



# **SNS COLLEGE OF TECHNOLOGY**

Kurumbapalayam (Po), Coimbatore - 641 107

**An Autonomous Institution**

Accredited by NBA - AICTE and Accredited by NAAC - UGC with 'A+' Grade  
Approved by AICTE, New Delhi & Affiliated to Anna University, Chennai

## **DEPARTMENT OF MECHANICAL ENGINEERING**

### **COURSE NAME : 16MEOE2 NEW PRODUCT DEVELOPMENT IV YEAR /V SEMESTER**

#### **Unit 2 – Concept Generation and Selection Topic : **Concept Generation****

**P.Divyakumar,**  
AP/ Mechanical Engg.,  
SNS College of Technology,  
Coimbatore - 35





# Concept generation



It is the divergent **development of many alternatives**, where the focus is on innovation, structural layout and function satisfaction.

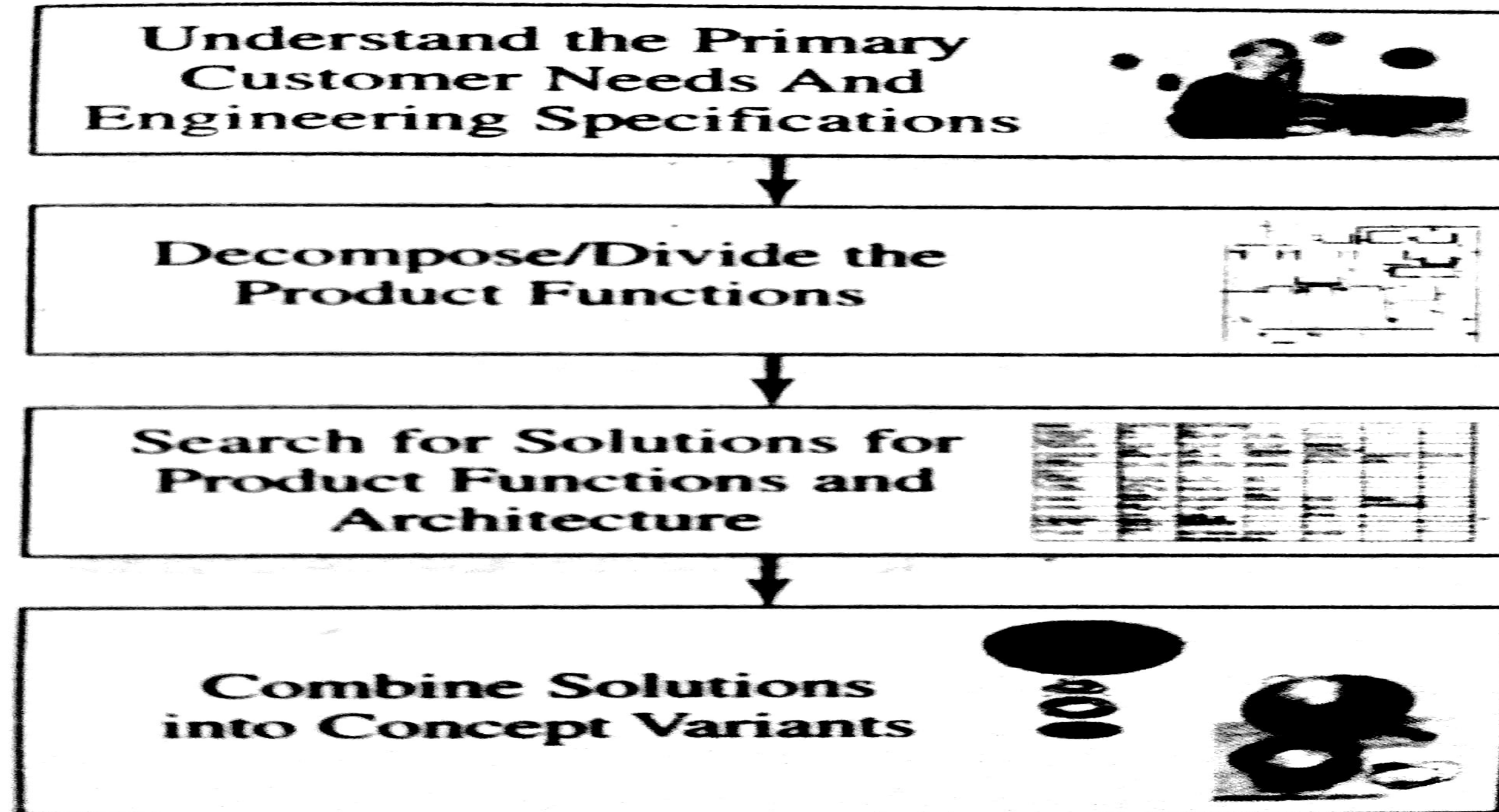
- Clarify the problem**
- Search internally**
- Search externally**
- Explore systematically**
- Reflect on the process and solutions**





