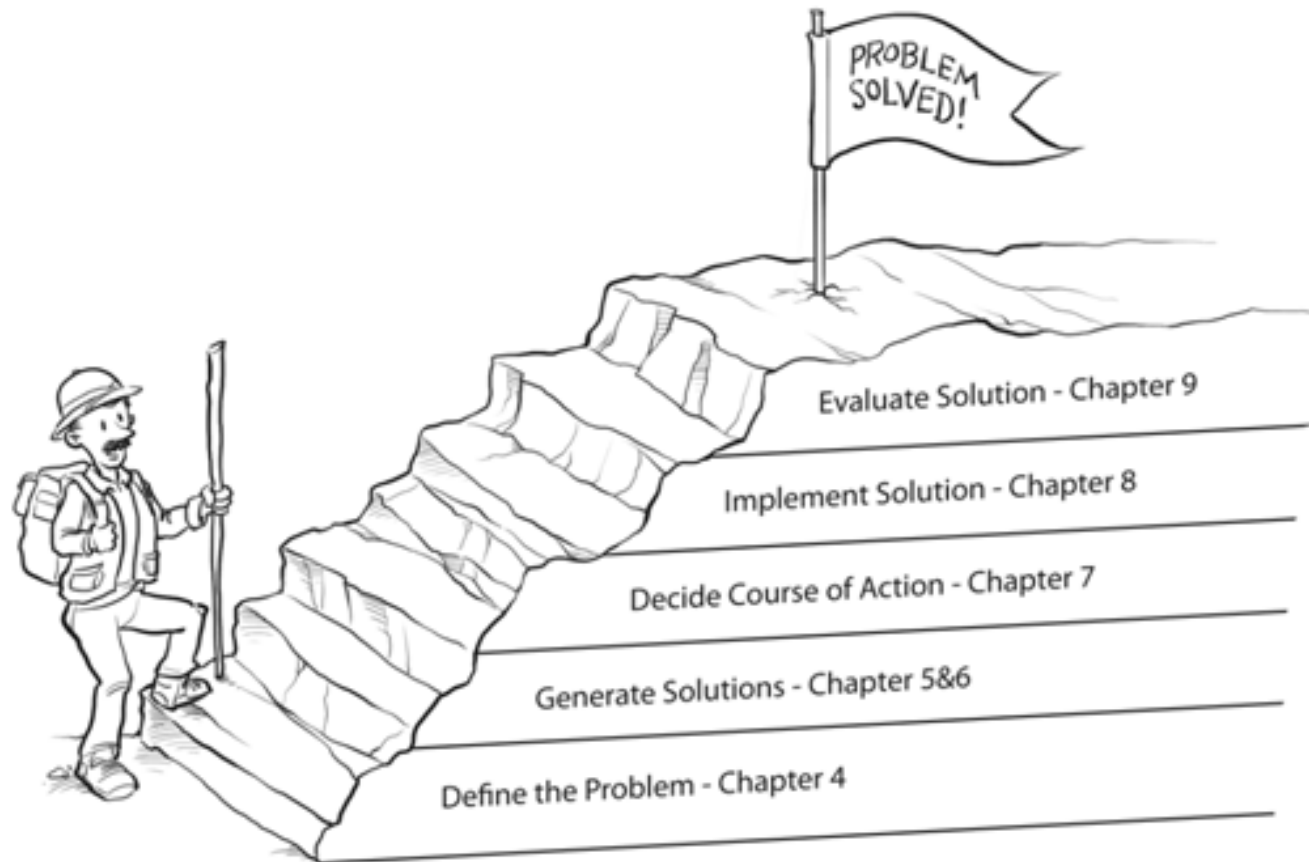


The Five Building Blocks of the Heuristic



Chapter 7

Generating Solutions

Nothing is more dangerous than an idea, when it is the only one you have.

- Emile Cartier

Creative Thinking

Creative Thinking

The process we use to develop ideas that are unique, useful and worthy of further elaboration.

