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More than the sum of its parts: systems thinking in design education.

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More than the sum of its parts:

Systems thinking in design education

RSD4 Symposium – September 1, 2015 – Banff



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“Design, if it is to be ecologically responsible and socially responsive, must be revolutionary and radical.” – Victor Papanek



Historically, a design problem in the classroom is addressed in isolation of the larger picture and has a self-prescribed outcome.

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Traditional design education trains the student to think about two things in the project outcome:

- 1.) How the design piece affects its intended audience.
- 2.) How the result impacts the client's revenues.



Global warming is the most pressing issue facing the discipline and civilisation.

“...our economic system and our planetary system are now at war.” – Naomi Klein

A photograph of a forest with tall, thin trees and a path covered in fallen leaves. The text is overlaid on a semi-transparent white box in the center of the image.

We need that radical ecological design shift to be taught in higher education.

Systems Thinking is the answer.

Trains students to consider client communication and financial needs as well as:

- 1.) The demand of our work on our natural resources.

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- 1.) The demand of our work on our natural resources.
- 2.) Where and how we get materials to produce our projects.

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Trains students to consider client communication and financial needs as well as:

- 1.) The demand of our work on our natural resources.
- 2.) Where and how we get materials to produce our projects.
- 3.) **Who and what is affected by our decisions**

Systems Thinking is the answer.

Trains students to consider client communication and financial needs as well as:

- 1.) The demand of our work on our natural resources.
- 2.) Where and how we get materials to produce our projects.
- 3.) Who and what is affected by our decisions
- 4.) What happens to the project after it's handed off.**

How we transition...

Employ commonly understood design principles to help explain & align biological systems with creation process.

- 1.) Use Gestalt Theory.
- 2.) Use “Powers of Ten” metaphor (Charles & Ray Eames).
- 3.) Use current, but modified, design process.



Understanding the concept of Gestalt is a good starting point to explain to designers how to think in systems – it's a good way to speak to them in their language.

Graphic design is more than the sum of its parts.



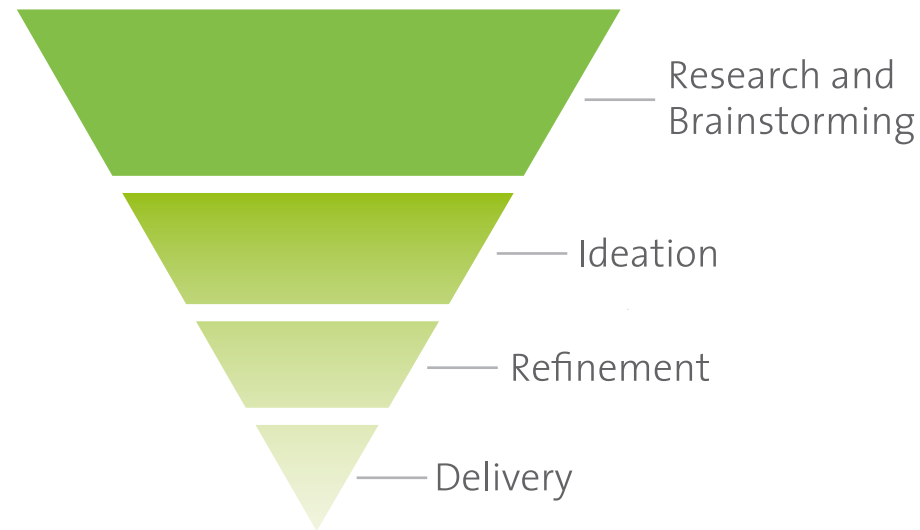
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“Powers of Ten” teaches us about the complexity and beauty of the natural world. Zooming in and out helps us learn about how it works.

Graphic design is part of a complex system of vendors, materials, and distribution.





The standard four phases (research, ideation, refinement, delivery) can remain, but the funnel form (pyramid) is converted into a more woven circular structure.