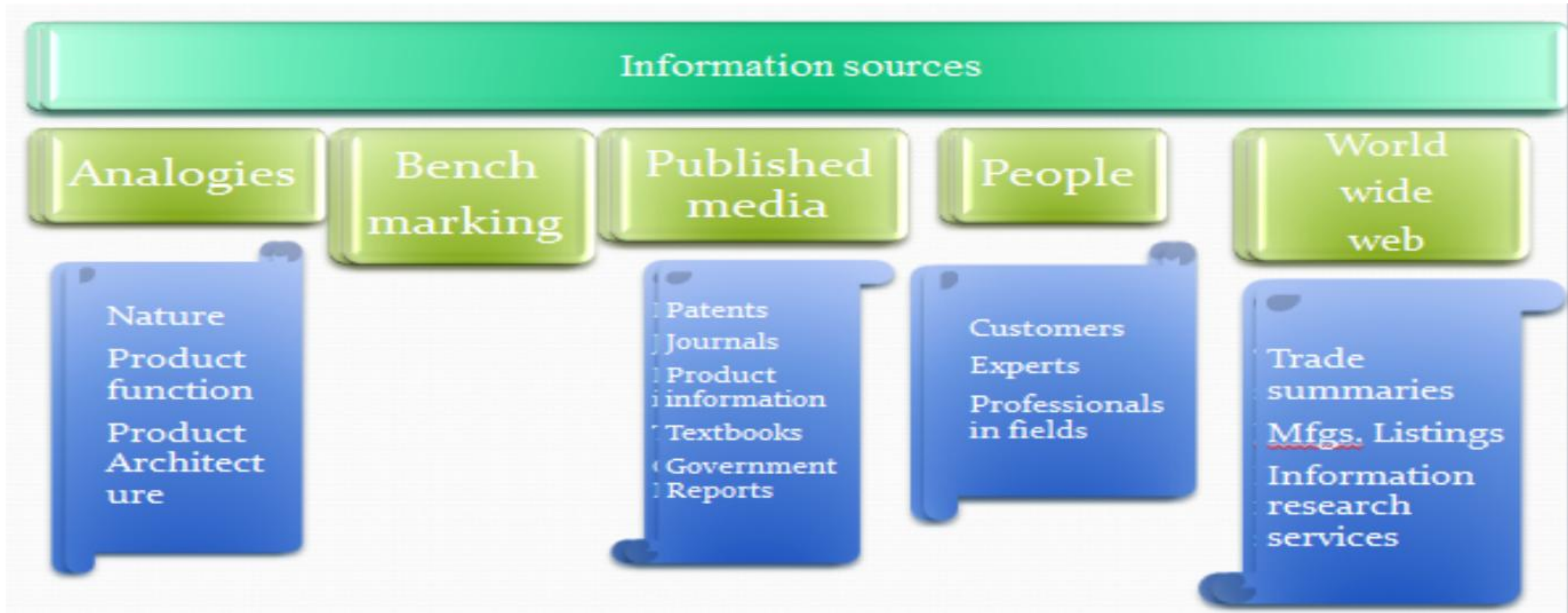
# Concept generation process

## Clarify the problem





# Information sources for concept generation(Search Externally)





# Concept generation



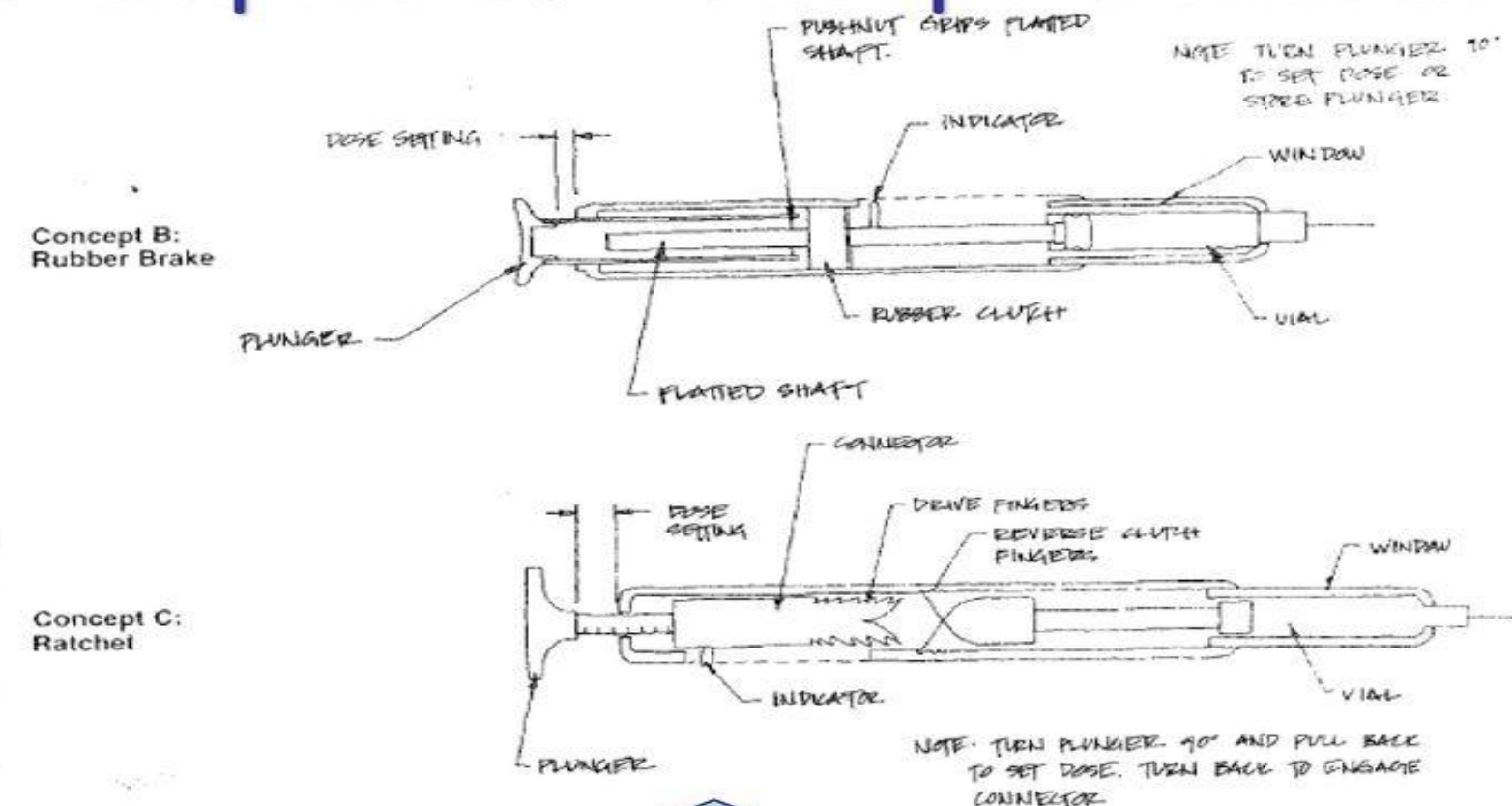
Two types of methods

- ❑ Information gathering
- ❑ Brainstorming technique

These methods focus on combination of obtaining knowledge of possible technologies with the generation of ideas from the minds of the designers.

**Biasing methods.**

## Examples of Concept Generation



Karl T. Ulrich and Steven D. Eppinger, 2004,  
*Product Design and Development*, Exhibit 7-3,  
Chapter 7, 3<sup>rd</sup> Edition, Irwin McGraw-Hill

Concepts need to be well-defined  
**PRIOR** to concept evaluation!  
(neither of these concepts made  
the screening cut) **EDGE™**