Creative thinkers

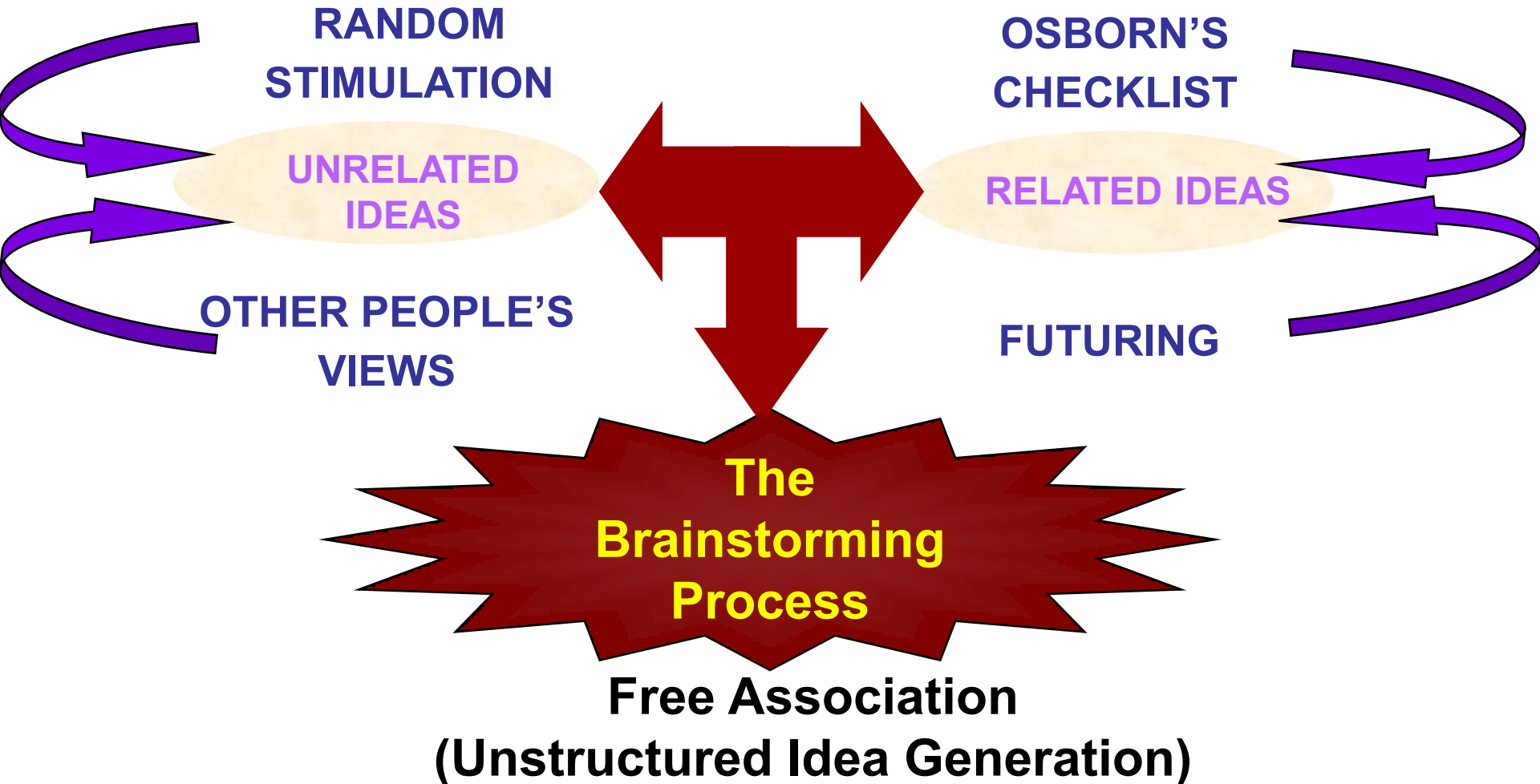
- Consider rejecting standardized formats for problem solving
- Have an interest in a wide range of related and divergent fields
- Take multiple perspectives on a problem
- Have a future orientation
- Have self-confidence and trust in their own judgment

Brainstorming Methods

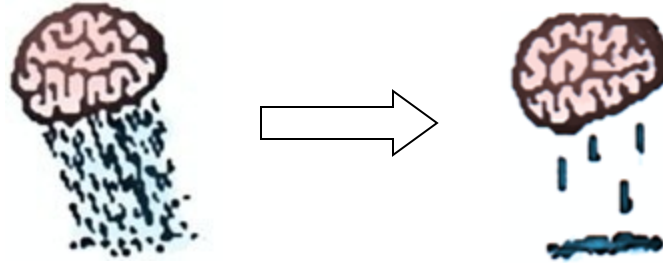
Brainstorming is one of the most important techniques to generate and develop new ideas

