THINK!
DESIGN

D'source Project

Open Design School

MoE's Innovation Cell

Synectics, Analogical Thinking, Metaphors, Nature Inspiration, Concept Evaluation, Concept Maps

Design Thinking & Innovation Tools

Section: T10, Week 10

Design Thinking & Innovation (DT&I)

Section: T10

Week 10

Design Thinking & Innovation (DT&I)

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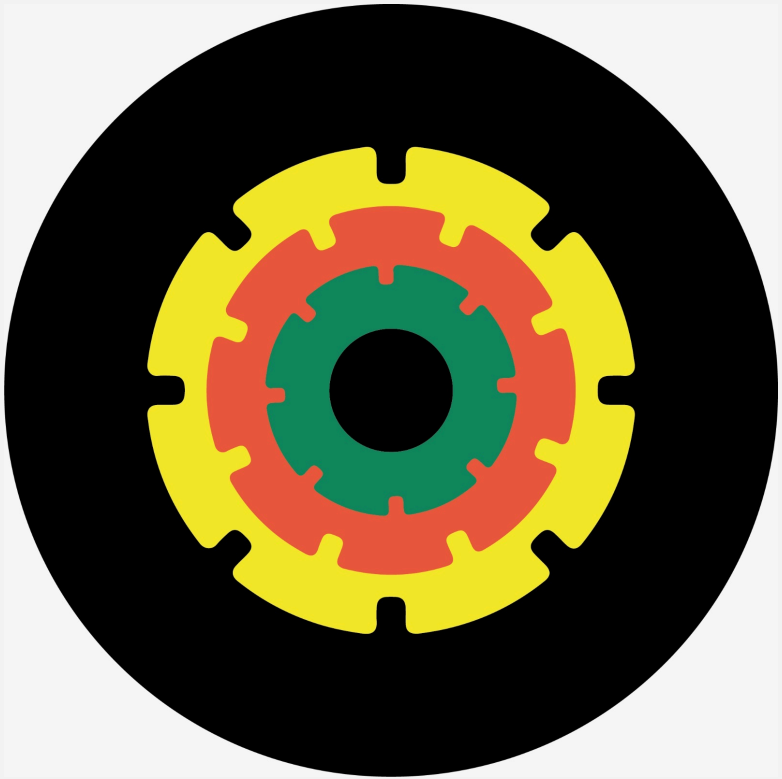

DT&I Tools

T10 Module T10:

Synectics, Analogical Thinking, Metaphors, Nature Inspiration, Concept Evaluation, Concept Maps

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T10.1

‘Synectics’ as an Ideation Tool:

How to use Synectics for Ideation?

Synectics as a creative method coined by George M. Prince and William J.J. Gordon was quite useful in ideation by making a **connection between ideas that are out of box and not connected with each other.**

Synectics also makes use of Brain-storming for Ideation to **generate key-words or ideas** associated with the problem that you are trying to solve to **conceive of unusual, unexpected, surprising ideas**.

Synectics adopted the words **Syn+ectics** from Greek language, which means **"the joining together of different and apparently irrelevant elements"** in new combinations/connections.

Reference: J J Gordon (1961)

Synectics:

Steps in Synectics: as an extension of brainstorming

1. Note down the Problem that you have selected for Brain-Storming
(A clear statement of the problem is recommended)

2. Brain-storm for unusual ideas as key-words or sketches and note these down
(as scribbles or sketches on post-it notes, online on Miro/Figma, etc.)

3. Make use of Analogies, Metaphors or Inspiration from Nature to make connections
(so that cross-relationships, unexpected combinations and surprising ideas could be made)

4. Do not criticize anyone – building on each others ideas should be welcome
(mostly unusual ones with new point of views)

