

Creative techniques of problems solving and decision making

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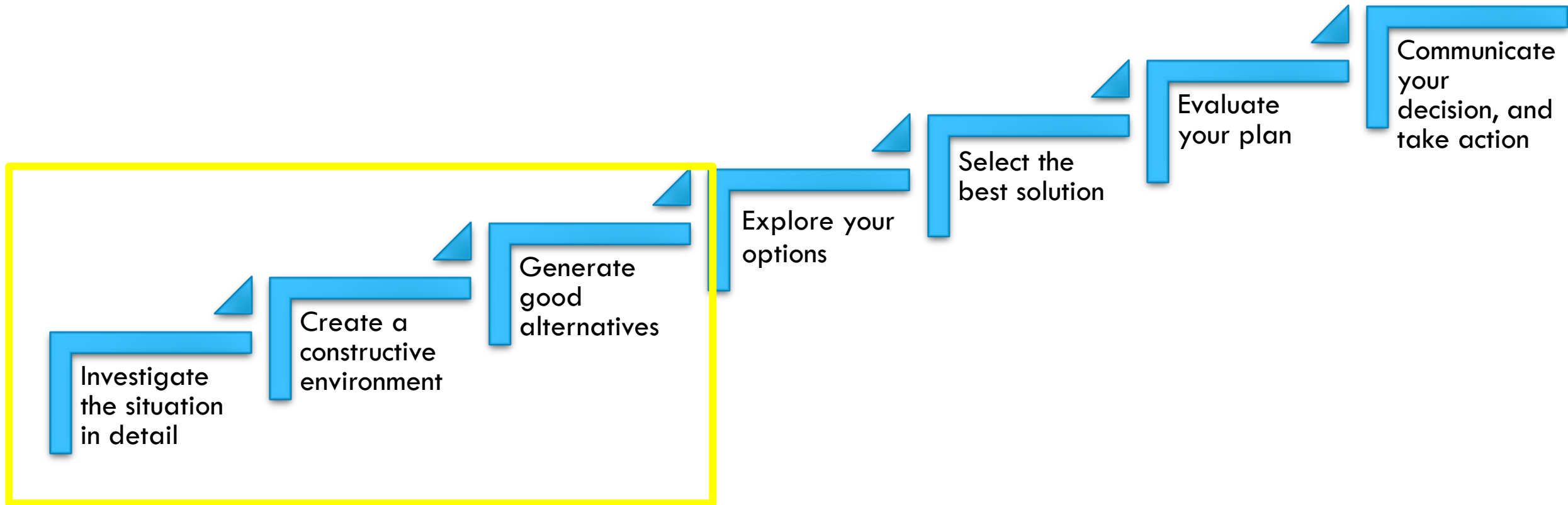
Workshop is provided in the frame of ICT_EDUPAND Project 2020-1-PL01-KA226-HE-096196

Holistic approach towards problem-based ICT education based on international cooperation in pandemic conditions

These workshops realise the Intellectual Output 2 - Digital resources in educating teachers for acquiring new skills related to problem-based methodology.



7-STEP DECISION-MAKING STRATEGY



STEP 1: INVESTIGATE THE SITUATION IN DETAIL

- ✓ you need to fully understand your situation
- ✓ consider the decision in the context of the problem it is intended to address
- ✓ determine whether the stated problem is the real issue, or just a symptom of something deeper
- ✓ decide if your problem requires more complex analysis

STEP 1: INVESTIGATE THE SITUATION IN DETAIL

Selected creative techniques:

- ✓ 5 Whys
- ✓ Root Cause Analysis
- ✓ Problem tree
- ✓ Six thinking hats

THE WANT OF A NAIL

For want of a nail, the shoe was lost,
For want of a shoe, the horse was lost,
For want of a horse, the rider was lost,
For want of a rider, the message was lost,
For want of a message, the battle was lost,
For want of a battle, the war was lost,
For want of a war, the kingdom was lost,
For want of a nail, the world was lost