Lateral Thinking

Vertical Thinking



Comments that reduce Brainstorming to Braindrizzling

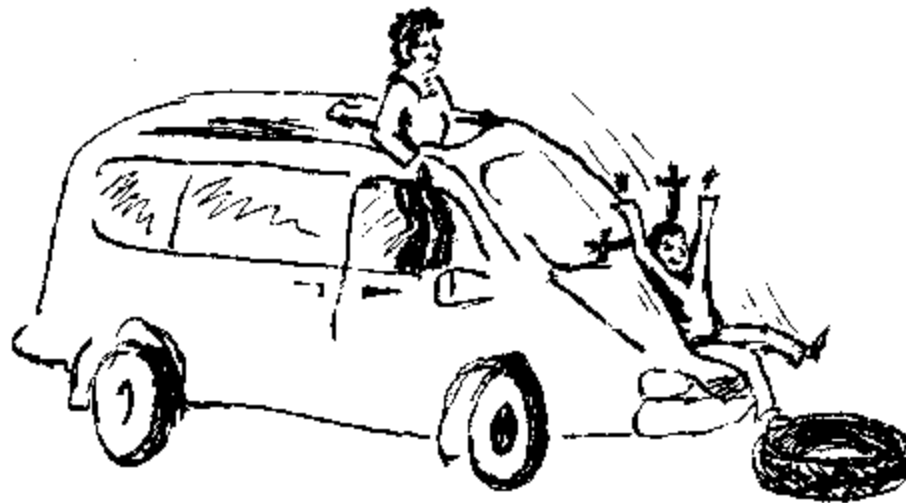


- That won't work
- That's too radical
- It's not our job
- We don't have enough time
- That's too much hassle
- It's against our policy
- We haven't done it that way before
- That's too expensive
- That's not practical
- We can't solve this problem

BRAINSTORMING EXERCISE

Suggest safe playground equipment that could be made from old cars.