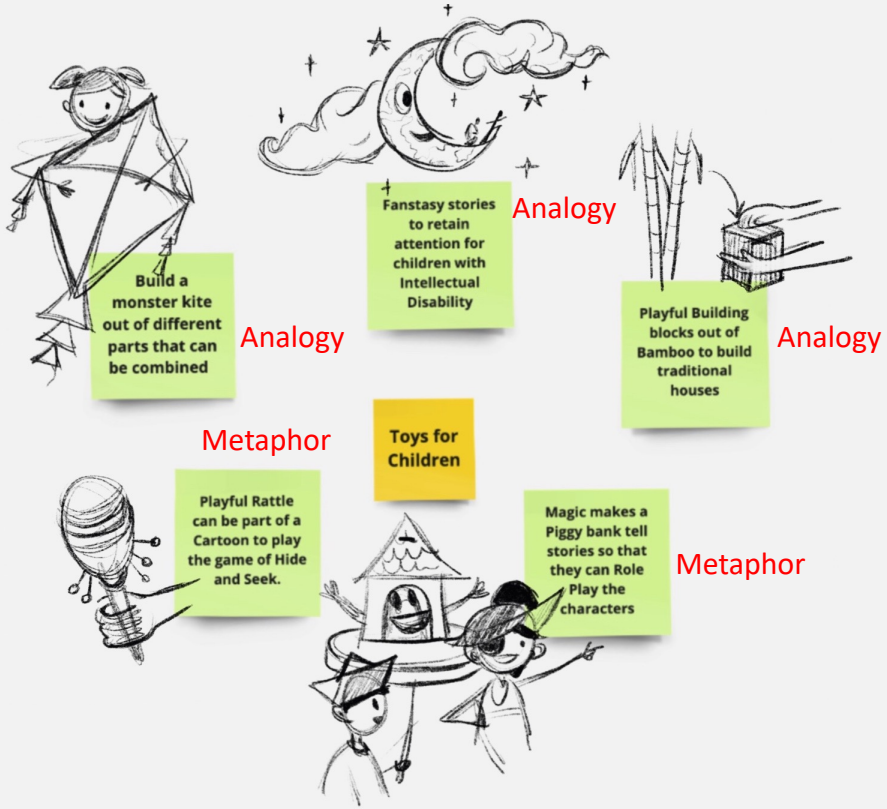
5. Do this until one runs out of new out of the box ideas
(greater the number, the more the variety)

Reference: T1.0-006

Example of using Synectics for Ideation:

Lets say the redefined statement for the problem is:

Design an engaging 'Play and Learn' Constructive Toy for Children in the age group of 3 to 6 with features of Collaboration, Sharing and Storytelling using Sustainable Materials



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T10.2

‘Analogical Thinking’ as an Ideation Tool:

How to use ‘Analogy’ for Ideation?

‘Analogical Thinking’ makes use of ‘Analogy’ to generate fresh new ideas and make surprising connections.

These are some of the different types of Analogies:

1. Personal Analogy – imagine yourself as the idea for the Object and tries to role-play the situation with ones experiences and come out with new ideas.

2. Direct Analogy – make use of similar objects or situations in both the man made and natural world and make new connections

3. Fantasy Analogy – make use of your imagination to make the familiar strange

Personal Analogy:

In using **Personal Analogy for Ideation, imagine yourself as the idea for the Object and try to role-play the situation with ones experiences and come out with new ideas.**

If you are designing a wooden Toy for Children, Imagine yourself as the wooden toy, and imagine what children will do to play with the wooden toy – that means children might sit on you, pull and push you, take you for a ride, share it with their friends, etc.

Or, If you are designing a Chair for the Elderly, Imagine yourself as the Chair, and imagine the needs of the Elderly to rest and relax – that means elderly will sit on you, be relaxed and comfortable, might want to stretch their legs, etc.

Direct Analogy:

In using **Direct Analogy for Ideation, make use of similar objects or situations in both the man made and natural world and make new connections and come out with new ideas.**

If you are designing a wooden Toy for Children, Imagine the wooden toy is like a Train (direct analogy from man made world) with different bogies – so that it can be made modular with different functions that can be attached.

Or, If you are designing a Chair for the Elderly, Imagine the Chair to be like a Pendulum (direct analogy from man made world), and juxtapose the needs of the Elderly to rest, relax and be comfortable.

Fantasy Analogy:

In using **Fantasy Analogy for Ideation, make use of make use of your imagination to make the familiar strange and make new connections and come out with new ideas.**

If you are designing a wooden Toy for Children, Imagine the wooden toy is like a dancing snake with several heads (fantasy analogy from imagination) - so that it can dance or coil and go to sleep.

Or, If you are designing a Chair for the Elderly, Imagine the Chair to be like a shape changing robot (fantasy analogy from imagination) - so that it can predict the need for the Elderly to rest, relax and be comfortable.

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T10.3

‘Metaphorical Thinking’ as an Ideation Tool:

Metaphors for Ideation?

