

Creative

Problem Solving

NASA Genius Test (divergent thinking)

3-5 years

98%



8-10 years

32%



13-15 years

10%



Adult


2%



Agenda

- Creativity
- Measure your own creativity level
- The process of solving problems
in a creative way

What is creativity?

A photograph of Ken Robinson, a man with glasses and a dark suit, speaking on a stage. He is gesturing with his right hand. The background is dark with some blue and red lighting.

*"Creativity is the process
of having original ideas
that have value"*

Ken Robinson

What is an idea?

"... the triumph of association"

Robert Frost

"An idea is nothing more nor less than a new combination of old elements"

James Webb Young





creativity
is a kind of
WORK

Can we measure creativity?



Use circles as
a prompt for drawing!

Draw for 2 minutes

Creativity Indicators

- **Fluency**
 - Producing many original ideas easily
- **Elaboration**
 - Enhance ideas by providing more details
- **Flexibility**
 - Coming up with many different kinds of ideas
- **Originality**
 - Production of ideas that are unique or unusual

Use the circles as a prompt for drawing. Draw for two minutes.

Anna



face



face



face



face



face

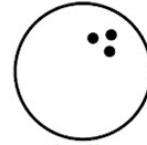
Benji



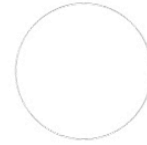
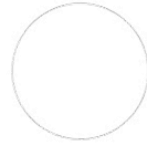
face



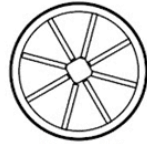
wheel



ball



Carol



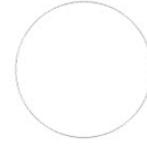
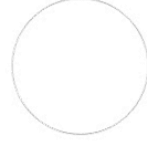
wheel



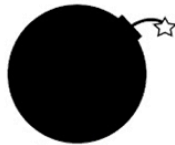
wheel



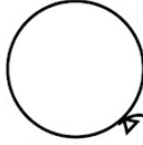
ball



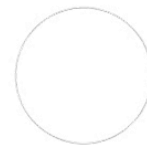
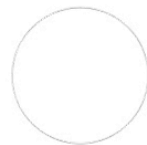
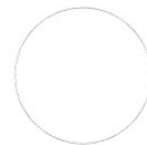
Darlene



bomb



balloon



Eric



face



face



face



Other Creativity Tests

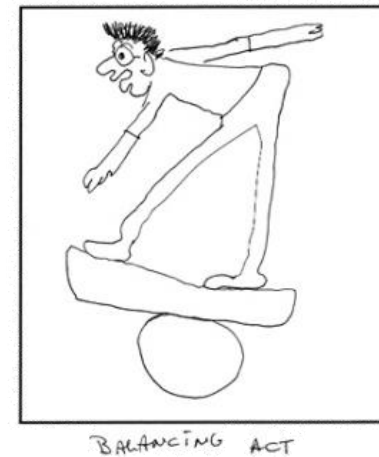
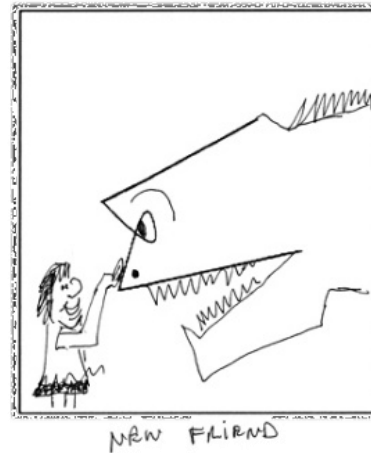
- You have two minutes...
 - *How many uses can you think of for a paper clip?*
 - *Enumerate all transparent objects.*
 - How many similarities do you see between the following two objects?

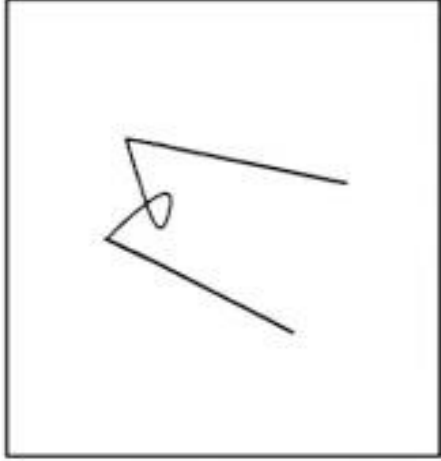


Other Creativity Tests

- You have three minutes...
 - What would happen if the sun disappears?
 - You're given a shape like the below, and then asked to complete the image

Are they elaborate?