Suggested Uses of Old Cars as Equipment for a Children's Playground

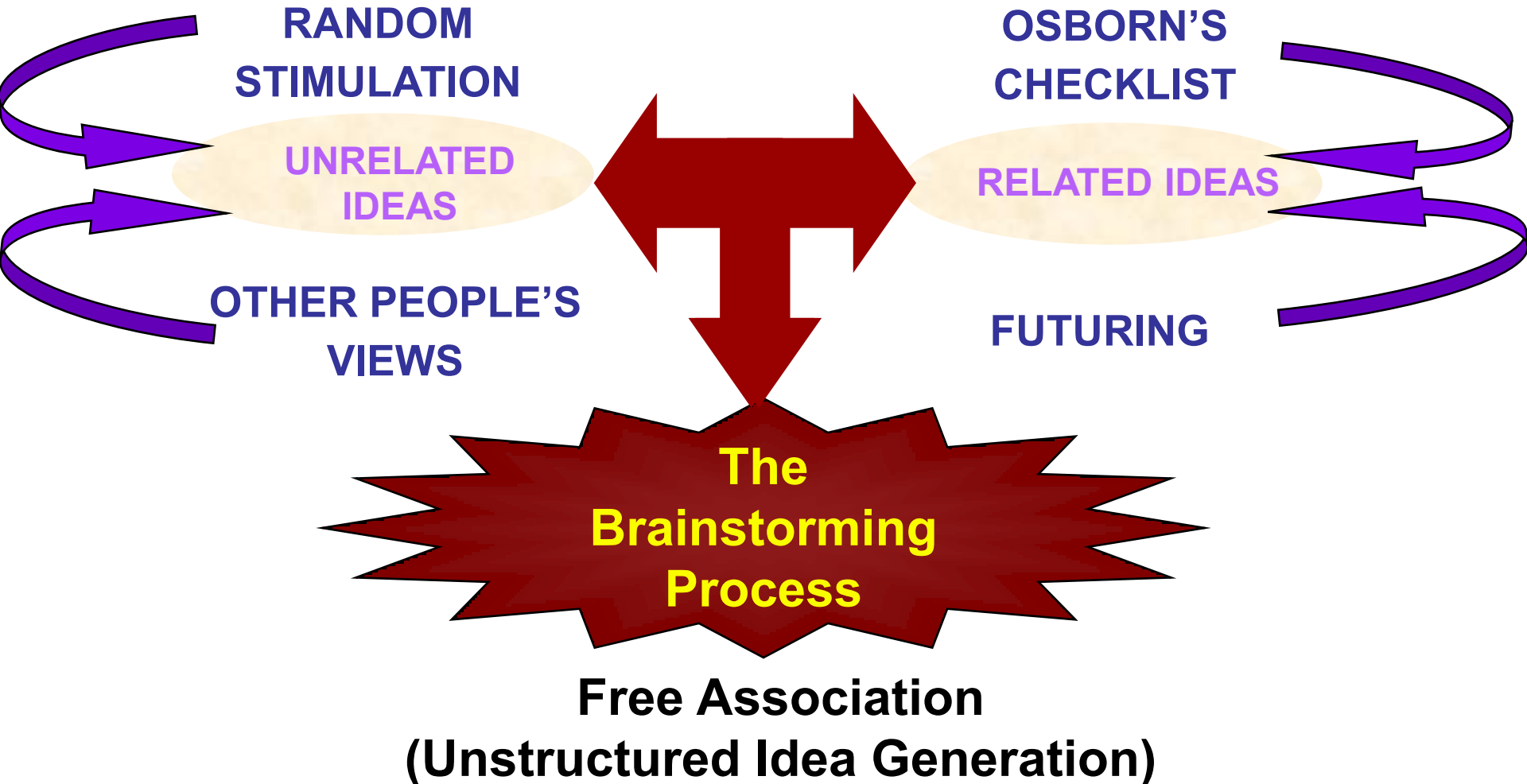


Free Association

- Cut the body of the car up to make a 3-D puzzle.
- Take the tires and roll them along the ground.
- Take the seats out and use them as a bed to rest between activities
- Teenagers could take the engine apart and try to put it back together.
- Make a garden by planting flowers inside.
- Use the tires to crawl through as an obstacle course.
- Make into sculpture.
- Take off the doors and use as a goal for hockey.
- Get on the roof and use the car as a slide.

Lateral Thinking

Vertical Thinking



Osborn's Checklist for Adding New Ideas

Vertical Thinking – (S.C.A.M.P.E.R)

SCAMPER is an acronym for a useful list of active verbs that can be applied as stimuli to make you think differently about the problem.

SCAMPER was defined by Robert Eberle, after an initial list from Brainstorming originator Alex Osborn.

Osborn's Checklist for Adding New Ideas

Vertical Thinking – (S.C.A.M.P.E.R)

- **S**ubstitute
- **C**ombine
- **A**dapt
- **M**odify (Magnify, Minify)
- **P**ut to other uses
- **E**liminate
- **R**earrange

Rerraange



Com → ← **bine**

Osborn's Checklist for Adding New Ideas

- **Substitute?** Who else, where else, or what else? Other ingredient, material, or approach?
- **Combine?** Combine parts, units, ideas? Blend? Compromise? Combine from different categories?
- **Adapt?** How can this (product, idea, plan, etc.) be used as is? What are other uses it could be adapted to?
- **Modify?** Change the meaning, material, color, shape, odor, etc.?
- **Magnify?** Add new ingredient? Make longer, stronger, thicker, higher, etc.?
- **Minify?** Split up? Take something out? Make lighter, lower, shorter, etc.?

Osborn's Checklist for Adding New Ideas

- **Put to other uses?** How can you put the thing to different or other uses? New ways to use as is? Other uses if it is modified?
- **Eliminate?** What can you eliminate? Remove something? Eliminate waste? Reduce time? Reduce effort? Cut costs?
- **Rearrange?** Interchange parts? Other patterns, layouts? Transpose cause and effect? Change positives to negatives? Reverse roles? Turn it backwards or upside down? Sort?

Osborn's Checklist for Adding New Ideas

Vertical Thinking – (S.C.A.M.P.E.R)

- **S**ubstitute
- **C**ombine
- **A**dapt
- **M**odify (Magnify, Minify)
- **P**ut to other uses
- **E**liminate
- **R**earrange

Osborn's Checklist for Adding New Ideas

•**S**ubstitute: Use the car seats in swings.



•**C**ombine: Use the side panels or roof to make a huge canopy or fort.



•**A**dapt: Take the hood off and use it as a toboggan in winter.



•**M**odify: Crush the cars into cubes and allow the kids to climb on the blocks.



Osborn's Checklist for Adding New Ideas

- **P**ut to other uses: Remove the engines and side panels and make go-carts.