‘Metaphorical Thinking’ makes use of ‘Metaphors’ to generate fresh new ideas and make surprising connections.

A metaphor is a figure of speech in which a word or phrase denoting one kind of object or action is used in place of another to suggest a likeness or analogy between them (Merriam-webster Dictionary).

Examples of some Metaphors:
1. **‘Desktop’** as a Metaphor to simulate the working environment on a computer screen
2. My teacher has a **‘Heart of Gold’** as she has always supported me.

Further Examples of Metaphors:

Further Examples of using Metaphors:

If you are designing a wooden Toy for Children, Imagine the wooden toy is like a 'Rainbow Garden' (Metaphor as analogy) – such that the toys have rainbow colours and components with elements from the Garden.

Or, If you are designing a Chair for the Elderly, Imagine the Chair to be like a 'Empathetic Soft Cloud' (Metaphor as analogy) - so that it can be concerned about the need for the Elderly to rest, relax and be comfortable.

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T10.4

Inspiration from Nature as an Ideation Tool:

Inspiration from Nature for Ideation?

‘Inspiration from Nature’ makes use of observing how nature solves problems and adopting these to your problem space.

We can make use of inspiration from nature to solve problems in design. Mankind has done this for thousands of years.

Nature Inspired Design is also known by the following names:

1. Biomimicry
2. Bionic
3. Biomimetic

Examples from Nature for Ideation:

Examples of some Inspirations from Nature:

1. The **shape of the beak of the kingfisher bird** as inspiration for the **shape of the bullet train**.
2. The **fractal structure found in nature** as inspiration for **making structurally strong architectural building layouts.**
3. The **Shark skin inspired swimsuit fabric to be less resistant to water** drag.
4. The **flight and the shape of birds have inspired the shape of aircraft.**

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A10.5

What is ‘Concept Evaluation’?

What is ‘Concept Evaluation’?

The several concept ideas that are generated needs to be evaluated to prioritise the concepts:

The way to do this would be to make matrix of ideas on one axis and the design criteria on the other axis and give weightages to the design criteria based on a scale.

The different design criteria could be based on these:

1. User Experience and Environment (Sustainability)
2. Form (Aesthetics) and Function
3. Creativity and Innovation (Newness)
4. Cost and Maintenance

Example of ‘Concept Evaluation’:

Shown below are 3 final concepts evaluated through Total Scores vs Weighted Average scores (in brackets) in a rated scale of 1 to 5. The weighetd scores are based on how important are the factors relatively.

Factors- 1-5 scale (% weights)	Ease of Use (15%)	Look and Feel (15%)	User Friendly (20%)	Fewer steps (20%)	Use of New Technology (30%)	Total
Concept 1	5 (.75)	4 (.6)	3 (.6)	3 (.6)	3 (.9)	18 (3.45)
Concept 2	3 (.45)	5 (.75)	5 (1.0)	4 (.8)	5 (1.5)	22 (4.5)
Concept 3	2 (.3)	2 (.3)	4 (.8)	3 (.6)	5 (1.5)	16 (3.5)

Final Concept 2 has scored the highest score in both Total Scores (22) and weighted scores (4.5). Final Concept 1 has scored 2nd in Total scores and 3rd in weighted scores and Final Concept 3 has scored 3rd in Total scores and 2nd in weighted scores.

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T10.6

What are ‘Concept Maps’?

What are ‘Concept Maps’?