„The Want of a Nail”, T. Rundgren, Warner Chappell N.A., Ltd., 1989

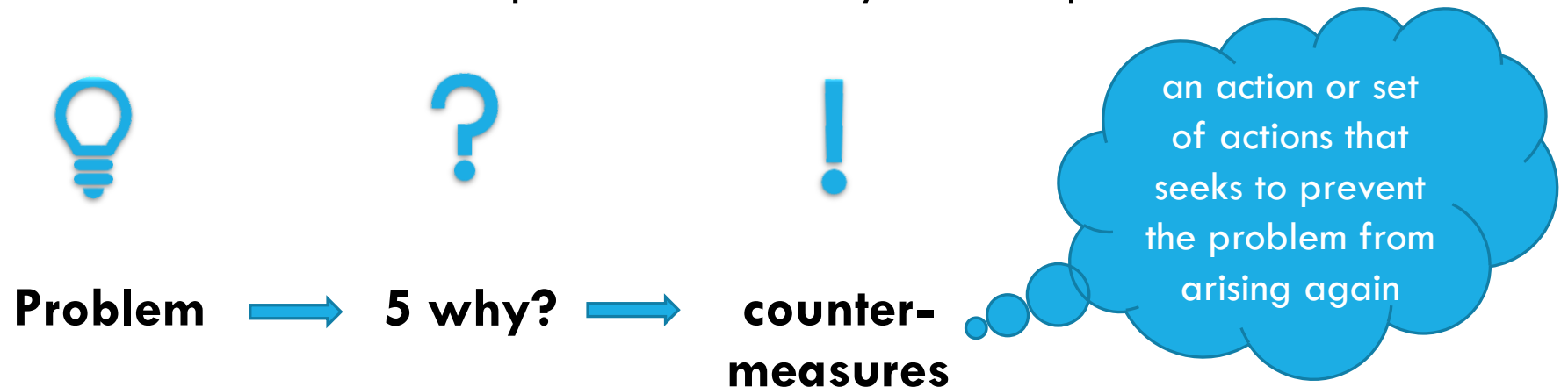
5 WHYS TECHNIQUE

It was developed in the 1930s by a founder of Toyota Industries and Toyota still uses it today.

The technique is used to find the symptoms of a problem to reveal its causes.

The answers come from people who have hands-on experience of the process or problem in question.

It is most effective when used to resolve simple or moderately difficult problems



5 WHYS - EXAMPLE

For want of a nail, the shoe was lost,
For want of a shoe, the horse was lost,
For want of a horse, the rider was lost,
For want of a rider, the message was lost,
For want of a message, the battle was lost,
For want of a battle, the war was lost,
For want of a war, the kingdom was lost,
For want of a nail, the world was lost

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5 WHYS TECHNIQUE



Assemble a Team



Define the Problem



Ask the First "Why?"