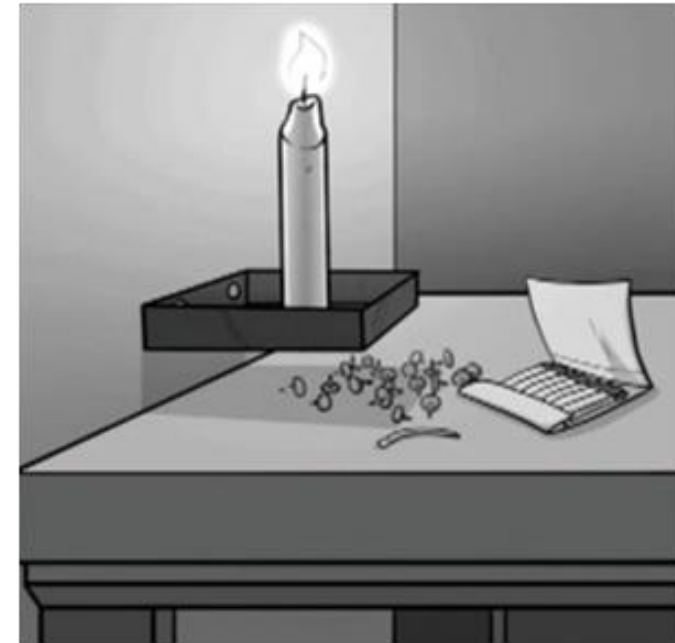


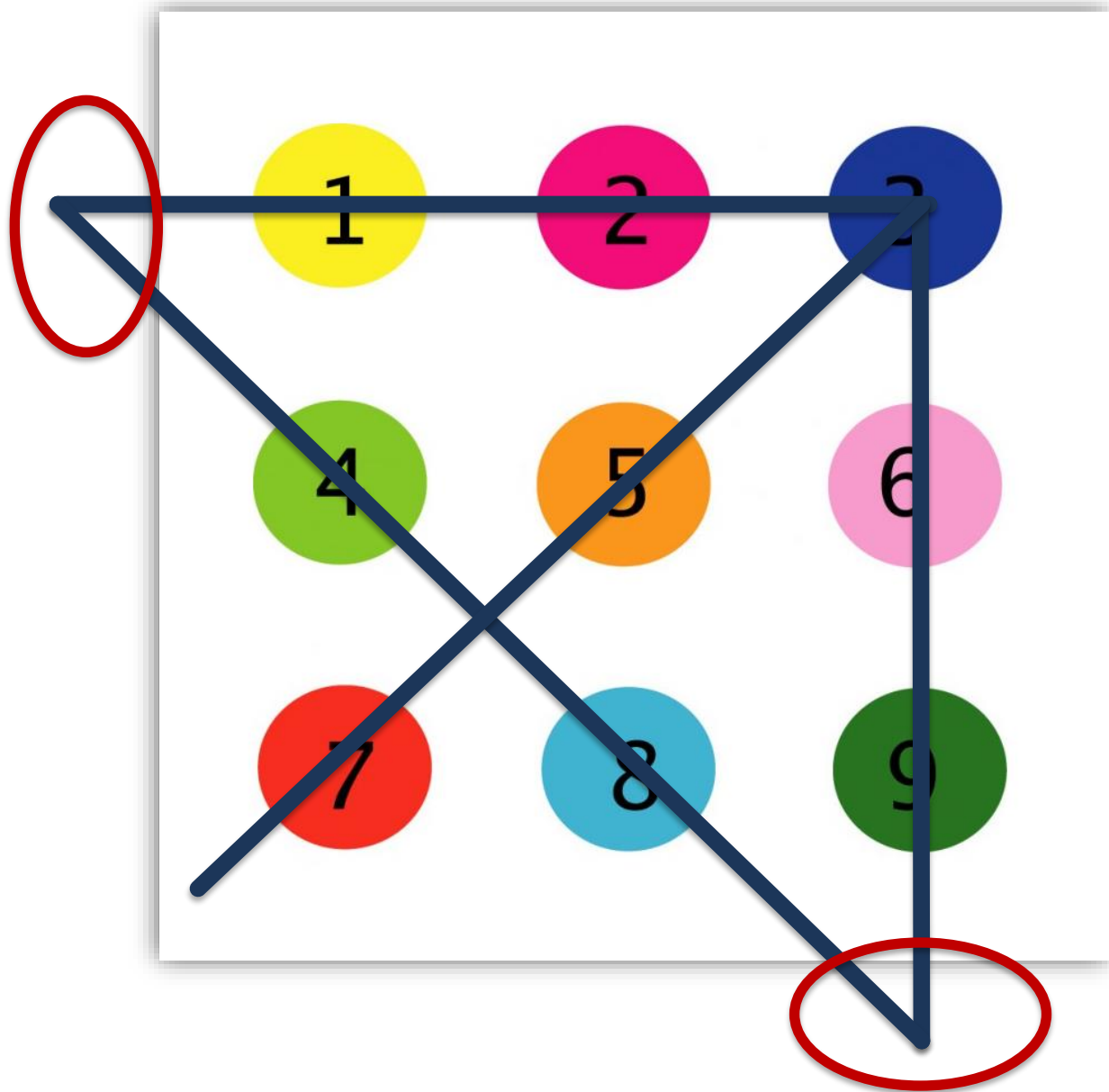
THINK OUTSIDE THE BOX

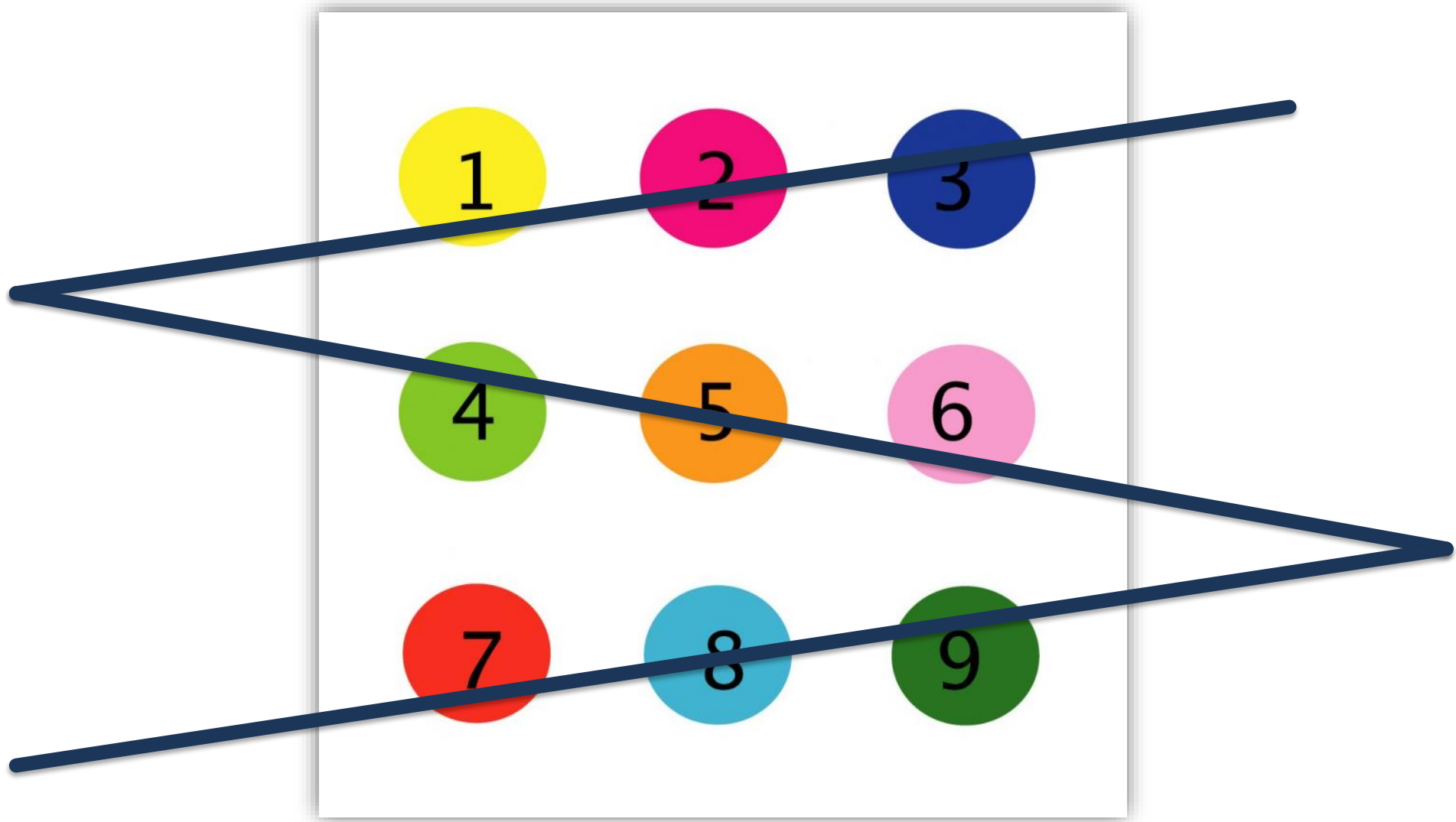
X	O	X
O	O	X
O	X	O

Other Creativity Tests

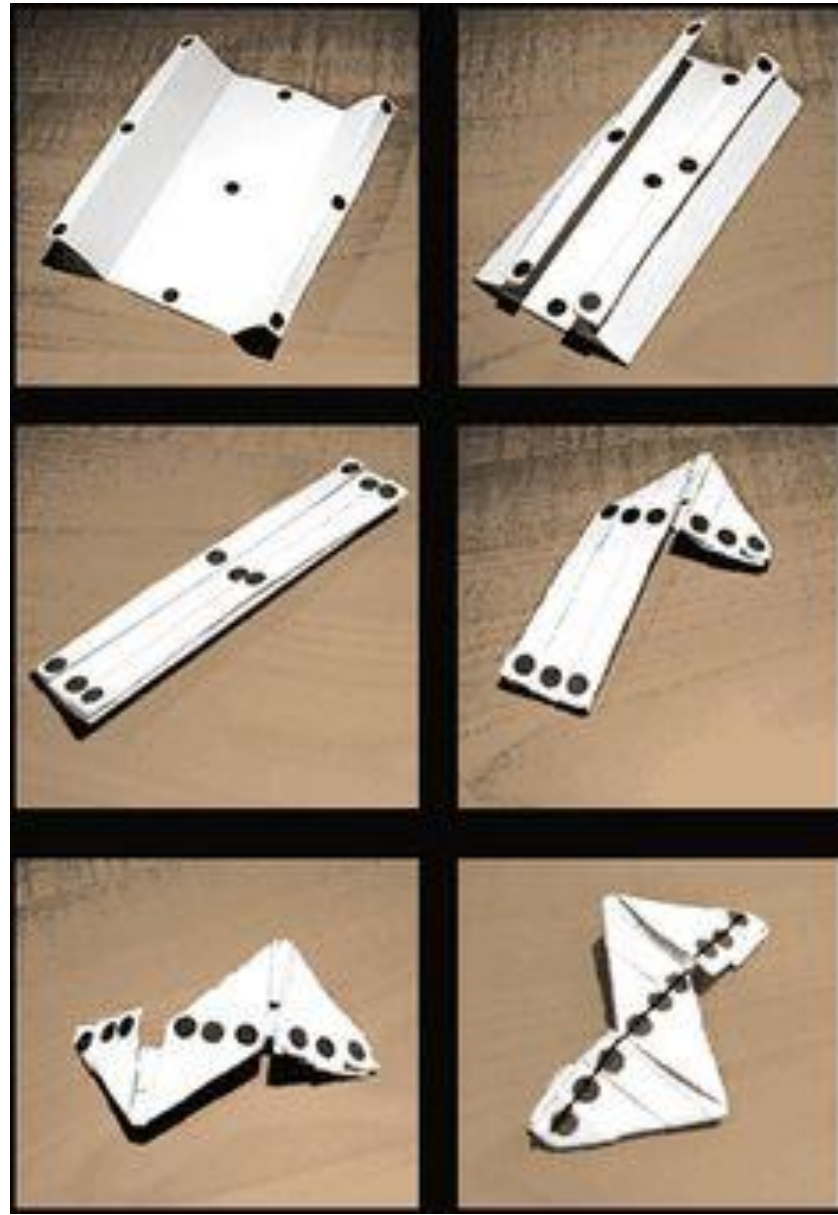
Candle problem

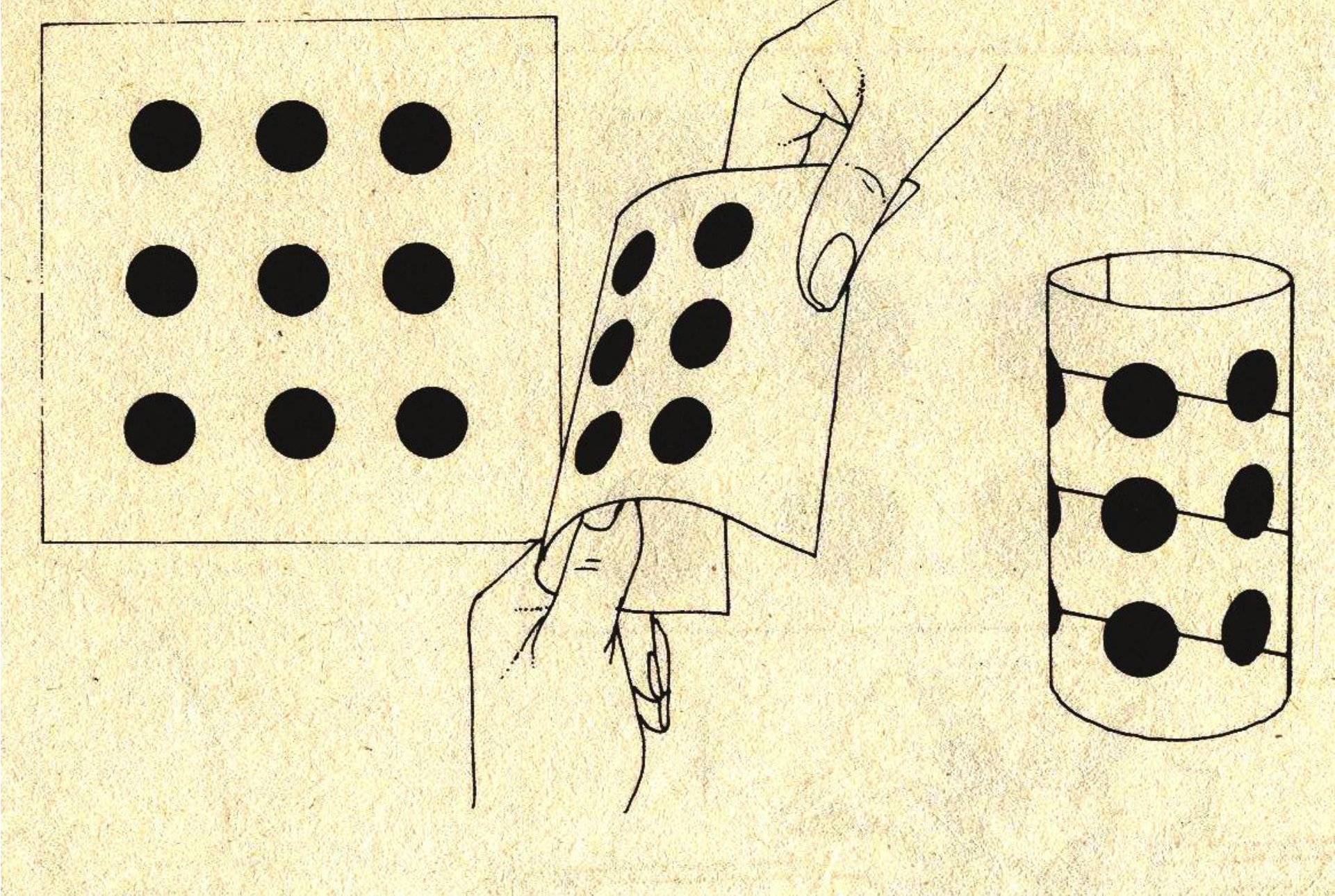




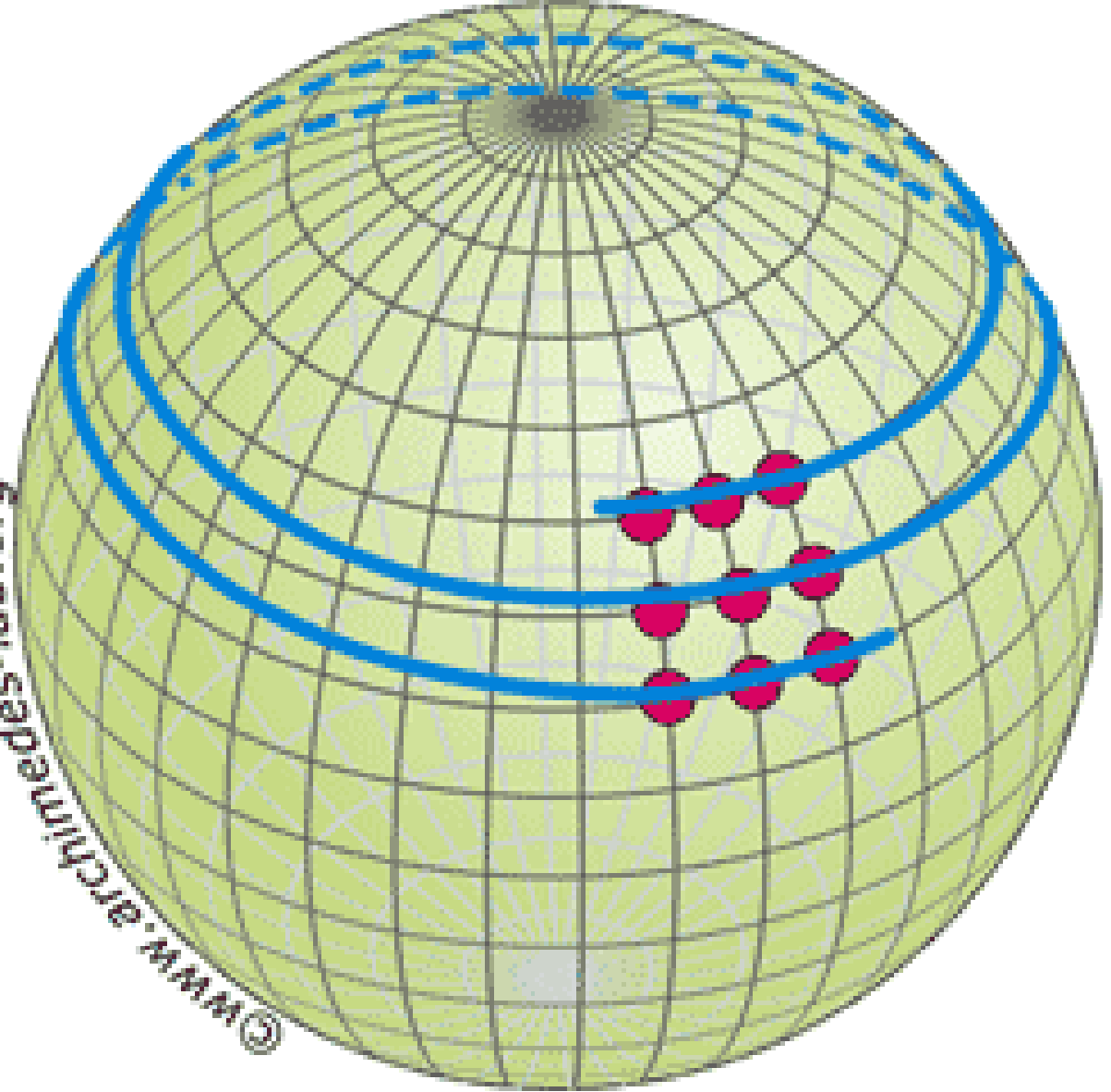








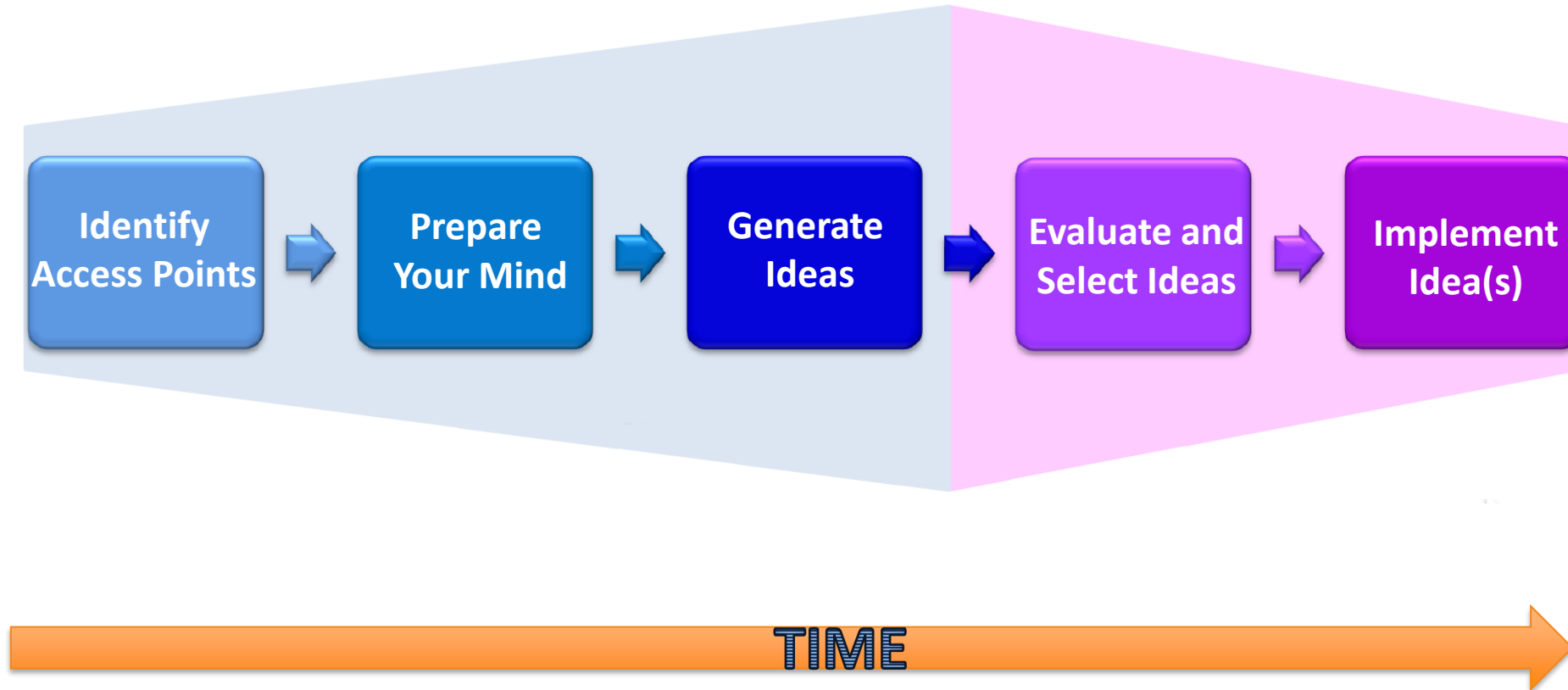
www.archimedes-lab.org ©



**A QUICK JUMP
OUT OF THE BOX
IS MORE INSIGHTFUL THAN
A LIFETIME OF
STANDARD THINKING**

Giovanni E. Corazza

Process of creative problem solving



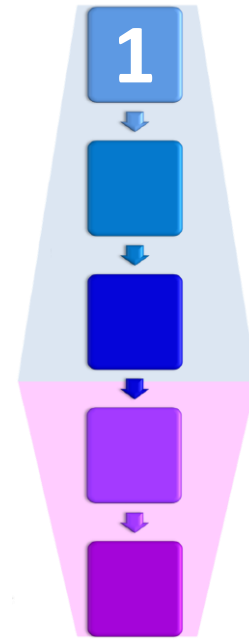
