

Solution Generation

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- Barriers to Idea Generation
 - Perception Blocks
 - * Stereotyping
 - * Limiting the Problem (unnecessarily)
 - * Information Overload
 - Emotional Blocks
 - * Fear of Risk Taking
 - Stems from childhood
 - * Lack of an Appetite for Chaos
 - Learn to live with confusion
 - * Judging while generating ideas
 - Negativity
 - * Lack of Challenge
 - Too easy to take on
 - * Thinking all of some of the problem cannot be solved
 - Lack of energy
 - * Inability to Incubate
 - Rushing!
 - Cultural Blocks
 - * Imposed by our immediate social or physical environment
 - Expressive Blocks
 - * Inability to Communicate
 - * Information goes unstated or unknown
 - * Can not build off of thoughts not presented

- Environmental Blocks
 - * Distractions that inhibit deep, prolonged concentration
 - Other priorities
 - Phones
 - People
- Intellectual Blocks
 - * Inflexible or inadequate uses of problem solving strategies
 - * Lack of intellectual skills necessary
 - * Lack of information
 - * Expanding your mind
 - Conduct literature reviews
 - Conduct a patent search
 - Benchmark existing products
 - Reverse engineer devices
 - Consult an expert
- Comments that Reduce Creativity and Ideation
 - 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
- Other Peoples' Views
 - Think about walking around on your knees
 - * How would this change your perspective?
 - Imagine the playground from a child's height
 - What was your favorite playground toy?
 - * How could this be mimicked with used auto parts?
- Morphological Charts

- Configured as a matrix:
 - * Left most column is design goals (Objectives, constraints, and functions)
 - * Other columns are ways to achieve those features
- Try to keep all features to the same level of detail
- Once all features and solutions are complete, choose combinations until design is created
- The C-Sketch Method
 - Team-based design strategy
 - Can be more difficult with large teams
 - Excellent for developing visual elements
 - Everyone draws out some kind of design, this design is handed around and each person makes comments back on each person's design
- The Gallery Method
 - Team-based design strategy
 - All team members create sketches within a time limit
 - Sketches are all posted/shared together
 - All sketches are discussed and critiqued
- The Revision Method
 - Improve an existing product or process without starting over
 - Use Nth generation design to add or modify features
 - Repurpose the design to meet new customer needs
- Benchmarking and Best Practices
 - Benchmarking — Compare your own product or process against a competitor's in order to improve
 - * How have other companies solved similar problems? How can I solve my problem?
 - * What do other companies do better than us?
 - Best Practices — Determine the best methods and techniques within your industry
 - * Research and gather the best information
 - * Incorporate the best methods into your operations
- Patent Search

- What is the state of the art?
 - Find working designs
- Bionics/Biomimetics — Search for solutions in nature
 - Look in the natural world for inspiration
 - Animals, plants, human body
 - Examples: Velcro, sharkskin, geckos and lizards, solar cells
- The Brainstorming Process
 - Lateral Thinking
 - * Random stimulation
 - * Unrelated ideas
 - Vertical Thinking
 - * SCAMPER (substitute, combine, adapt, modify, put to other uses, eliminate, rearrange) checklist
- Inversion Techniques
 - Think of how to do the opposite
 - * Invert/reverse the problem statement
- Design Heuristic Cards