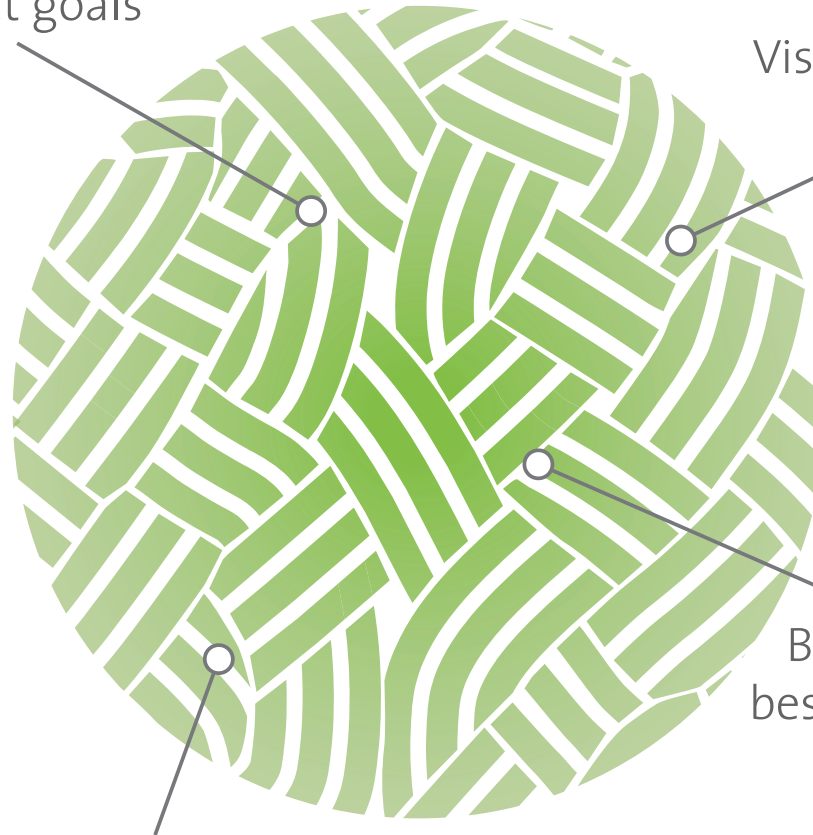
Graphic design has a easy-to-understand yet flawed process.

Determine
project goals

Visually map
system

Brainstorm
best outcomes

Evaluate outcomes
and implement



Systems thinking steps

A model to look backwards, forward, and dig deeper into a past project or phase for guidance.

- 1.) Listen to the client and collectively determine project

Systems thinking steps

A model to look backwards, forward, and dig deeper into a past project or phase for guidance.

- 1.) Listen to the client and collectively determine project goals.
- 2.) Visually map out the design problem(s).