Identify Access Points

Objective

Identify many access points to solve the problem

Technique

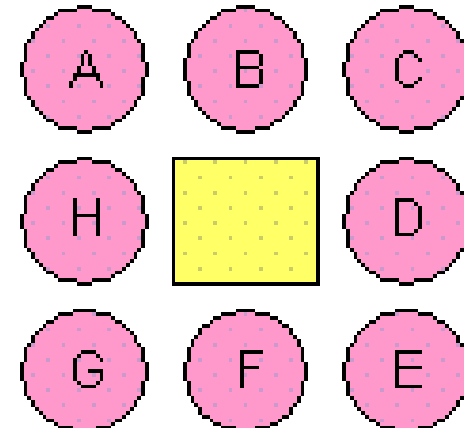
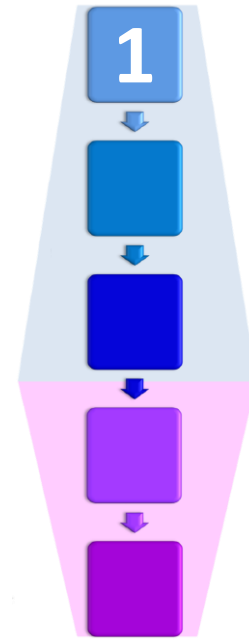
Lotus Blossom Diagram



Identify Access Points

Lotus Blossom Technique

1. Write your central theme / problem in the center square
2. Think of 8 related ideas or applications (access points)
3. Write ideas in the surrounding circles (A-H)



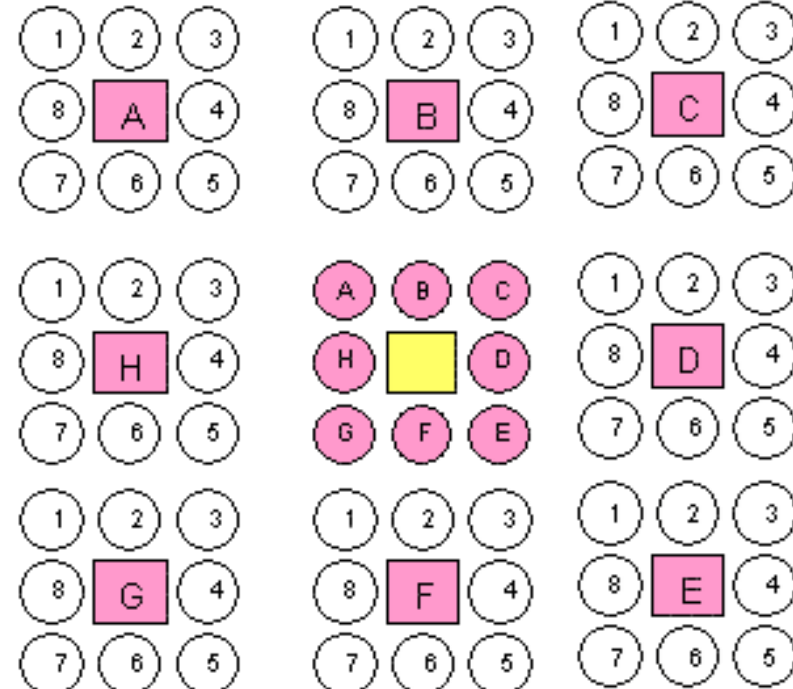
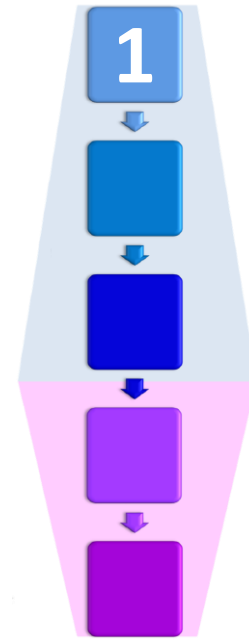
Identify Access Points

Lotus Blossom Technique

4. Use the ideas written in each of the eight surrounding stars as the central themes for another eight ideas

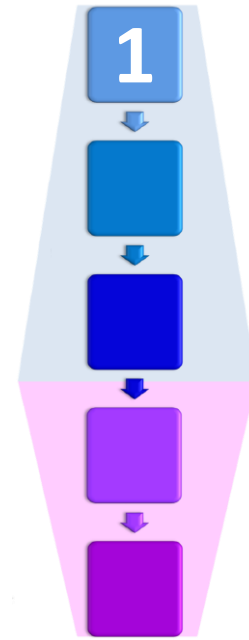
5. Try to think of 8 new ideas involving the new central theme

→ **64 ideas!**



Identify Access Points

1 Invitation Only	2 Chocolate Invite	3 Recipe Book						
8 Chocolate Media Kit	A Launch Event	4 Celebrity Appearance						
7 Chocolate Themed Decor	6 Happy Hour w/ Chocolatinis	5 Nationwide Series of Events						
			A Launch Event	B Public Relations	C Packaging			
			H Grass roots marketing	High-end Chocolate	D Distribution			
			G Advertising	F Sampling	E Partnerships			