- **E**liminate: Throw away the rims and use the tires for a "romper room"/jumping pit.



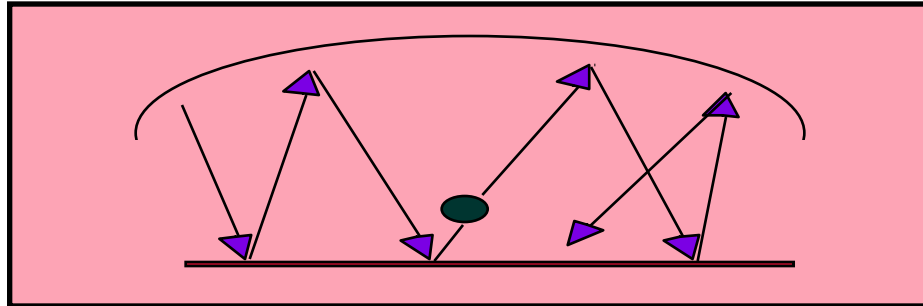
- **R**earrange: Turn the car upside down and use it as a teeter-totter.



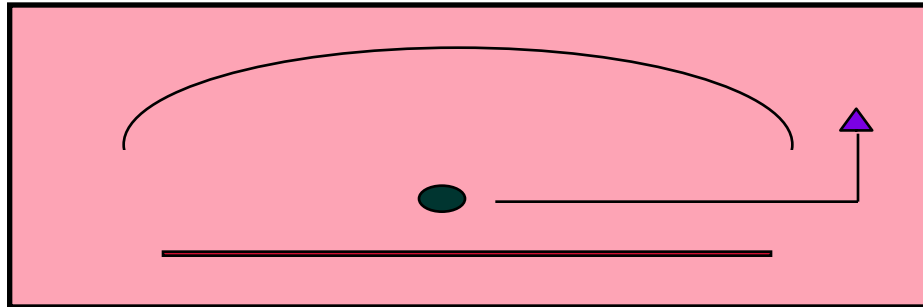
Futuring

- *Laser to vaporize car*
- *Vapor separated into molecular components*
- *Use components to make polymers*
- *Polymers reassembled into toys (giant legos)*

Stuck



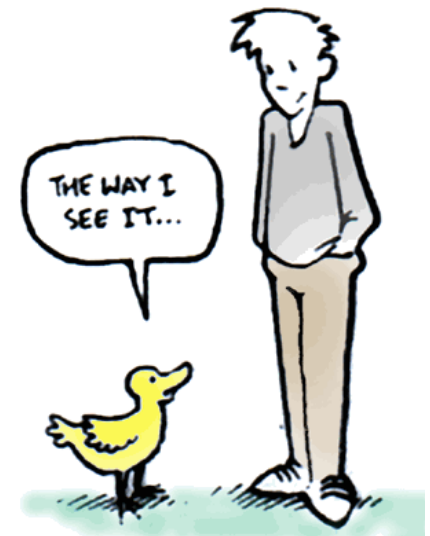
Unstuck



Lateral Thinking: Other People's View

- Think about walking around on your knees.
 - How would this change your perspective--that is, imagine the playground from a child's height.
- What was your favorite playground toy?
 - How could this be mimicked with used auto parts?

Example: From a child's viewpoint, the intact car would be an exciting change to pretend to be a "grown-up." Just take off the doors and remove other equipment (electrical, etc.) and let the kids pretend to drive. Just leave the car as it is!



Lateral Thinking: Random Simulation Words

all, albatross, airplane, air, animals, bag, basketball, bean, bee, bear, bump, bed, car, cannon, cap, control, cape, custard pie, dawn, deer, defense, dig, dive, dump, dumpster, ear, eavesdrop, evolution, eve, fawn, fix, find, fungus, food, ghost, graph, gulp, gum, hot, halo, hope, hammer, humbug, head, high, ice, icon, ill, jealous, jump, jig, jive, jinx, key, knife, kitchen, lump, lie, loan, live, Latvia, man, mop, market, make, maim, mane, notice, needle, new, next, nice, open, Oscar, opera, office, pen, powder, pump, Plato, pigeons, pocket, quick, quack, quiet, rage, rash, run, rigid, radar, Scrooge, stop, stove, save, saloon, sandwich, ski, simple, safe, sauce, sand, sphere, tea, time, ticket, treadmill, up, uneven, upside-down, vice, victor, vindicate, volume, violin, voice, wreak, witch, wide, wedge, x-ray, yearn, year, yazzle, zone, zoo, zip, zap