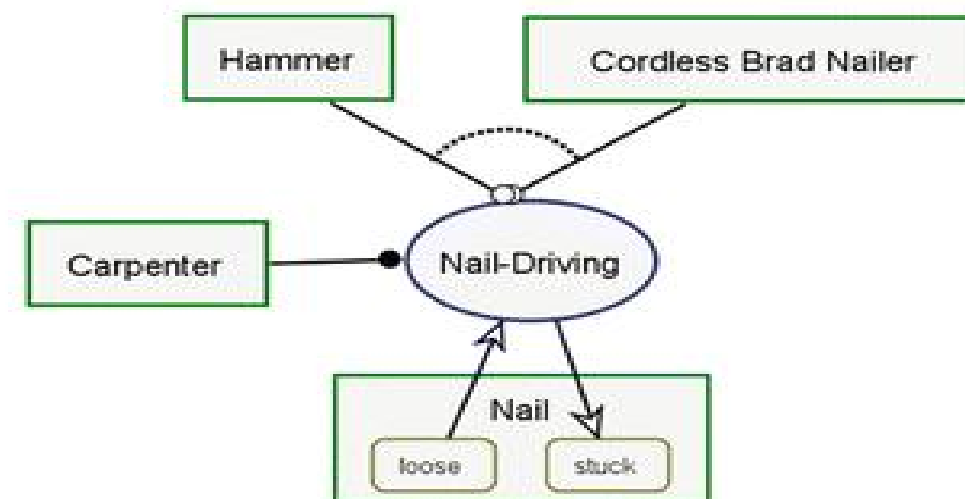
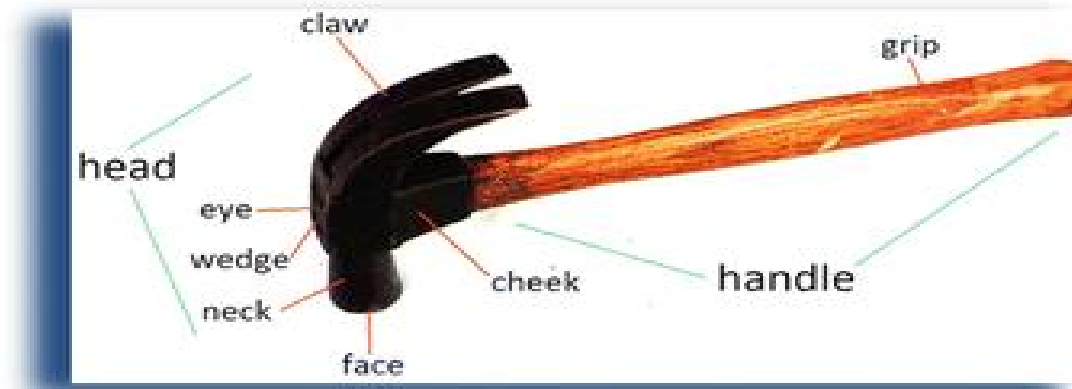


# Some concept generation methods(Search Internally)



Internal search is the use of personal and team knowledge and creativity to generate solution concepts

- ❑ **Brain storming**
- ❑ **Memory maps**
- ❑ **Brain – ball**
- ❑ **C – Sketch/ 6-3-5 method**



Nail-Driving changes Nail from loose to stuck.



# Some concept generation methods(Search Internally)



- Suspend judgement
- Generate a lot of ideas
- Welcome ideas that may seem infeasible
- Use graphical and physical media

## Hints for generating solution concepts

- Make analogies
- Wish and wonder
- Use related stimuli
- Use unrelated stimuli
- Set quantitative goals
- Use the gallery method



# Practise quiz



## 1. Goals work best for building teams when

- a. they are clearly stated
- b. there are many goals to challenge the team
- c. the goals create competition within the group
- d. no goal is shared by every member on the team

Ans: 1-a







# Brain storming



- ❖ Brain storming is an **intuitive method of generating concepts**
- ❖ It focuses on **product function and architecture**, where **team members communicate ideas** verbally during a set time period
- ❖ The primary advantage of brainstorming is the ability of a set of individuals to collectively build on each other to generate ideas that would not arise individually