Ask "Why?" More Times



Know When to Stop

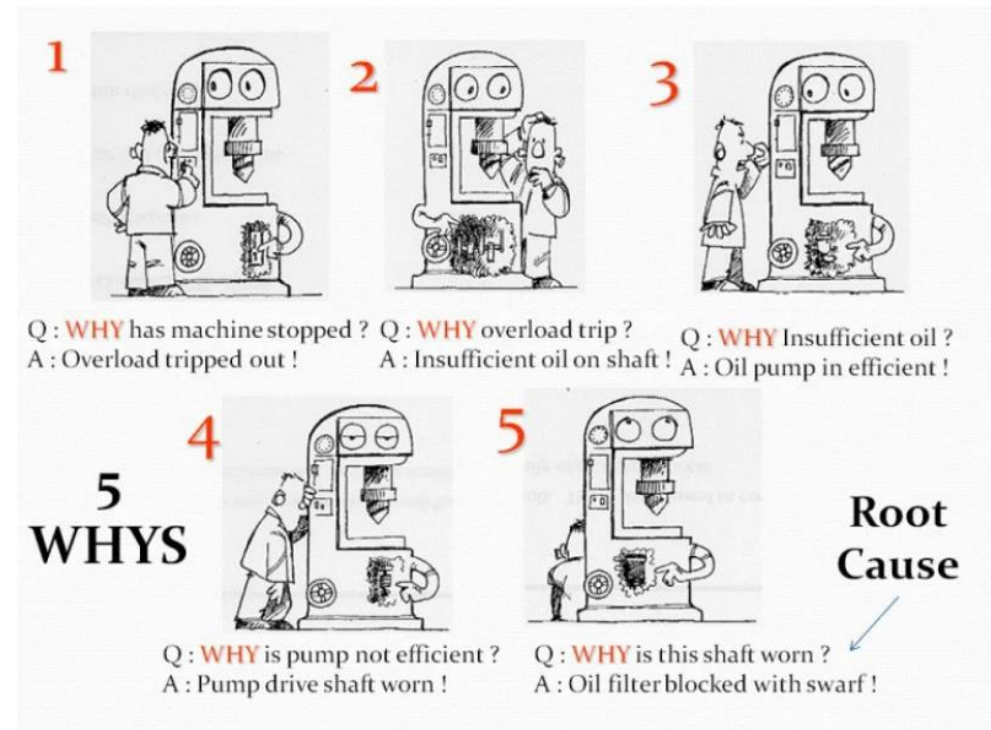


Address the Root Cause(s)



Monitor Your Measures

Source: <https://beingnimble.wordpress.com/2017/05/18/5-whys-in-practice/>



More about 5 whys:

https://www.youtube.com/watch?time_continue=115&v=B-M3YIA2KDg&feature=emb_logo

5 WHYS EXAMPLE

My students were bored

Why?

They were tired

Why?

The room was hot and crowded

Why?

The AC was not working

Why?

Nobody knows it should be fixed

counter-measure: repairing the air conditioning



WHAT ARE THE BENEFITS OF 5 WHYS ANALYSIS?

- Helps to understand the nature of problems
- Helps to devise collaborative solutions
- Helps to determine the root cause faster due to its lean and structured approach
- Doesn't require special qualifications
- Considers the opinions of all stakeholders
- Minimizes the risk of hurting sentiments

LET'S PRACTICE



Source: www.pixabay.com

STEP 2: CREATE A CONSTRUCTIVE ENVIRONMENT FOR YOUR DECISION

- Explore the situation with others and gain support
- Identify who to include in the decision-making process and who will be part of any final decision-making group
- Enable people to contribute to the discussions
- Make sure that everyone supports this decision

Collaboration Tools

- ✓ Personal Preparation for Great Decision Making
- ✓ Stakeholder Analysis
- ✓ Vroom-Yetton Decision Model
- ✓ Constructive Controversy
- ✓ Avoiding Groupthink

STEP 3: GENERATE GOOD ALTERNATIVES TO DECIDE BETWEEN

The wider the options you explore, the better your final decision is likely to be.

It can be helpful to use a variety of creative thinking techniques to step outside your normal patterns of thinking and come up with innovative solutions.

Brainstorming is probably the most popular method of generating ideas.



BRAINSTORMING

Brainstorming is a problem-solving method for generating creative ideas in a group setting.

It's especially helpful when trying to solve a problem that you are really close to.

The goal is to create a judgment-free space for everyone to participate so that innovation can thrive.

It is a great way for participants to share, combine, and build on each other's ideas so that you end up with a solution that is unique and effective.

The magic of brainstorming happens when someone shares an idea that then sparks other ideas and possibilities that the group can expand and build on.

RULES OF BRAINSTORMING

- Don't criticize any ideas.
- Encourage a wide variety of ideas.
- Build on each other's ideas.
- Don't be afraid to share unrealistic or unconventional ideas.
- Optimal group size is between 6 to 12 people
- Heterogeneous group targeted towards the ideas



CHALLENGES IN BRAINSTORMING

- Unbalanced conversation
- The anchoring effect
- Awkward silence
- Disconnected teams

STEPS OF BRAINSTORMING

STEP I: PROBLEM DEFINITION AND INTRODUCTION TO BRAINSTORMING

Election of the facilitator (moderator)

The moderator presents the essence of the problem

The moderator introduces the rules of participation

Select a person to write down the ideas

The discussion should not be recorded on audio or video

The session should not last longer than 30-60 minutes



STEPS OF BRAINSTORMING

STEP II: PRESENTING AND COLLECTING ALL IDEAS

Participants give ideas for solving the problem/finding solutions

The session can last from 5 to 25 minutes, depending on the number of participants and the difficulty of the problem raised