Lateral Thinking: Random Simulation Words

Document



Paper → Art → Colors → Car Paint

Allow kids to paint graffiti on cars ←



Lateral Thinking: Random Simulation Words

Painting

- Let kids paint graffiti on the cars
- Paint targets and let kids throw balls at them
- Paint the car as a covered wagon and let the kids play cowboys

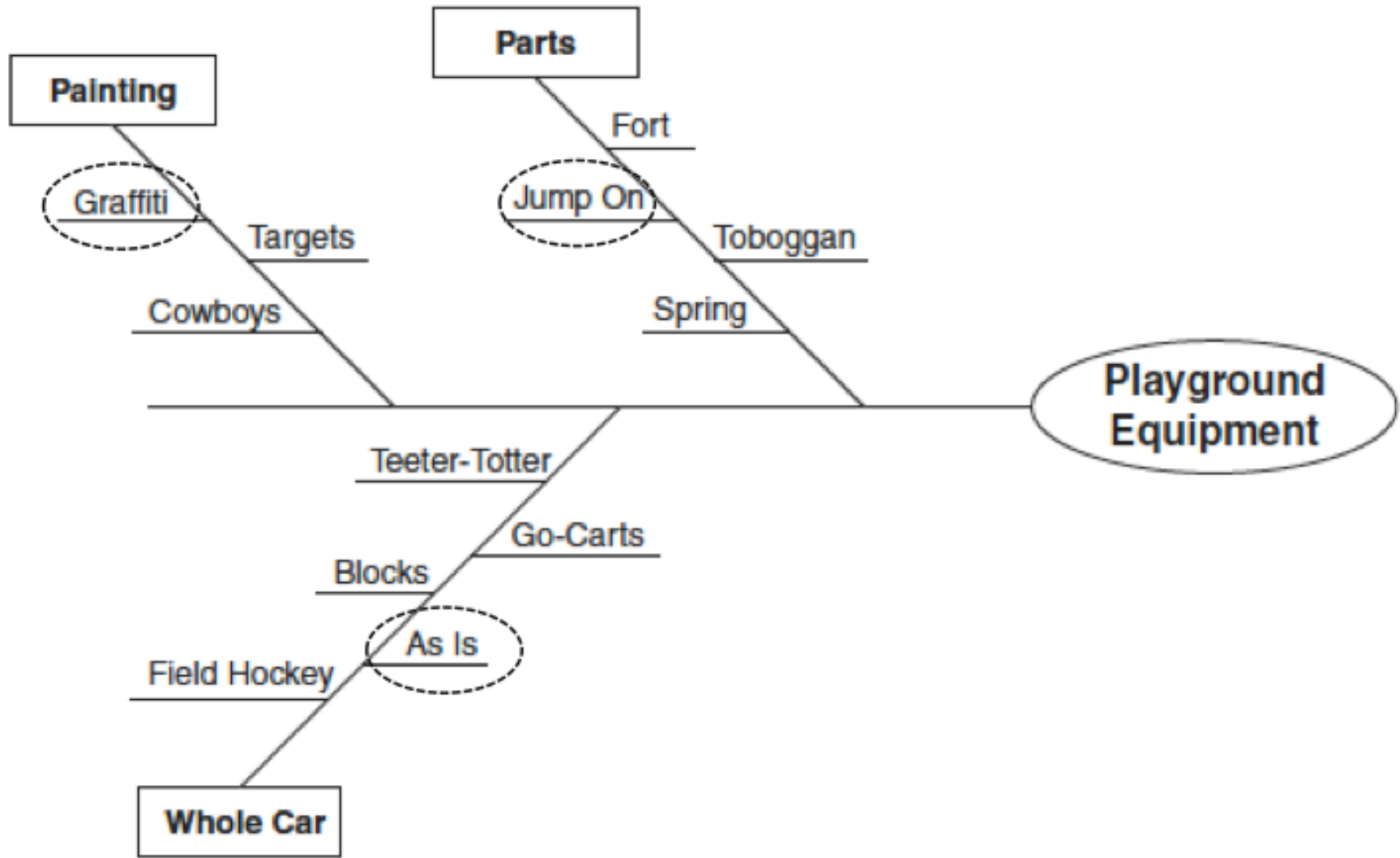
Whole Car

- Turn the car into a teeter-totter (upside down)
- Turn the car into a go-kart
- Crush the car and make blocks from it
- Let kids drive the car as is
- Open the car's doors and use them as goals for field hockey