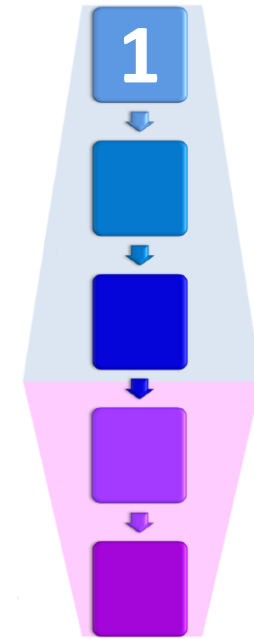


Identify Access Points

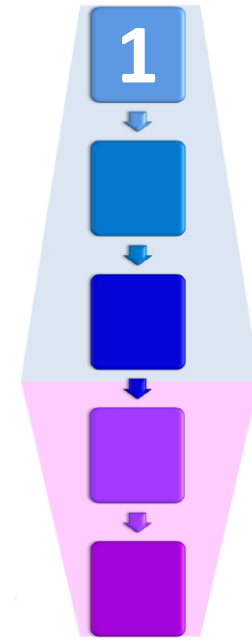
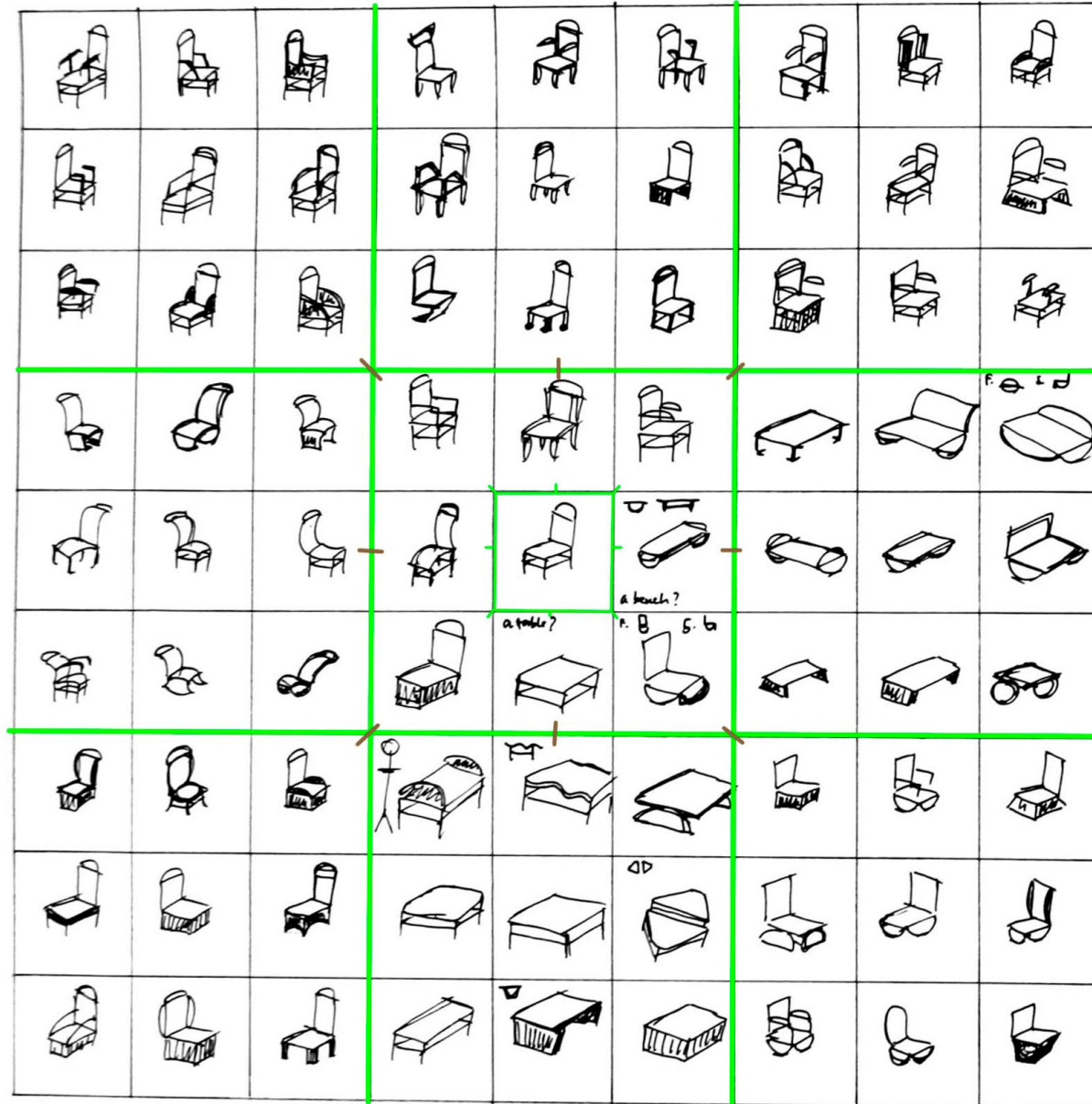
Lotus Blossom Daisy Diagram

Instructions: Place topic in the center black area, surround with major categories. Cascade categories to matching "petal" boxes. Brainstorm 8 new ideas for each category.

6 Twitter	3 Keep log of what we could find/answer	7	6 demographic studies	3 Gentle advice - detective work	7	6	3	7
2 Track problems left at desk.	F Mining existing user ques. & data	4 Look at search logs for social studies (understanding)	2 Spy on public terminals - what is happening there	C Direct Observation	4 Usability tests virtual & physical	2	G	4
5 User survey data	1 Look for things people have trouble with via Ask Us	8	5 Obstacle course...	1 Look/Study search logs	8	5	1	8
6	3	7	F mining existing user ques. + data	C direct observation	G tools to capture user beh. trends	6 look at whole process	3 different locations + different devices	7 look at emotional experience
	B	4	B help users stand in staff shoes	help staff develop empathy for users	5 use our services	2 usability tests every fall + spring	D USE OUR SERVICES	4 outside libraries help - e.g. writing center, etc.
	1	8	E Student liaisons	A help staff stand in users' shoes	H frame staff comm around user perspective	5 use library spaces for staff work	1 develop set of tasks that use services	8 Camp + other + contact
ents sons	3 use surveys as marketing tools	7 Film a student doing something + show it to staff.	6 Be in faculty spaces.	3 Freshman advising	7 show TA's connect w/ loc. through their work. Attend their lectures/talks.	6	3 user personas for evaluating services/projects etc.	7
ent ts- etc.	E STUDENT LIAISONS	4 Invite students to all-staff mtgs. (to communicate something)	2 Visit classrooms, library, dorm, other places/spaces where students/patrons live/spend time.	A Help staff stand in users' shoes	4 Be involved in MIT community - join activities when students are involved.	2 Getting staff to remember the user when working on projects/amb work	H frame staff comm. around user perspective	4
	1 System of points rewards for prosth... retizing	8	5 Make personal connections to faculty (shadow "office w/ a librarian")	1 Give students video cameras so we can see their entire experience	8 Read admissions' office blogs	5	1 Annual report to users	8