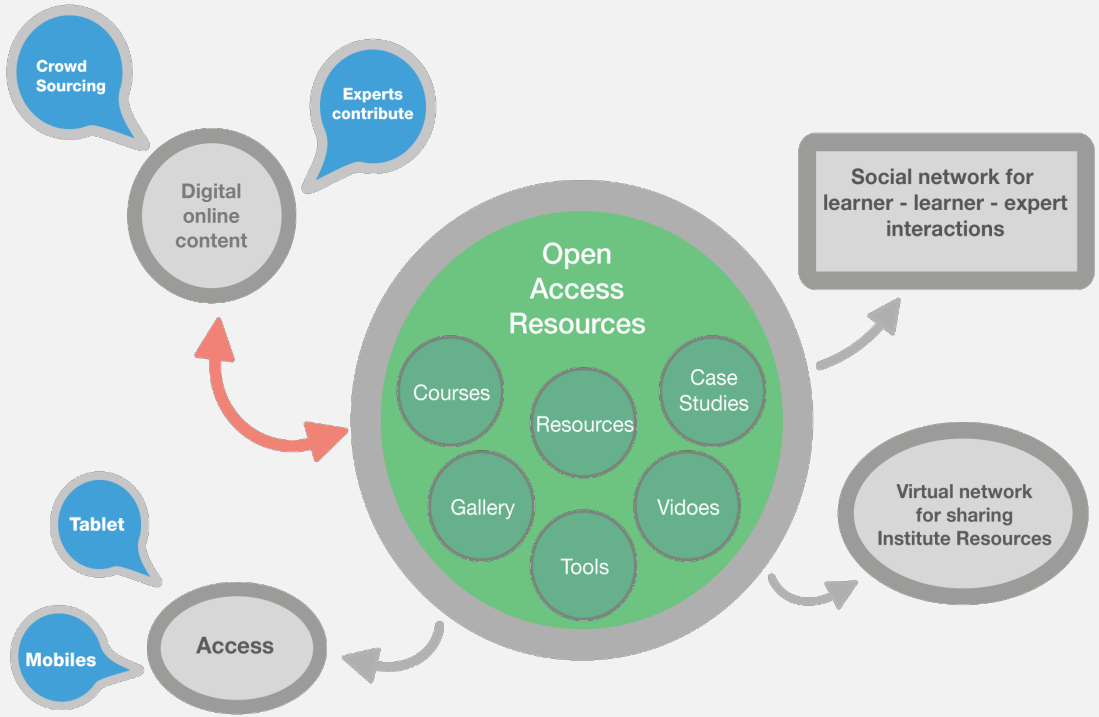
Concept Maps visually depict how the idea is interconnected to other components or parts of the problem space that you are trying to find a solution.

Concept Maps are helpful to give an overview of the parts of the solution

Ref: Joseph Novak

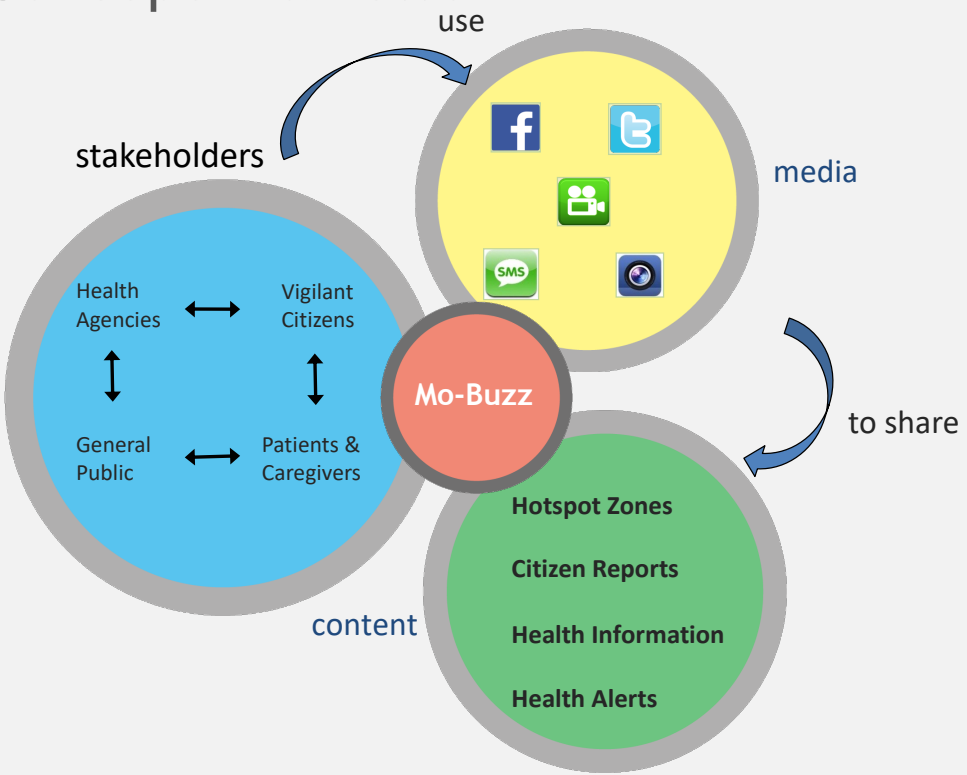
Example of ‘Concept Maps’. . .

Here is shown an example of concept map visually representing the different components of the D’source.in learning environment as an idea.