Systems thinking steps

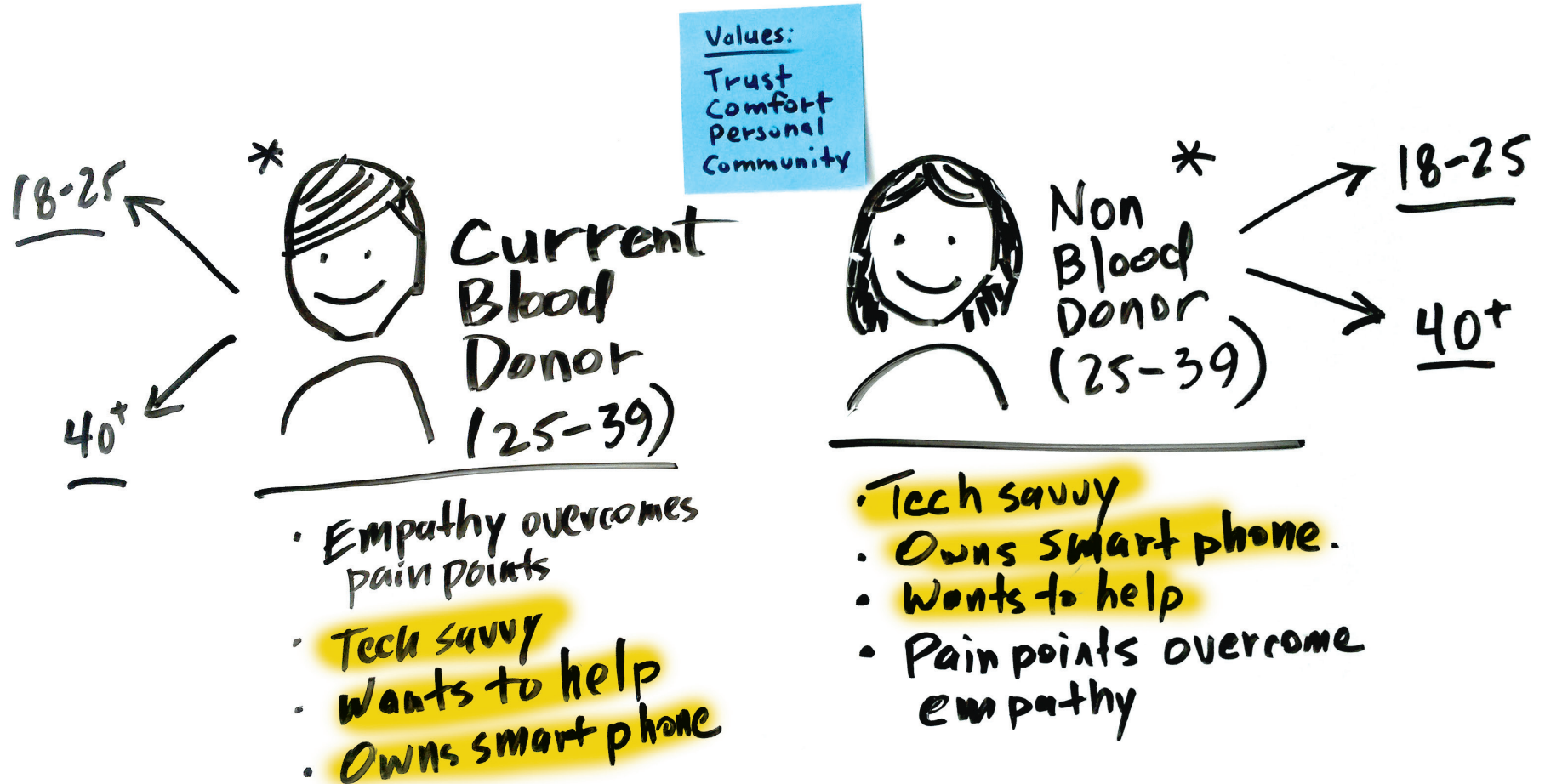
A model to look backwards, forward, and dig deeper into a past project or phase for guidance.

- 1.) Listen to the client and collectively determine project goals.
- 2.) Visually map out the design problem(s).
- 3.) **Brainstorm best solutions to reach and connect with audience(s).**

Systems thinking steps

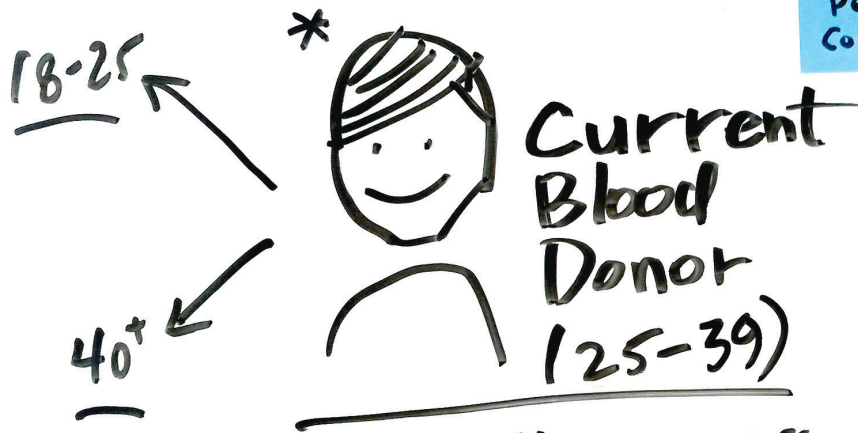
A model to look backwards, forward, and dig deeper into a past project or phase for guidance.

- 1.) Listen to the client and collectively determine project goals.
- 2.) Visually map out the design problem(s).
- 3.) Brainstorm best solutions to reach and connect with audience(s).
- 4.) Evaluate each possible project outcome and its impacts to decide upon what to implement.