Identify Access Points



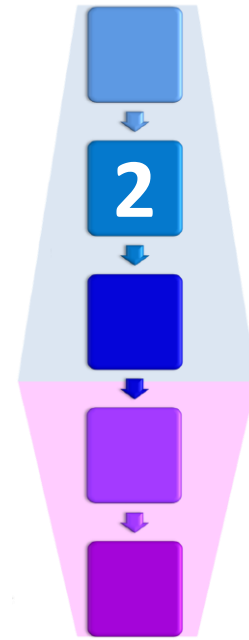
Prepare your mind

Objective

Clear your mind of common ideas

Technique

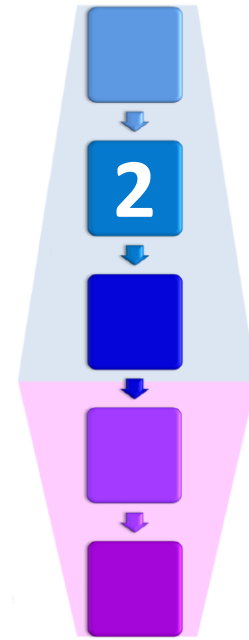
Short brainstorming

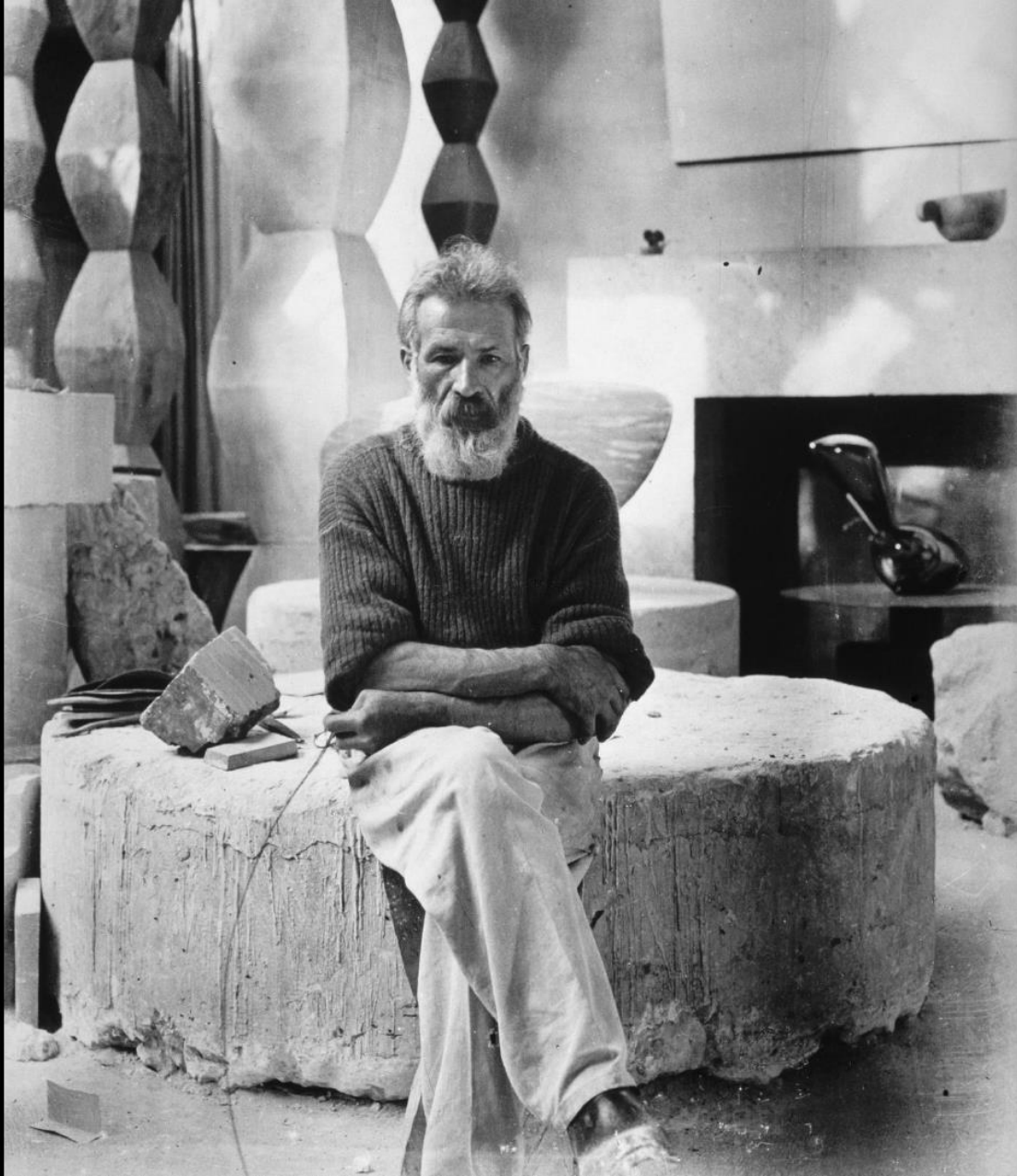


Prepare your mind

Brainstorming

- Don't judge the others ideas
"There are no bad ideas"
- Encourage crazy ideas
"There are no ridiculous ideas"
- Quantity not quality
"We just think, not reflect"
- Each person has the same importance
"There is no hierarchy"
- Create ideas from other ideas





**"Things are not
difficult to be done,
the most difficult is
to put yourself in the
state of doing them"**

Constantin Brâncuși

Generate Ideas

Objective

- generate a high number of ideas
- preserve brainstorming rules

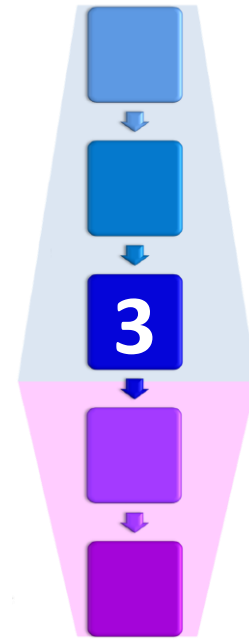
Techniques

Great Minds

Break the Law

Roulette

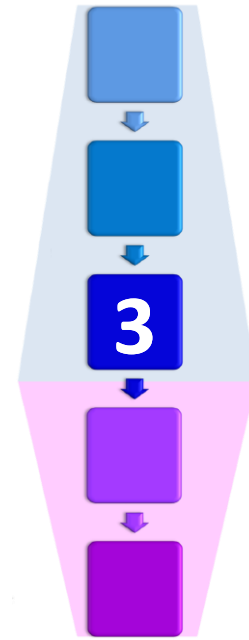
S.C.A.M.P.E.R.



Generate Ideas

Great Minds

1. create a list of inspirational quotes
2. random chose one quote
3. write down all thoughts you have related to quote (even if they are not related with your problem)
4. Combine, develop, associate ideas, create links with your problem



Generate Ideas



"If you hear a voice within you say, 'You cannot paint,' then by all means paint, and that voice will be silenced"

Vincent Van Gogh

"Originality is nothing but judicious imitation"

Voltaire

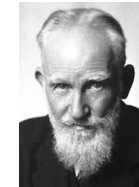


"Creativity comes from a conflict of ideas"

Donatella Versace

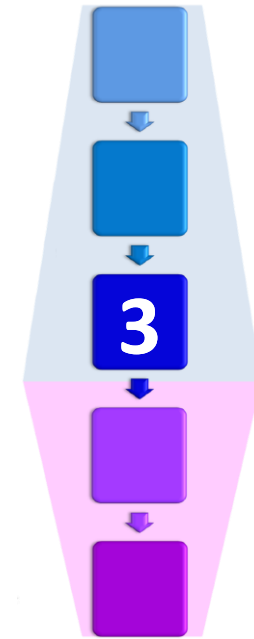
"You see things; and you say, 'Why?' But I dream things that never were; and I say, 'Why not?'"

George Bernard Shaw



"Learn the rules like a pro, so you can break them like an artist."

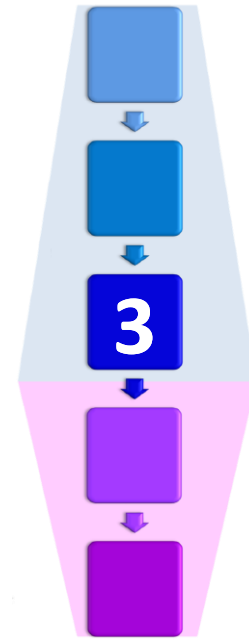
Pablo Picasso



Generate Ideas

Roulette

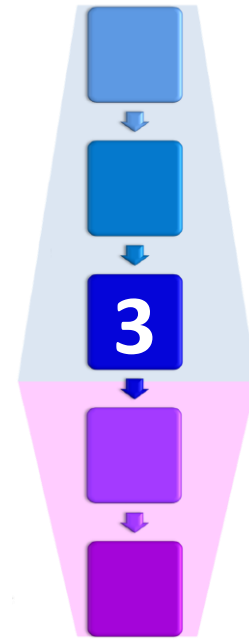
- Write down the problem or challenge
- Random chose an item/object that is not linked with the problem/challenge
- Write down all ideas about the item and/or item attributes
- Think how you can associate, connect, oppose or combine these ideas with your problem/challenge.



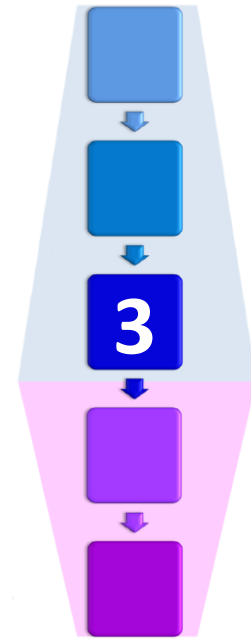
Generate Ideas

Break the Law

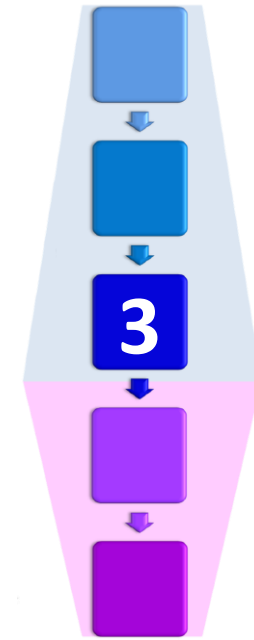
1. List all assumptions & rules about the topic
2. Search the opposite/contrary of the assumption/rule (if you do not find it ask yourself why)
3. How could we obtain an advantage from this



Generate Ideas

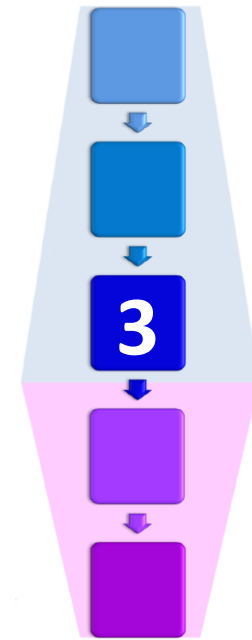


Generate Ideas



Generate Ideas

Seneca Anticafe (Bucharest) – you only pay for time.