The end of this phase is marked by a clear decrease in the number of ideas submitted

The session can also end if the facilitator decides that the material collected is sufficient to solve the problem

Different methods of collecting ideas can be used



STEPS OF BRAINSTORMING

STEP III: ANALYSIS OF PREVIOUSLY SUBMITTED IDEAS

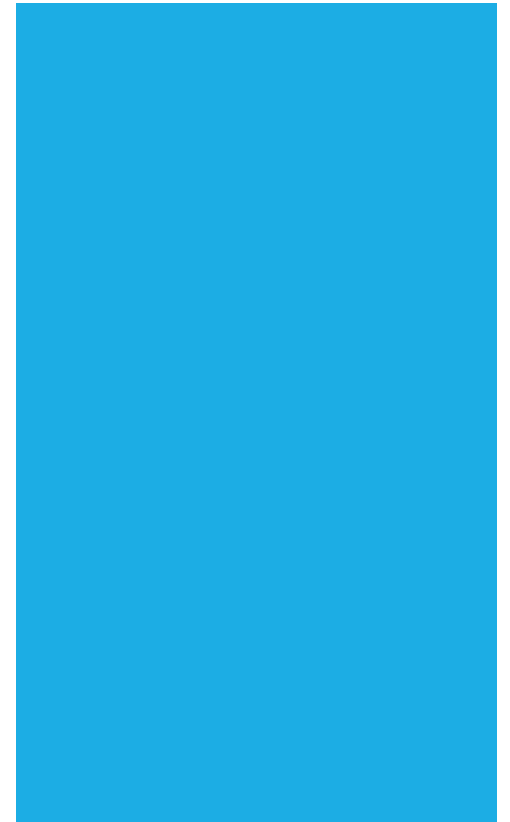
Discuss the ideas put forward

All the suggestions should be well understood by everyone

Group suggestions, remove duplicates

Choose the most appropriate solutions to the problem and justify their position

The best solution is implemented and tested for effectiveness



BRAINSTORMING TECHNIQUES AND METHODS

- ✓ Classic brainstorming
- ✓ Pinboard Cards
- ✓ 66 Philips method
- ✓ 635 method
- ✓ Reverse brainstorming
- ✓ Starbusting
- ✓ Figure storming
- ✓ Disney method
- ✓ Mind mapping



CLASSICAL BRAINSTROMING

- ❑ Participants say their ideas out loud
- ❑ This is a good method of brainstorming when participants are open, not afraid to speak and the group is not too large
- ❑ All invitees toss their ideas around and one person writes them on the board

PINBOARD CARDS METHOD

- ❑ presentation of overall topic for the participants (questions, tasks, and goals are outlined)
- ❑ everyone pins an idea or answer to the question on the wall (or application/chat)
- ❑ grouping ideas
- ❑ adding further posts to others

QUESTIONING TECHNIQUE

- ❑ The “Ws” are used in the questioning technique.
- ❑ “Who, What, Why, When, Where?” are asked over and over

Examples:

“Why does someone have problem X”

“Who could need product Y”

“Where can technology Z be used elsewhere?”

REVERSAL TECHNIQUE

- ❑ the opposite to questioning technique
- ❑ you can also clarify important questions like it should not be and then make it more efficient
- ❑ it is advised to use this technique at the beginning of each session to let the creative juices flow

Examples:

“Who could NOT need product Y”

“Where can NOT technology Z be used elsewhere?”

SUBJUNCTIVE METHOD

- ❑ no limits for yourself and consciously think “out-of-the-box”
- ❑ helps to make the thoughts freer
- ❑ make the initially impossible possible by just figuring out the impossible

Examples:

“What would have to happen for....”

“Under what circumstances would XYZ work?”

PHILLIPS 66 METHOD

Group discussion technique helping overcome the problem of silence in group situations

This method helps larger groups to brainstorm more effectively and gives all participants the space and freedom to express themselves equally

STEP 1 Divide participants up into smaller teams and if possible have people sit so that they will not be overheard by others.

STEP 2 The team selects a spokesperson who will record and present the team's ideas.

