsters are mostly active at night time when the room's space is not needed, these parts can be pulled out when one goes to sleep.

Idea triggers



Your mind is empty and you don't know where to begin. Or your mind is full, almost chaotic, and you don't know where to begin. You are facing a problem and you don't know what to do about it. You have outlined or prototyped a solution and you are thinking about ways to further improve it. You have a working solution that should be improved. You have a brilliant idea or product and need to market it.

You need a kick to get started.

Every stimulus will get you start thinking yet where do such stimuli come from? And which stimuli are most effective?

By asking the right questions you are more than half way to your solution. Good questions help to better understand the situation, the problem, its forces, the opportunities and available resources. But how can select the right questions? How can I make sure that I do not forget the important questions?

Questions can lead you to different thought directions, see new things, and provide views from MULTIPLE PERSPECTIVES. A good question or way of viewing gives you the right kick to start thinking.

Therefore,

Compile questions, challenges, prompts, templates and tables as idea triggers that can be used randomly, as a checklist or on deliberate choice.

A typical question template to gather information about a situation, a challenge or existing product is 5W1H: Who? What? Where? When? Why? How? If you ask all these questions you get already much more information as compared to an unstructured brainstorming. Most important, you don't forget one question to ask.

Triggers to improve an existing idea or product are provided by the SCAMPER method and the Osborn tools. SCAMPER triggers your thoughts about modifying a solution by trying the following things to it:

S = Substitute: Can you substitute parts of the solution?

C = Combine: Can you combine the solution with other ones?

A = Adapt: Can you adapt an existing solution to solve your problem?

M = Magnify: What can be enlarged?

- P = Put to Other Uses: In which other contexts could the solution be used differently?
- E = Eliminate (or Minify): What could be reduced or simplified?
- R = Rearrange (or Reverse): Could you rearrange or reverse the parts of your solution?

The Oborn tools are similar to SCAMPER, but treat Rearrange and Reverse as separate triggers.

These triggers are often used as checklists, meaning that you ask each of the questions to generate new ideas for product improvement. Yet each of the triggers is already useful and if there is not enough time to run through all questions it just as fine to randomly pickup three of four. To randomly pick up an idea trigger you could write down the triggers on small cards and shuffle the card deck. Other idea triggers include:

- Negation of assumption: Use an established concept or rule and pretend that it is no longer valid.
- Negation of goals: Think about everything you can do to *not* reach your goal.
- What if...?: Think up different scenarios without taking care for any restrictions or constraints.
- Random Impulse: Use a random word or image to trigger new ideas.
- Exaggeration: Exaggerate a form, effect, approach, or statement.
- Provoke: How can you shock a potential audience?
- Effects of time: Which effects does time or the historical context have to your product?
- Metaphors: Are there metaphors or analogies to describe your solution or idea?
- Parody: Could you think of a parody to highlight clichés about your product or target group?
- Playing around: Are there playful uses, descriptions or re-framings for your idea?
- Stories: What stories are behind your idea? How could you attract attention?

There are many more of these questions and each triggers a direction of thought. You should think about questions that suit to your domain and build your own stack of idea triggers. MULTIPLE PERSPECTIVES also helps as each perspective is a thought trigger. The standardized description fields of design patterns (context, problem, forces, solution, consequences, known uses) also act as triggers. This shows that idea triggers can be used to find new ideas as well as finding existing knowledge.

Idea triggers often benefit from examples and helper questions:

Helper Questions for Substitute

What parts can be replaced?

What rules can be change?

Are there other persons, places, time frames or ingredients?

Can you use other materials or surfaces?

Example for Substitute

Instead to dial a number, one can enter the name of the person one wants to call. Instead of typing in the name one could speak the name into the phone.

An idea trigger always puts your thoughts in motion. It suggests a new direction of thinking for your current problem. While many of the triggers state obvious questions, these questions are often not in our head when we concentrate deeply on a challenge. By working with a

checklist or randomly picking up an idea trigger we are reminded of these important questions. Because they are often very simple they immediately generate new ideas or show a new direction of thought. You can also use RANDOM IMPULSES to trigger ideas.