Generate Ideas

S.C.A.M.P.E.R.

Substitute or Replace

Combine two or more objects

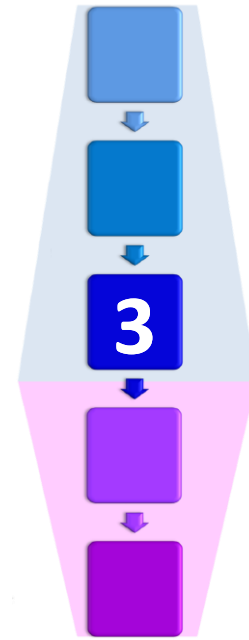
Adapt or change to fit the situation

Modify/**M**inify/**M**agnify- change an attribute

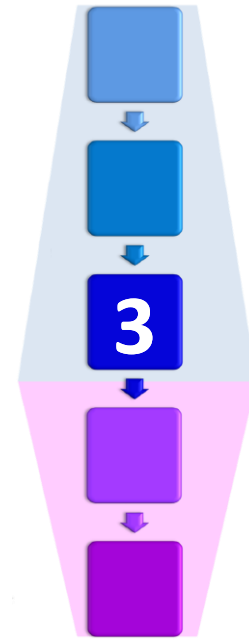
Put to other use – a new use for something

Eliminate – remove or omit one or more parts

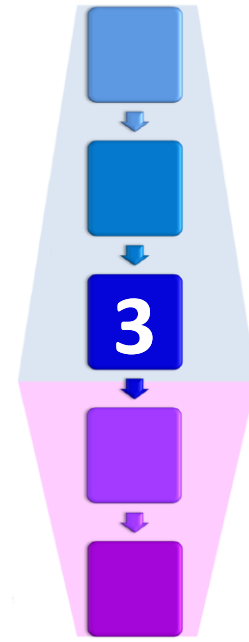
Reverse/Rearrange – put it in a different order



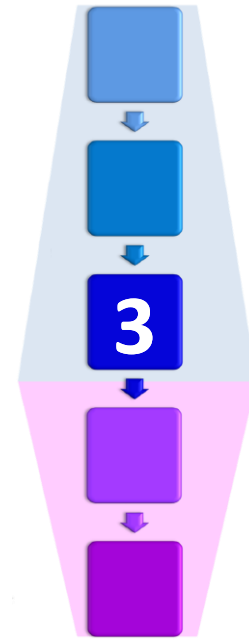
Generate Ideas



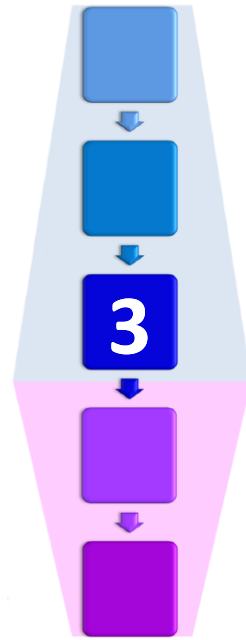
Generate Ideas



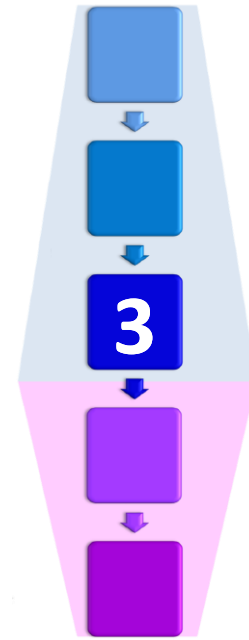
Generate Ideas



Generate Ideas



Generate Ideas



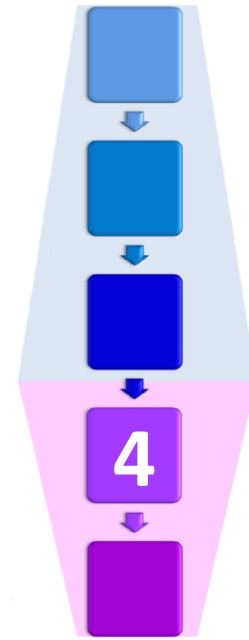
Evaluate and Select Ideas

Objective

Identify feasible solutions and

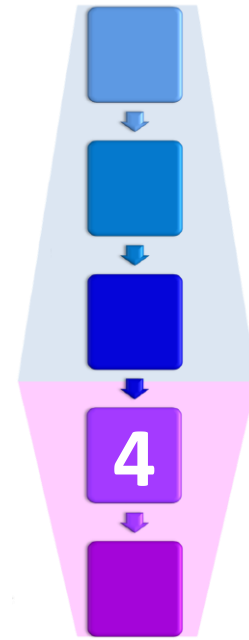
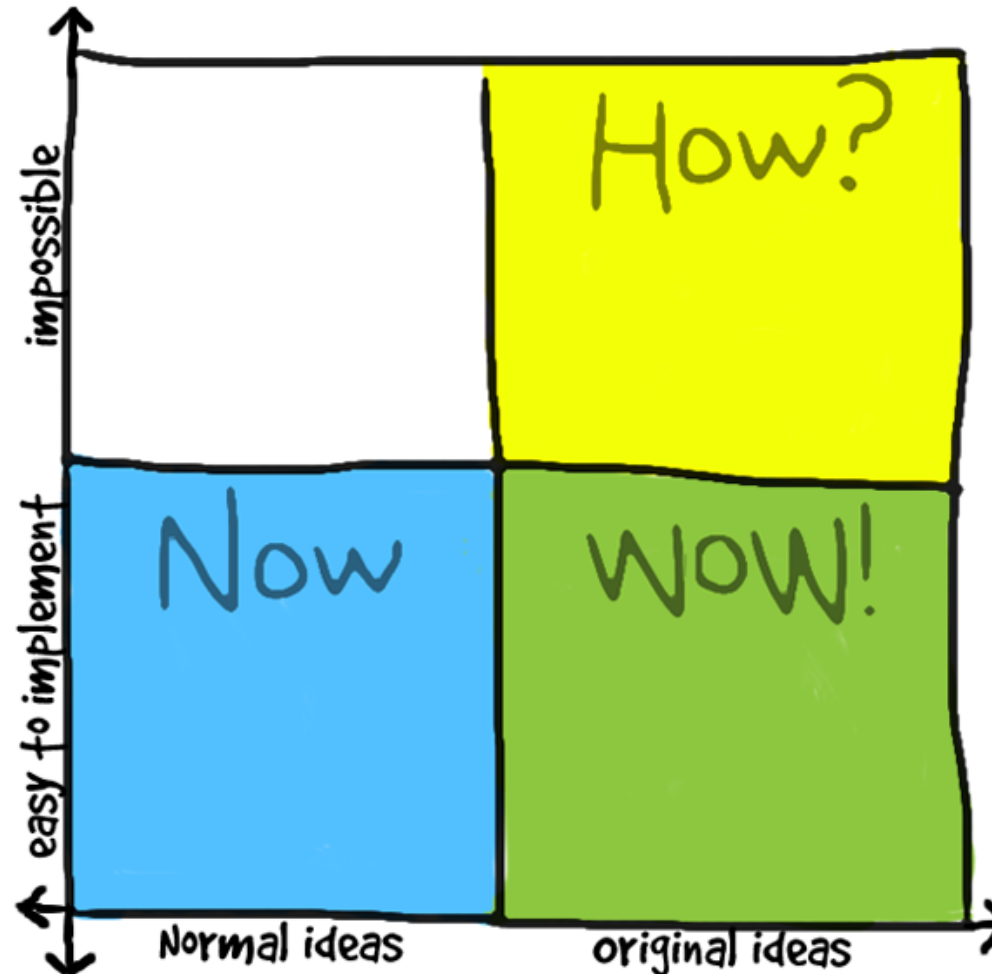
Technique

Now!, How?, Wow!

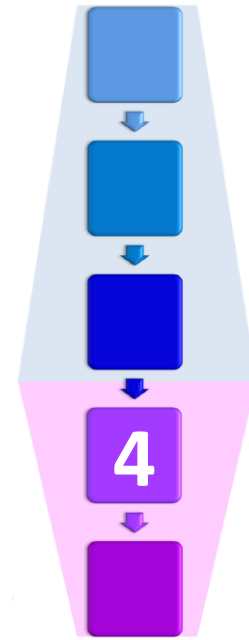


Evaluate and Select Ideas

Now, How?, Wow!