# Mind mapping

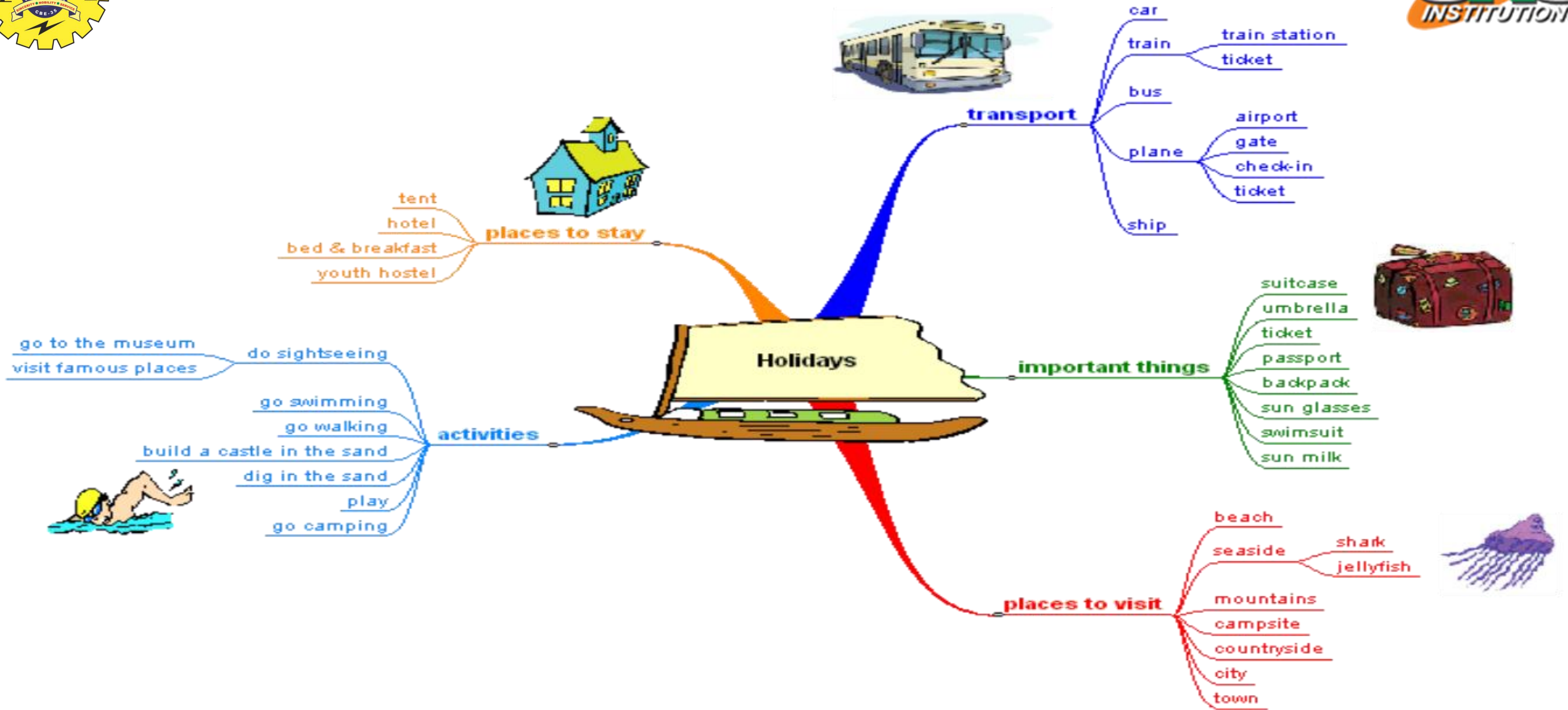


## Mind Mapping



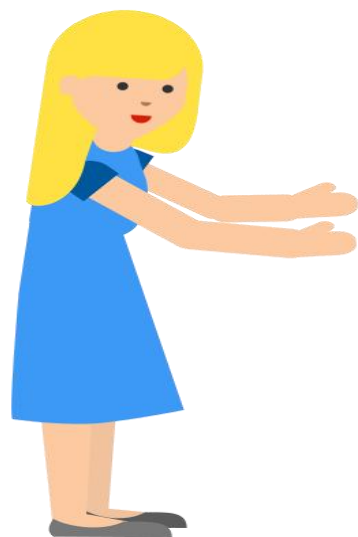
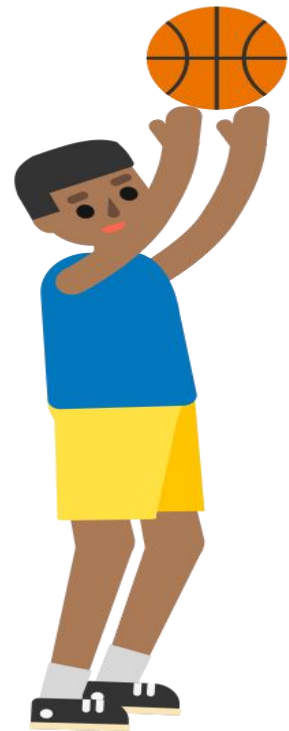