STEP 3 Present a problem or an issue for discussion. After a 6 minute discussion, ideas are recorded.

STEP 4 Each team evaluates their ideas, edits and presents them to the conference facilitator which will probably be you!

STEP 5 All ideas are then discussed and can be displayed in poster style around the room.

635 METHOD

It is a method that is good if you want to generate a lot of ideas in a very short time.

The idea: 6 people - 3 ideas - 5 minutes

Each person gets a sheet of paper and writes down 3 ideas in 5 minutes

Then the person passes the sheet to the person next to him and gets a completed sheet from another person.

Next, each person adds another 3 ideas to the other person's written ideas for another 5 minutes. Seeing the suggestions of others, a person can expand them, overwrite them or come up with something new.

Within 30 minutes, we can collect as many as **108** ideas during one brainstorming session.

METAPLAN

In this method of brainstorming, the group talks about a specific problem and, in addition, completes a poster posted with 4 questions:

- How is it?
- How should it be?
- Why is it not as it should be?
- Conclusions and solution of the problem.

REVERSE BRAINSTORMING

- ❑ goal of the workshop is not the solution, but the problem
- ❑ focus on the problem and possible causes for the problem beforehand

Step 1: All group members are encouraged to come up with ideas on how to cause the problem. This involves collecting all ideas, for example through pin board cards or other brainstorming methods, to cause the problem.

Step 2: The identified problems and problem triggers are then used as the basis for the next step. As with classic brainstorming, the focus is then back on the solution. In this way, elements that have a possible impact on the problem can be addressed individually.

STARBUSTING

- ❑ to deal issues that are very complex
- ❑ easy to use and works best in teams

Step 1: The facilitator introduces the problem and encourages the participants to ask as many questions as possible about the problem

Step 2: The problem is examined from many different angles and these questions can then be answered as a basis for further discussion or serve as a conversation starter

FIGURE STORMING

- ❑ take in account other perspectives (e.g. customers, suppliers, students etc.).
- ❑ use the classic brainstorming method to collect ideas, but **from another person's point of view**

Examples:

How would an external consultant solve this problem?

What would a student expect from us during classes?

How would you, as the Dean/Rector, solve this problem?

DISNEY METHOD

- ❑ creativity method as well as a decision-making aid in one
- ❑ related with role play
- ❑ parallel thinking to analyse a problem, generate ideas, evaluate ideas, construct and critique a plan of action
- ❑ works best with a team of 3-4 people, but can also be done alone



Source: www.pexels.com

DISNEY METHOD

Dreamer

- thinks freely of “realistic” or “practical”
- finds the most creative ideas possible
- speaks, enthusiastic, passionate, and does not think about feasibility

- What do we want?
- How can we imagine a solution?
- What are some potential benefits of this solution?

Realist and Doer

- is characterised by neutrality as well as the impartiality towards topics
- considers the costs, the technical and practical feasibility of the ideas as well as the capacities of teams, technologies and the time required for their implementation
- has to realize EVERY idea according to the motto “I realize everything”

- How can we apply this idea?
- What is our action plan?
- What is our timeline?
- What resources would we need?

DISNEY METHOD

What could go wrong with this idea?
What is missing?
What are some potential weaknesses?

Critic

- uses critical questioning, worst-case scenarios, unpleasant truths, weighing things up, and finding weak points
- carefully weighs up the ideas and find the weak points that would cause implementation or failure

Neutral

- works with the 3 rollers (1-3),
- assumes the neutral position of an outsider (a customer, a supplier, the press, or another person observing from outside).

LET'S PRACTICE



Source: www.pixabay.com

MIND MAPPING

a non-linear, visual
brainstorming method

a graphical way to represent
ideas and concepts

helps to structure information,
better analyze, comprehend,
synthesize, recall and generate
new ideas

avoids dull, linear thinking,
jogging your creativity and
making note taking fun again



Source: www.pixabay.com

CONCEPT OF MIND MAPPING

First popularized by British popular psychology author and television personality Tony Buzan in 1972

The effectiveness of mind mapping is based on its reflection of natural thought processes

In a mind map, as opposed to traditional note taking or a linear text, information is structured in a way that resembles much more closely how your brain actually works

Using mind mapping you stimulate both hemispheres to work, thus increasing the intensity and effectiveness of our intellectual abilities

Since it is an activity that is both analytical and artistic, it engages your brain in a much, much richer way, helping in all its cognitive functions



WHAT IS MIND MAP?