Sleep
on it!



“What is often lacking is not creativity in the idea-creating sense but innovation in the action-producing sense, i.e. putting ideas to work.”

Theodore Levitt

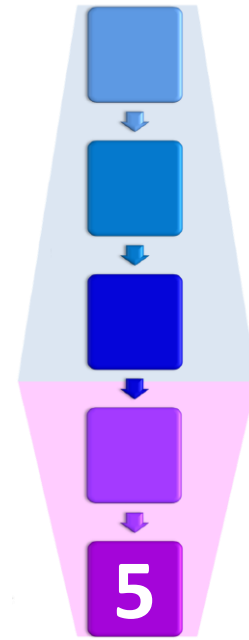
Implement Idea(s)

Objective

- Start implementing the solution
- Activate all elements involved in solving the problem

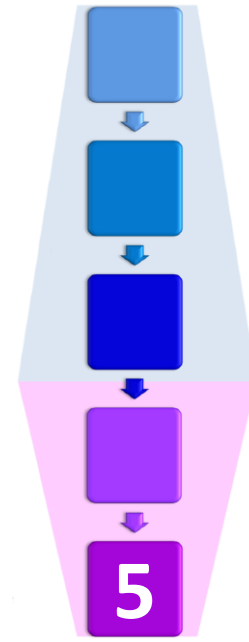
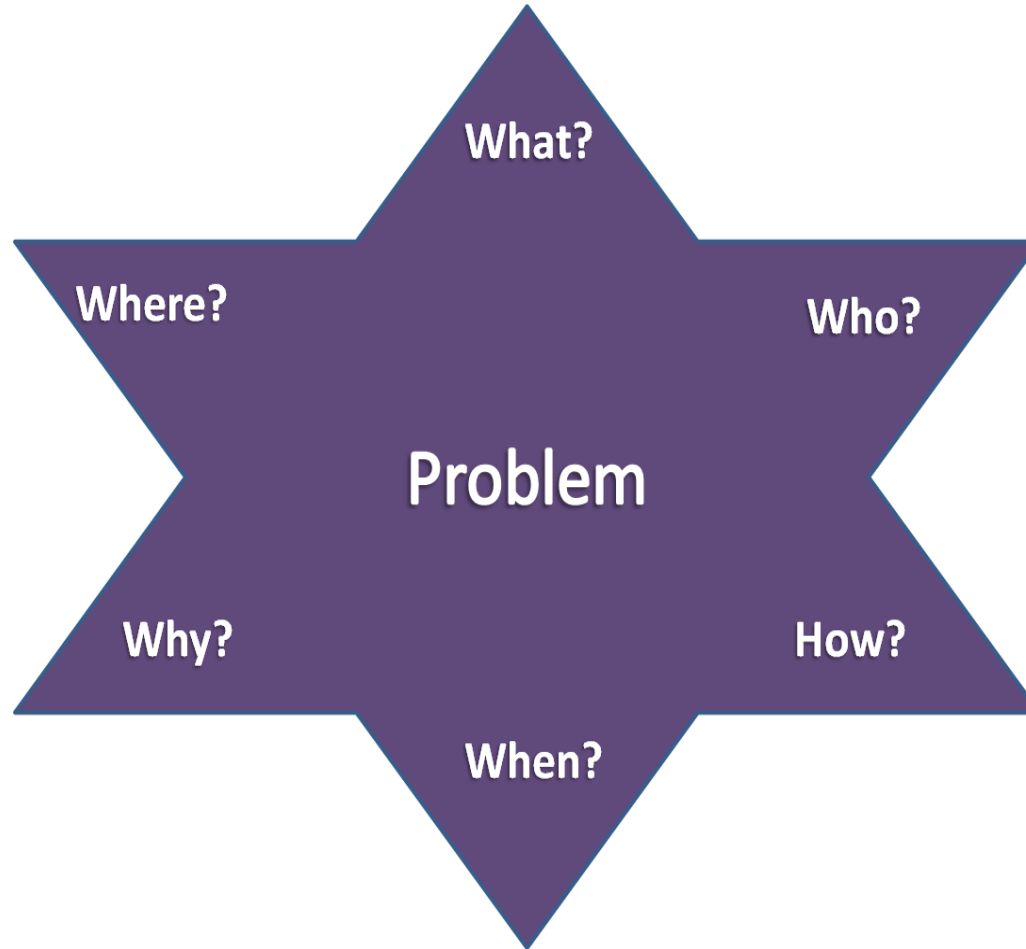
Technique

- Starbusting

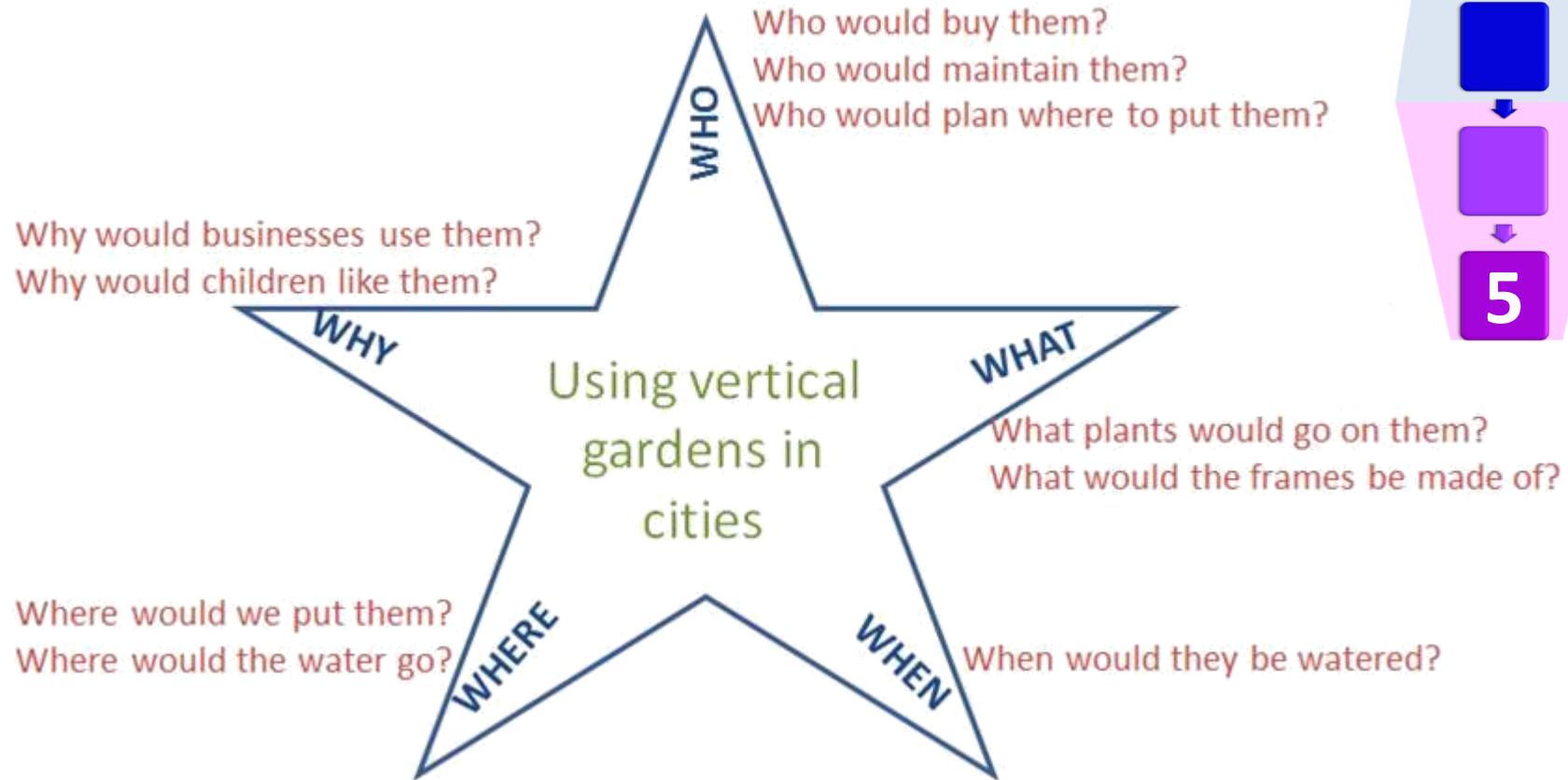


Implement Idea(s)

Starbusting



Implement Idea(s)



Creative Problem Solving Techniques