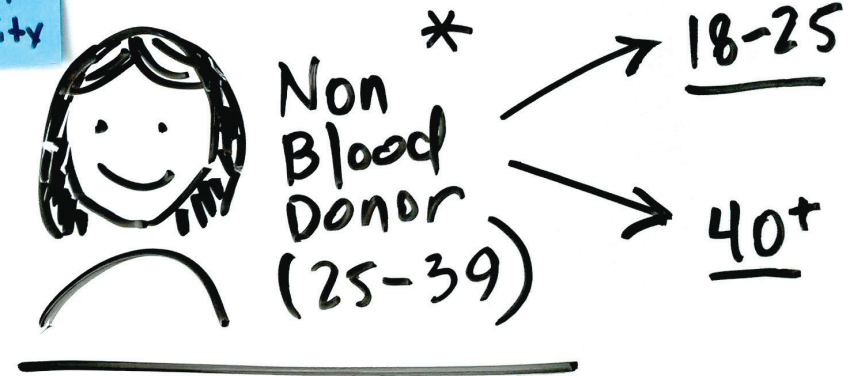


Collaboratively define project goals and create user personas for the audience(s).

Values:
Trust
Comfort
Personal
Community



- Empathy overcomes pain points
- Tech savvy
- Wants to help
- Owns smart phone



- Tech savvy
- Owns smart phone.
- Wants to help
- Pain points overcome empathy

social media?

Mobile App?

Server:
Energy
Plastics
Aluminum

sourced
global

Website?

Better
Service
Experience?

seating made
from what?
plastic
signage?
Energy

Global

Print
Ads?

Printer:
Paper
Ink
Energy

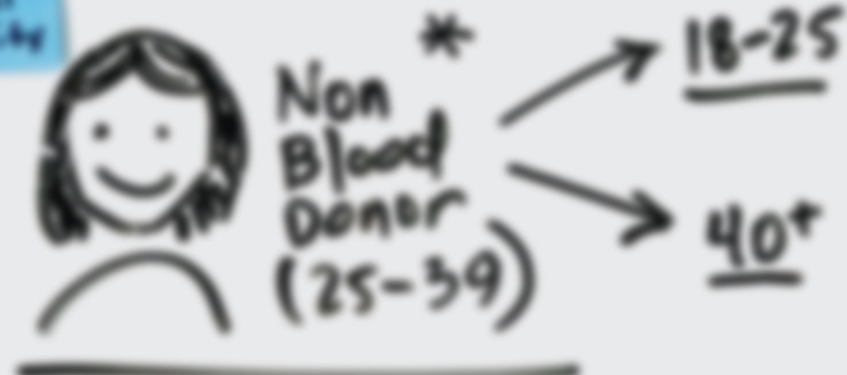
Outdoor
Signage

Local?

Printer:
Plastic
Paper
Ink
Energy

seating > needles?

Values:
Trust
Camaraderie
Personal
Community



• Empathy overcomes pain points

- Tech savvy
- Owns smart phone.
- Wants to help
- Pain points overcome empathy

• Tech savvy
• Wants to help
• Owns smart phone

Best solution
connect with a NPO?

social media

+
Illustrator

Server:
Energy
Plastics
Aluminum

sourced
global

Web?

hosting
must be
renewable.
vendors?

+ reward
program for
repeat
donors

Better
Service
Experience?

looking with
donor what
plastic
signage
exists?

Print
Ads?