Since ideas start to popup immediately, a common mistake is to stop too early to search for more. An idea trigger should be used to generate more than one idea. One could even set an IDEA QUOTA. The judgment about the ideas should be postponed to not stop the flow of new thoughts.

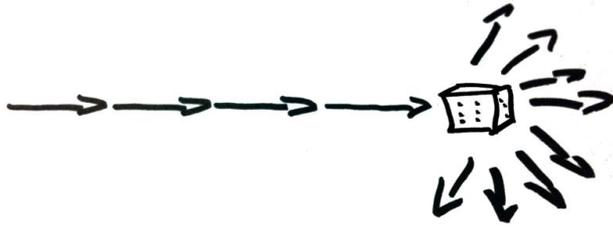
Business example: You can prepare a PowerPoint presentation that contains different thought triggers on each slide.

Education example: Split up a group of learners into small teams and let them use different thought triggers.

Personal example: Create a deck of idea cards by writing stimuli or drawing sketches on index cards. If you are looking for new ideas, randomly draw an index card.

A final remark: Many of the idea triggers are so important that I will describe them as individual patterns in future work. Behind each idea trigger there is a whole concept that can be captured as a pattern. But having idea triggers in itself is an important concept. Having a checklist, template or deck of card is quite important to not forget or skip always the same triggers.

Random Impulse



You want to develop new ideas or improve existing ones. You have a good understanding of the situation or you have studied the domain carefully. But you just can't come up with something new that could innovate or solve existing problems.

You are stuck with the old ideas.

Often we think everything is fine the way it is but we are blind for hidden problems. We might ignore challenges that not affect us directly or that will have its impact later.

At other times we know there is something wrong in the current situation but we cannot think about new ways of doing business. After all – how could things be different than they are now?

It is safe and convenient to follow the old paths but you can easily miss opportunities. For example, you might always take the same route to your house because it is convenient and save. But you might miss a much better route – one that is shorter, has less traffic or is more pleasant. Another example is the habit of always ordering the same food because you like it so much. But you might miss some meal that is even more delicious.

We are also in the habit of moving forward straight in one direction. To just walk on in that direction seems to be the lowest effort. But we can easily miss a side-path that is more effective, or discover a new trail that is more pleasant.

Therefore,

Give your thoughts a new and unbiased direction by using random stimuli such as random words, images, or impressions from a walk.

The random impulse does not have anything to do with what you are currently thinking about. And that is a good thing because it brings in new concepts, new relations, new features, and new similarities.

To obtain a random word you can:

- Open a book, close your eyes and put your finger somewhere. Move the finger forward to the first noun you encounter and use it as a random word. (Nouns work better because they are more concrete concepts).
- Use a random word generator on your mobile device or on a screen.
- Print out a table with noun words. You can get the words by randomly open a dictionary and use the first word of the page.

To obtain a random image you can:

- Open a magazine, flip up a page, look for the next ad and blindly place your finger at it. Use the object under your finger as a random impulse.
- Cut out images from magazines and put them folded into a jar. If you need a random stimulus you can draw one of the folded pieces.
- Use Flickr or Wikimedia Commons to get a random image or the image of the day.

Once you picked up a random word or picture, write down the properties of the concept behind it. Use these properties to stimulate new ideas for your original problem:

- Could you transfer one of the properties to your situation?
- Could the random concept be combined with one of your goals?
- What are the similarities, what are the differences?
- Can you use the random concept as a new context for your product, or vice versa?

Once you generate ideas by establishing a relation between the random word and your original concept, try to derive further ideas from that.

If you take a walk you will get a lot of random impulses. What ever you see, ask yourself how does it relate to your current situation, problem, idea or solution?

- If you see a pie in a bakery, ask yourself how you could make the goal sweeter.
- If you see a packed underground, ask yourself how you can put in more into your approach.

A random impulse always suggests a new unbiased path of thinking. When you focus on a challenge all your thoughts are associated with solutions you already know – that is with conventional ways of thinking. But if you find something unrelated and force yourself to make a connection, then you will generate something new. Many innovations are the result of COMBINING CONCEPTS.