A mind map a diagram used to visually organize information

A mind map is hierarchical and shows relationships among pieces of the whole

It is often created around a single concept, drawn as an image in the center of a blank page, to which associated representations of ideas such as images, words and parts of words are added

Major ideas are connected directly to the central concept, and other ideas branch out from those major ideas



WHAT CAN WE USE MIND MAPS FOR?

Note taking

Brainstorming (individually or in groups)

Problem solving

Studying and memorization

Planning

Researching and consolidating information from multiple sources

Presenting information

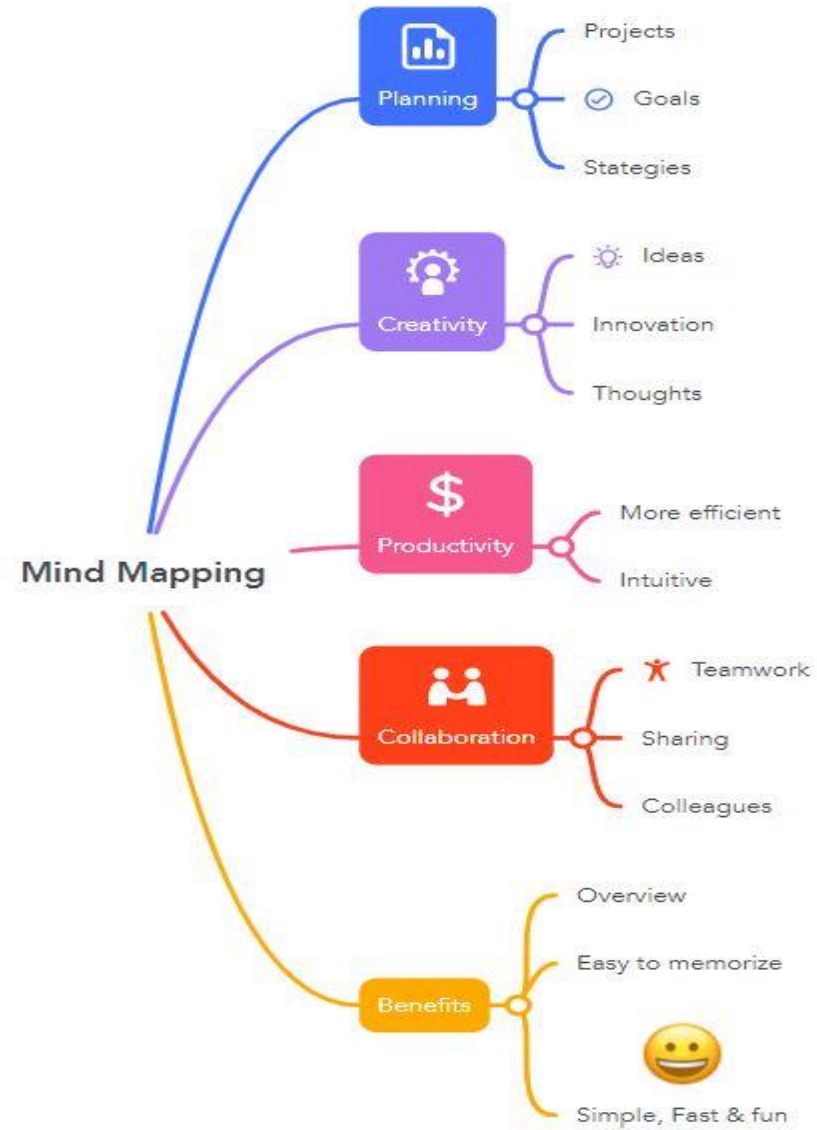
Gaining insight on complex subjects

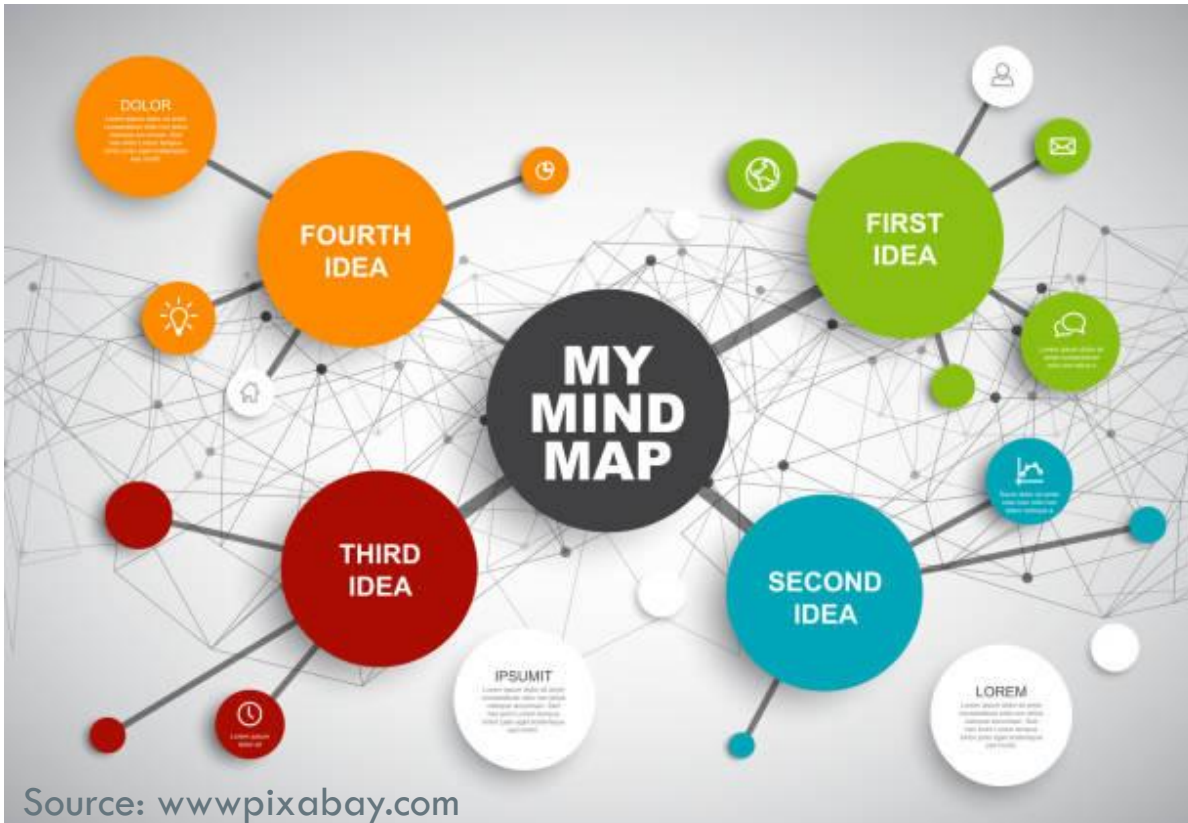
Jogging your creativity



Source: www.pixabay.com

WHY MIND MAPPING?





MIND MAPPING

HOW TO DO IT?

1. Start in the middle of a blank page (landscape orientation) writing or drawing the idea you intend to develop
2. Develop the related subtopics around this central topic, connecting each of them to the center with a line
3. Repeat the same process for the subtopics, generating lower-level subtopics

MIND MAPPING

1. Use colors, drawings and symbols copiously
2. Keep the topics labels as short as possible, keeping them to a single word or only a picture.
3. Vary text size, color and alignment.



Source: www.pixabay.com

IT TOOLS FOR FREE FOR MINDMAPPING

- Miro
- Canva
- GitMind
- Freeplane
- FreeMind
- Coggle
- Mindomo
- Bubbl



HOW TO USE MIRO:

<https://www.youtube.com/watch?v=PFm3KGGqfsk>

HOW TO USE CANVA:

<https://www.youtube.com/watch?v=c7ctpKrmKj8&t=97s>

LET'S PRACTICE



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Thank you for your attention!

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