Outdoor
Signage

Product
Paper
Ink
Energy

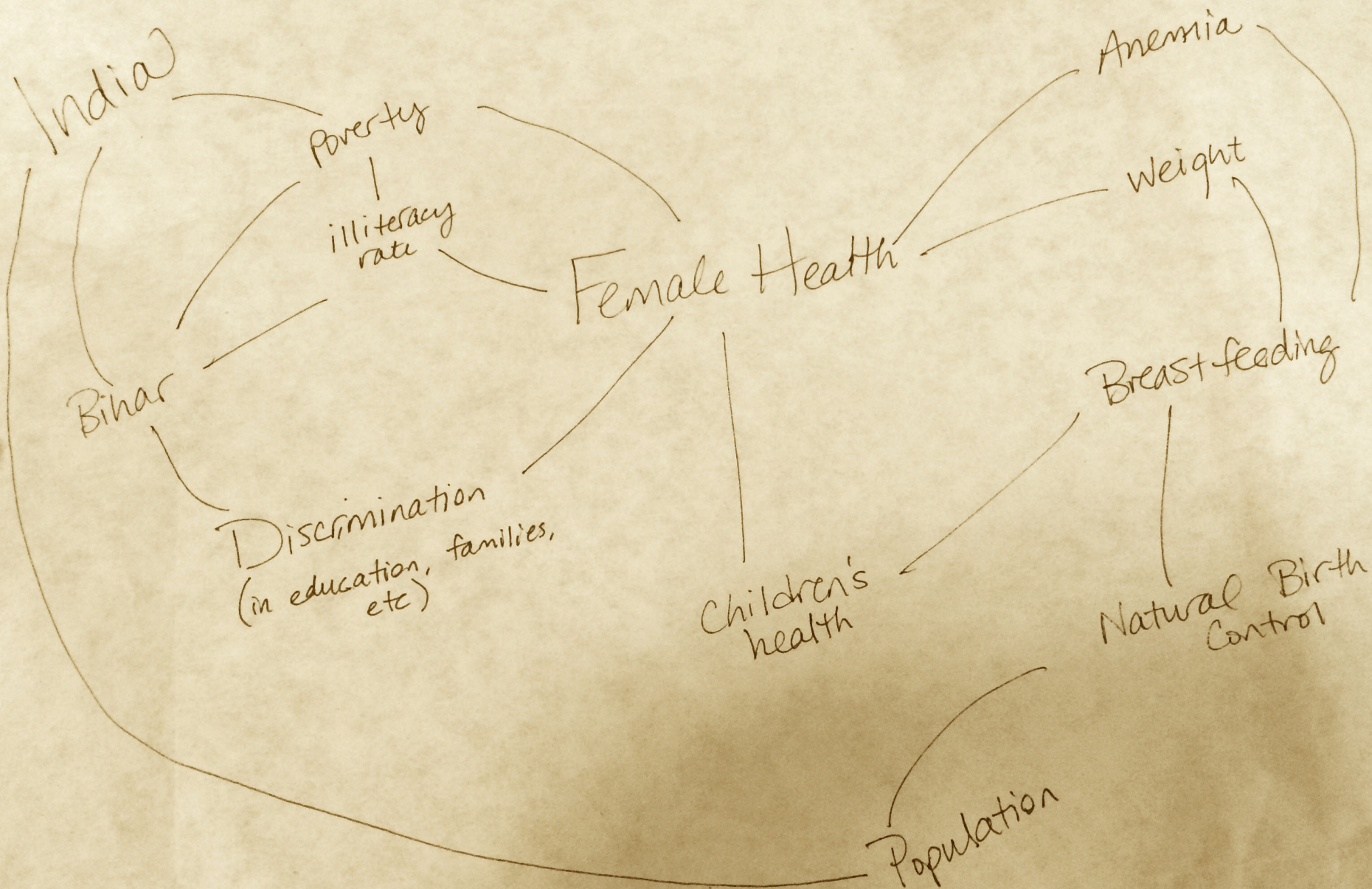
Local?

Product
Paper
Ink
Energy

Sample interdisciplinary design project:

(Industrial and graphic design + engineering)

Choose a wicked problem and propose a solution or series of solutions that can be implemented to help alleviate the issue using systems thinking.





Health

42%

OF INDIAN MOTHERS
ARE **UNDERWEIGHT**

33%

OF PREGNANT INDIAN
WOMEN HAVE A **BMI > 18.5**

60%

OF PREGNANT INDIAN
WOMEN HAVE **ANEMIA**

Education

A 2007 study in Chandigarh
found that, of 210 lactating
women:

28%

discarded nutritious
and necessary colostrum

73%

fed infants prelacteals

36%

delayed initiation
of breastfeeding

38%

were illiterate

Culture

Newly married women are at
the **bottom of the household
hierarchy**, meaning pregnant
women are only to eat after
their in-laws, husband, and
children have already eaten.

As a result, they eat the least
of any member of the family.

In some areas, women are
seen as **an economic burden**
because of their dowry, which
leads to **the mistreatment of
daughters**, low level of
education, and nutritional
deficiency.



Best practices for pedagogical application in the design classroom.

- 1.) Educate the educators.
- 2.) Remove prescribed outcome from assignment.
- 3.) Employ participatory design strategies. “Design with...”
- 4.) Team-based projects that have assigned roles for each student.
- 5.) Encourage students to speak with vendors and manufacturers.

Growing forward

There is a need for further experimentation with this and other systems thinking strategies within the classroom and in the profession.

More thought to concept of “upcycle” or “to renourish” during and after this design process.

Educating the educators.

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