Business Example: A group of managers discusses how to improve the communication in the company. They look up a random word and find “beach”. They now write down properties and associations of beaches: Sand, ocean, sun, swimming, cold beverages, waves, walks, a lot of people, barbeque... Some of these items lead to new ideas.

Cold beverages: Like a person who sells beverages on the beach someone could walk through the offices and sell the latest news.

Barbeque: Organize barbeques, breakfasts or after-work events to foster informal communication.

Waves: Thinking about waves you remember how radio waves are distributed and strengthened using several radio towers. Instead of radio towers you appoint team leads as repeaters of messages.

Education example: You plan to run a seminar for 20 students. However there are 80 students who want to attend the seminar. To find a solution, you draw a random word: “luggage”.

Luggage lets you think of travelling, packaging, dresses, holidays, being away, airports, baggage claim, lost items, security check...

You can use these thoughts for new ideas to solve the problem.

Be away: Assign tasks to students to go into the field. One week they will be in your seminar, the other week they will be in the field. While one group of students is in the field you can give a seminar for another group. This way you can double the number of participants.

Travelling: If there is another seminar with less applicants, let students rotate between different seminars.

Security check: Set standards what you expect from your students, e.g. skills or pre-exams. Only students who pass these checks will be allowed for the seminar.

Personal Example. You want to spend less money on dresses. You pickup the random word “Management”. A manager sets goals, approves budgets, and controls spending. Be your own manager and formally improve every investment into a new dress. Develop some sort of an application form that you have to fill out for yourself if you want to buy a new dress. The application form could require some arguments why the investment is needed. Do not directly make the decision but wait some days. Then have a look at the application and decide whether the arguments are still reasonable.

Not all of the generated ideas are fruitful. But that’s not the point. The random impulse should give your thoughts a kick. You should evaluate your ideas later and pick out the best ones.

Appendix: A short preview

The following section provides an overview of the creativity patterns that I am currently working on.

1. Patterns to understand the situation and your goal

DIVIDE AND CONQUER: Divide your problems into parts. You can focus on each part. You can modify, replace or rearrange parts.

FISHBONE DIAGRAM: Split the main problem into its sub problems.

WHY? WHY? WHY?: Ask recursively why questions.

5W1H: Ask Why? When? Where? What? Who? How?

MIND MAPS: Develop a hierarchical map of associative terms.

CONCEPT MAPS: Draw the relations between stakeholders, products, markets etc. into a concept map.

FUTURE SCENARIOS: Imagine different scenarios, including best, middle and worst case scenarios. Ask what if questions.

SWOT ANALYSIS: Analyze the strengths, weaknesses, opportunities and threats of the situation.

REPHRASE YOUR GOAL: Express your goals or the current situation in different terms. Ask different questions about the situation.

INVERSE VIEW: List all known obstacles or negative issues. For each obstacle find a way to overcome it. For each negative issue define the desired state.

FORCE FIELD ANALYSIS: First list all forces that positively and negatively influence the situation or your goal. Then think about how to strengthen the positive forces and weaken the negative forces.

KNOW YOUR FIELD: The most creative people are those who know their field very well. Therefore, make sure that you know all the concepts, patterns and rules of your field.

2. Generate Ideas

INCUBATION: Let your subconscious do the work. Switch between projects, forget about your problem and wait for the Eureka!

MULTIPLE PROJECTS: Engage yourself in multiple projects at the same time. Ideas and experiences from one project will distribute into other projects. Working on one project also means INCUBATION for another project.

HAVE FUN: Humour and creativity are closely related. Do something strange and funny to come up with new ideas. Watch some funny short videos to have a better mood.

IDEA QUOTA: Don't be satisfied with the obvious ideas. Dig deeper!

SUSPENDED JUDGMENT: Don't kill the best ideas too early. Even bad ideas can be used as inspiration.

FOLLOW-UP IDEAS: Use generated ideas to generate even more ideas.

BRAINSTORMING: The classic one plus useful variations, including ABC brainstorming, brainwriting and flashing light rounds.