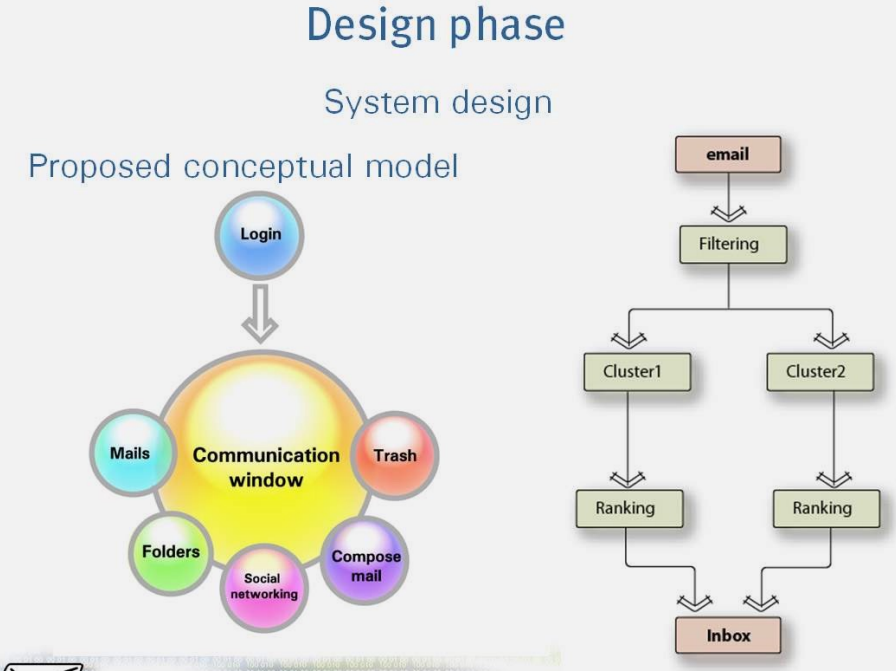
Example of ‘Concept Maps’. . .

Here is shown an example of concept map visually representing the different components of the Mo-Buzz Malaria tracking network.



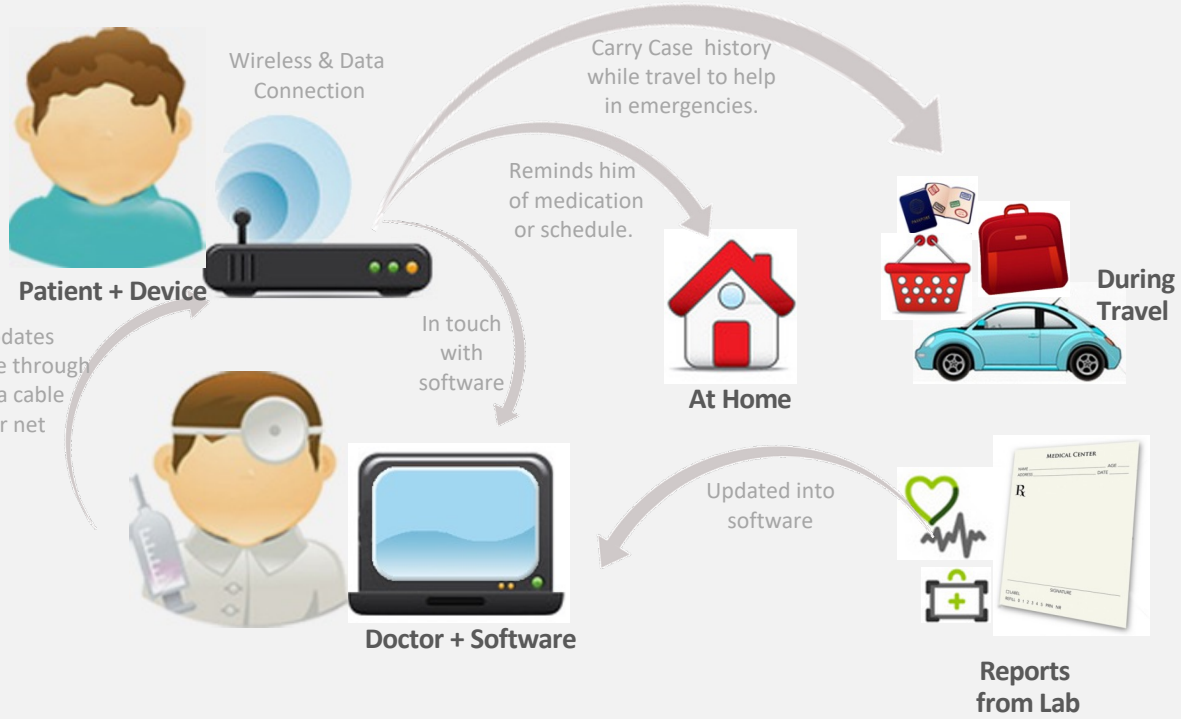
Example of ‘Concept Maps’. . .