Parts

- Use the seats in swings
- Use the roof and doors as part of a fort
- Use the tire inner tubes as part of an obstacle course (jump on)
- Use the car's hood as a toboggan
- Use the car's springs for a wobble ride

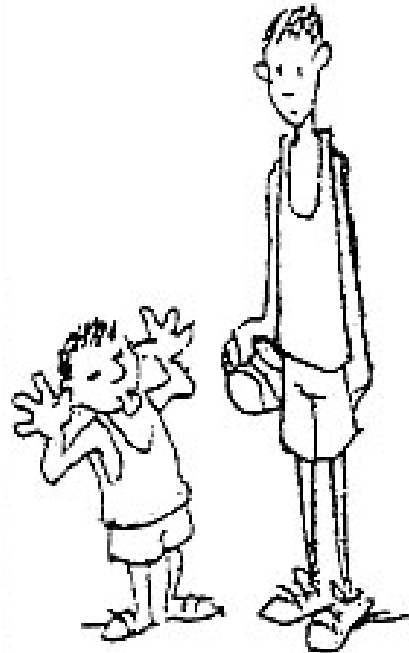
Lateral Thinking: Random Simulation Words



Fishbone Diagram

Basketball

Problem Statement: *How could the rules of basketball be changed so that players under 5'7" tall might be more competitive?*



Basketball

Brainstorming Method: **Free Association**

Ideas Generated

- Tall players can't block
- Tall players can't rebound
- Tall players can't dribble
- Tall players can't look at the basket
- Tall players can't use the backboard

Basketball

Brainstorming Method: **Free Association**

Ideas Generated

- No fouls on short players
- Taller players are not allowed outside the key
- Tall players have to wear weighted shoes
- Play in zero gravity
- Tall players wear uniforms with itching powder
- Short players wear spikes
- Short teams have more players

Basketball

Brainstorming Method: **Free Association**

Ideas Generated

- Lower the height of the basket
- Two separate baskets
- Tall players can't block
- Tall players can't rebound
- Tall players can't dribble
- Tall players can't lump
- No fouls on short players
- Tall players can't look at the basket
- Tall players cant use the backboard
- Play in zero gravity
- Some players on each team under 5'9"
- Short players' baskets count more
- Taller players are not allowed outside the key
- 3-point shot line closer for shorter players
- Tall players can guard only tall players
- Tall players have to wear weighted shoes
- Short players can use trampolines
- Tall players must use e heavier ball
- Make tall players run (winded) before game
- Tall players wear uniforms with itching powder
- Short players wear spikes
- Tall players must carry a small child on their backs
- Tall players wear glasses restricting peripheral vision
- Short and tall teams: Short teams have more players

Basketball

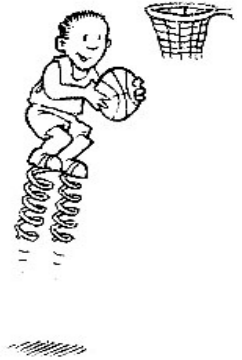
Vertical Brainstorming :

Osborn's Checklist – (S.C.A.M.P.E.R)

- **S**ubstitute
- **C**ombine
- **A**dapt
- **M**odify (Magnify, Minify)
- **P**ut to other uses
- **E**liminate
- **R**earrange

Basketball (S.C.A.M.P.E.R)

- **Substitute?** Platform tennis shoes with springs
(Substitute Equipment)
- **Combine?** Short players can pick up other players
(Combine Players for more Height)
- **Adapt?** Smaller players can foul as many times as they want
(rule adaptation).
- **Modify?** Raise baskets for taller players (modify court).
Tall players stay inside 3 point line.(modify rules)
- **Put to Other Uses** Assists by smaller players count as points
(Assists more that passes to an open player)
- **Eliminate** Tall players shots worth 1 point (eliminate points).
- **Rearrange?** Separate leagues for taller and shorter players
(rearrange grouping).



Basketball

Brainstorming Method: **Random Simulation**

Random word or concept:

- Humbug - What ideas come to mind?
- **Humbug** → Scrooge → mean → rough → more relaxed foul rules for short players.
- **Jealous** → rage → short players may **taunt** tall players to distract them.