PROVOCATION: Challenge assumptions, conventions and rules. Feel free to put everything upside down.

IDEA COMBINATION: Create something new by combining existing concepts.

MODIFICATION/VARIATION: Create something new by modifying existing objects or parts of them. Could you magnify, minimize, simplify or reshape its form?

SUBSTITUTION: Could you replace parts of an existing object to create something new?

PUT INTO A DIFFERENT CONTEXT: What would happen if you put something into a different context? How could it be useful there? What needs to be modified?

REARRANGE: Can you create something new by rearranging or reversing the parts of an object?

ANALOGIES: Learn principles from other concepts and draw analogies. Think about metaphors for your current design challenge. What can we learn from nature?

3. Evaluate ideas

CLUSTERING: Find categories for the ideas. Check whether you come up with new ideas once you identified the categories.

COMPARISON TABLES: Write down the properties of each idea and compare the ideas.

VOTING: Vote for the best ideas, which ideas should be elaborated or followed up.

RANKING: Compare ideas bring them into a ranking by dragging sticky notes or computer objects around. You cut off all ideas that fall under "priority baseline".

VALUE-FEASIBILITY MATRIX: For each idea evaluate its benefit and whether it is an easy win.

SIX THINKING HATS: Have **MULTIPLE PERSPECTIVES** on a proposed idea.

PMI – Plus, Minus, Interesting: For the most relevant ideas find all positive, negative and interesting aspects.

PRO-CONTRA-LISTS: What is in favour for an idea and what is a show stopper?

TIMING: Is it the right time for your idea?

STAKEHOLDER'S VIEWS: What would each stakeholder say about your idea?

4. Implementing ideas

ELABORATION: You have got a great idea? Now it's time to do the real work. A good idea needs to be elaborated because the details matter.

SKETCH IT: Visual thinking supports your expression of ideas.

JUST DO IT: If it is a good idea you should start today. Get rid of excuses.

NO RISK, NO FUN: Even if you are convinced of your idea you have some doubts. Evaluate the actual risk and compare them to the potential benefits.

MILESTONES: Set yourself goals and check whether you have reached them.

DEADLINES: You hate them? You should like them! They really move you forward.

WORK AROUND OBSTACLES: You have worked out an execution plan. Identify typical obstacles and situations that might stop your execution. Have specific reactions, planned actions or workarounds prepared if you run into such situations.

KEEP THE FAITH: There will be times of disappointment and failure. At such times it is important to motivate yourself again and remember achievements.

SELL YOUR IDEAS: You are convinced of your ideas. That's great! But usually you need support, e.g. resources, money, time, team members that invest time. Therefore it is important to convince other people as well.

PROTOTYPING: Test your ideas early!

VERIFICATION: If something works – fine! If something fails – don't capitulate but learn from your mistakes.

CELEBRATION: Wow, you have done it! (Or maybe just parts of it!). Celebrate it, to motivate yourself and to **SELL YOUR IDEA**.

5. Supportive tools and environments

POWER OF TEMPLATES: What? You have forgotten some of the patterns in this collection? Well, that happens. Therefore, use templates in your meetings or creative sessions to remember the questions, methods, tools, idea triggers etc.

THE RIGHT PLACE: Make sure you feel well in your environment. Make your first (home) and second (work) place comfortable. Look out for third places (coffeeshops, malls) that inspire you.

DREAM TEAM: The right mixture of people is more creative. Team up with people you like. Include in your team experts from your domain but also from other domains.

LIST OF CHALLENGES: Keep a list of the most important challenges. Have a look at this list every morning and every evening. Awareness supports the subconscious problem-solving process.

RELAX: You are more likely to generate good ideas if you are relaxed and in a positive mood.

NEW HABITS: Change some of your habits to get new inspirations. Switch to a new TV channel, read books from different authors, choose a new route to work.

PREPARED MIND: Know your domain and be open to new and unexpected phenomena.

IDEA LOGBOOK: Always log your thoughts and inspirations.

(VIRTUAL) STICKY NOTES: Use sticky notes to rearrange ideas and thoughts. If possible use a digital tool to save alternative arrangements.