# Mind mapping





# Brain ball

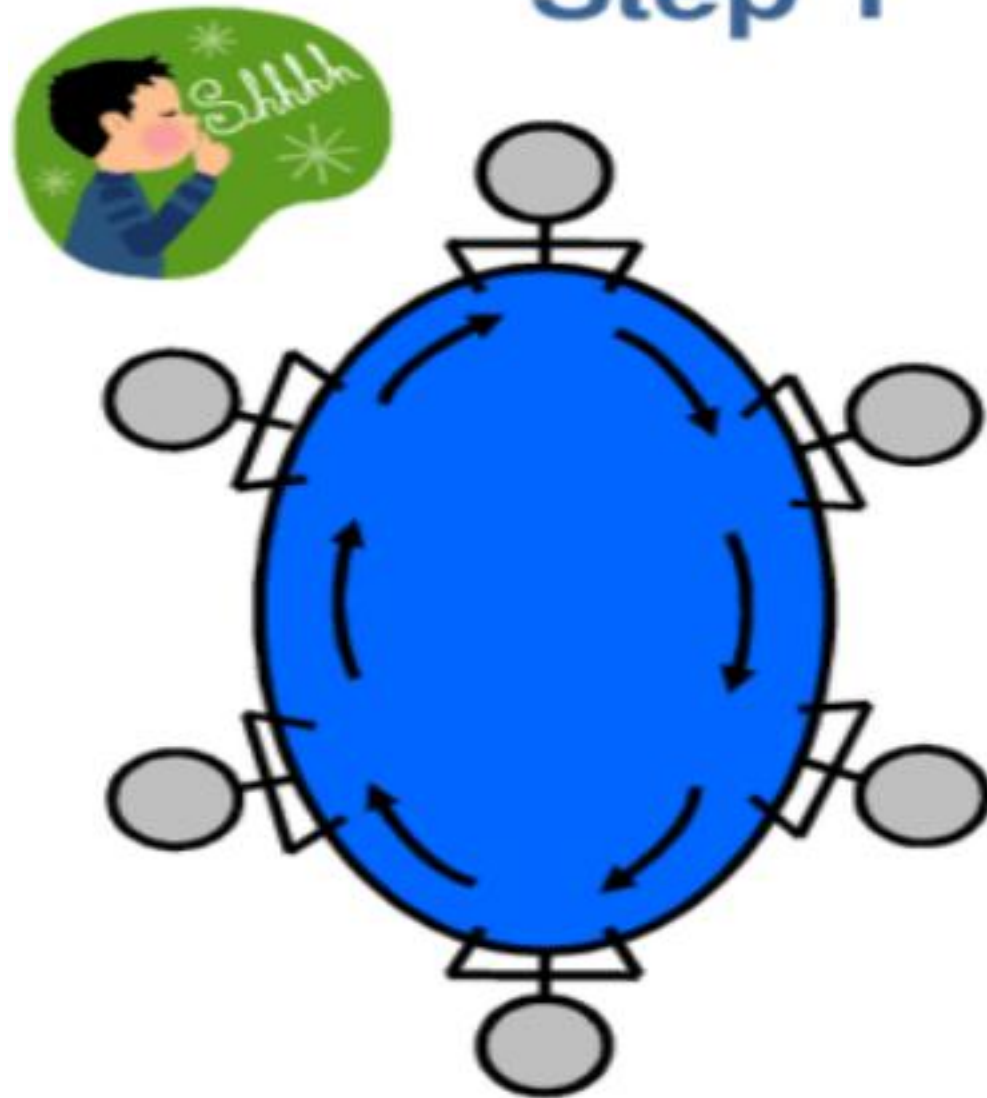




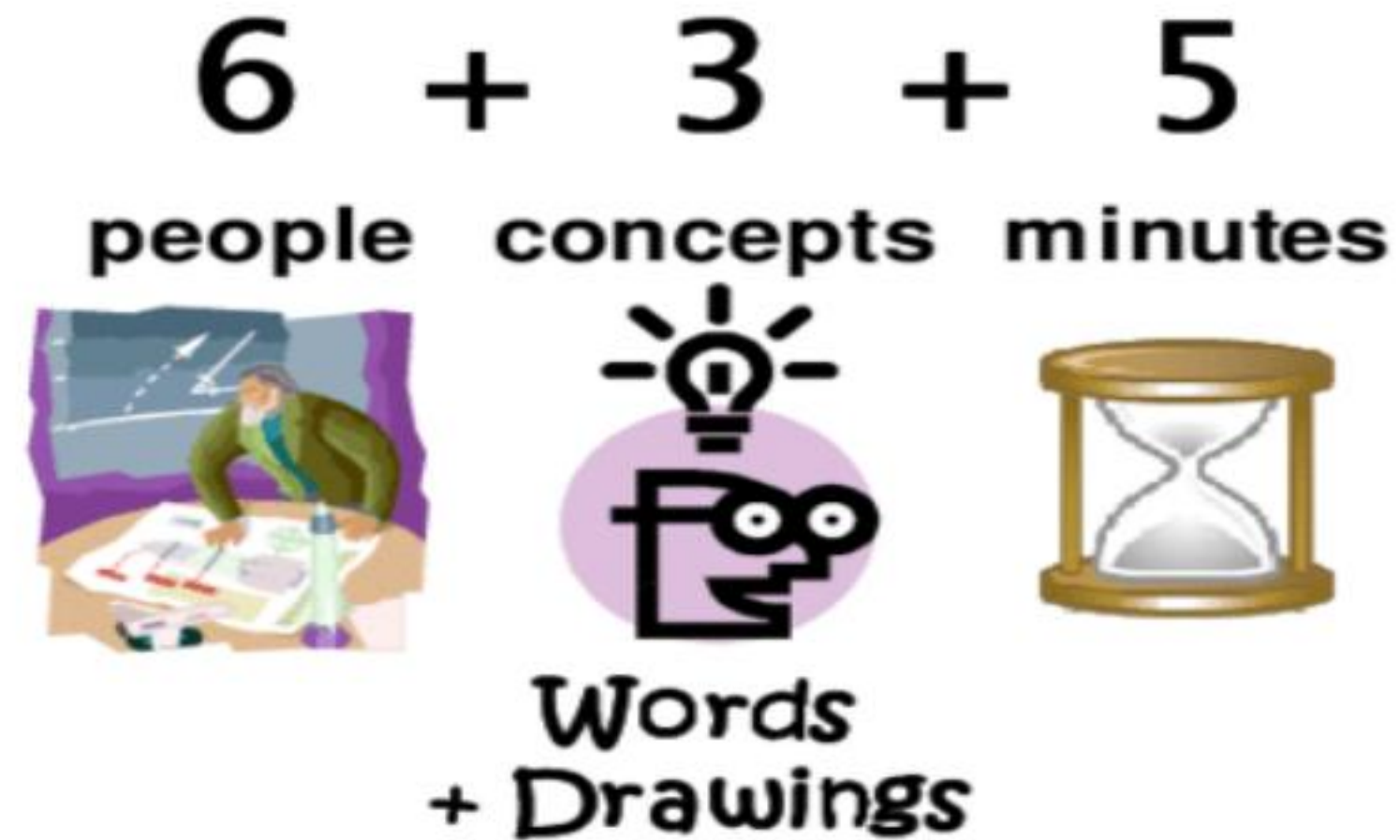
# 6-3-5 Method



## Step 1



## Step 2



## Step 3

**Pass to  
next  
person &  
repeat**



## 6-3-5 Method



- ❖ Arrange **the team members around a table**
- ❖ Each member writes/describes/sketches three (“3”) **ideas for the primary product function**
- ❖ After **T minutes** of work on the concepts, members **pass** their ideas to the person on their right
- ❖ For the next T minutes, **team members modify** (without erasing) the ideas on the sheet, with the option of adding an entirely new concept, not contained on their original idea sheet





## 6-3-5 Method



- ❖ Passing of the idea sheets continues until a members original sheet returns, and the round ends. With sufficient time intervals between rounds, five rounds are repeated
- ❖ After generating ideas for each of the primary product functions, **the entire process is repeated to develop alternative layouts** and combined concept variants that utilize a summary of the solution principles generated for each function
- ❖ Post process, **the ideas are accumulated and summarized**



# Industry specified questions



**Which of the following are benefits of brainstorming when compared to nominal group technique?**

- a. brainstorming is more fun
- b. brainstorming can create a positive organizational climate
- c. brainstorming can encourage talented and highly skilled employees to remain in an organization
- d. all of the above



**Ans:D**





*Thank You*