Here is shown an example of concept map visually representing the different components of the a new email application based on ranking and prioritising.



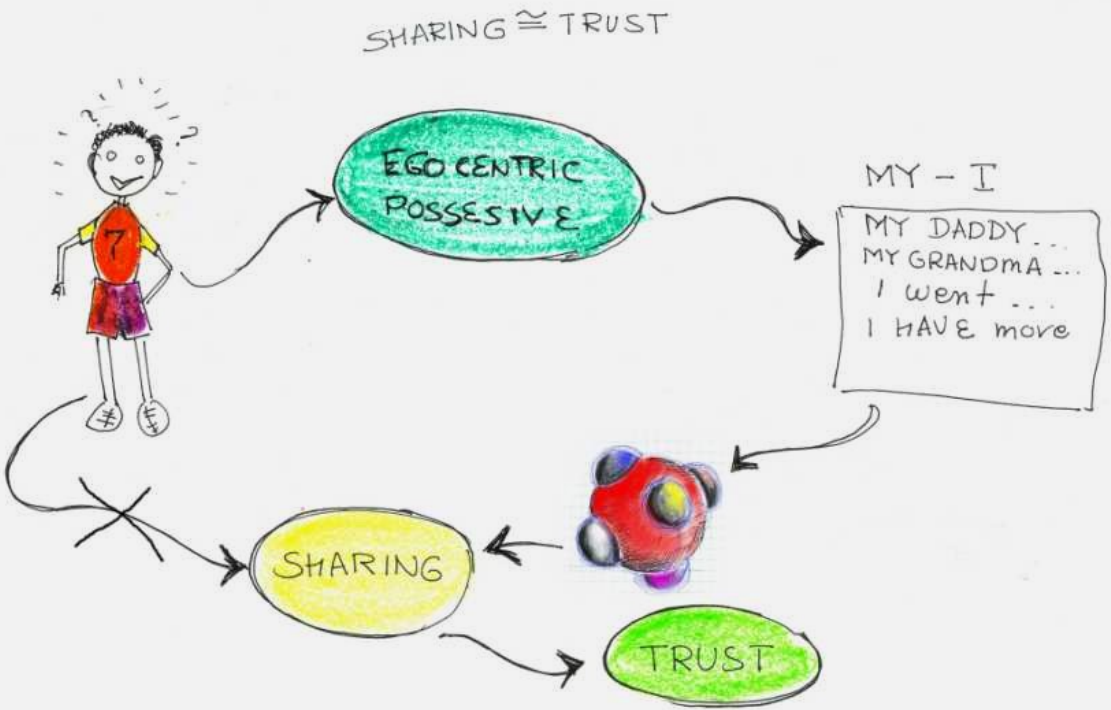
Example of ‘Concept Maps’. . .

Here is shown an example of concept map visually representing the different components of a Patient- Doctor System for Chronic Patients



Example of ‘Concept Maps’. . .

Here is shown an example of concept map of an interactive toy for children based on the metaphors of sharing Marbles



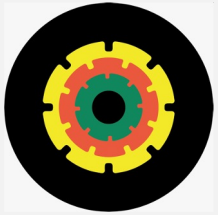
Thanks for Listening

DT&I Tools
Section: T10
Week 10

DT&I Course – Week 10:

DT&I Process
(20%)

> Ideation Part 2
> Generating Creative Ideas
> Concept Evaluation
> Concept Maps



DT&I Tools
(20%)

> Synectics
> Analogical Thinking
> Metaphors,
> Nature Inspiration,
> Concept Evaluation
> Concept Maps

DT&I Project
(50%)

> Apply Synectics, Analogical Thinking, Evaluate Concepts and generate Concept Maps

DT&I Cast Study
(10%)

> Case Study Project: **BPCL Retail Vision and Identity Design**

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Supporting Organizations:

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