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

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*Systems thinking in design education*

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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 civilization.

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

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2.) Where and how we get materials to produce our projects.
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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.
“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 an 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

Current Blood Donor (25-39)
- Empathy overcomes pain points
- Tech savvy
- Wants to help
- Owns smartphone

Non Blood Donor (40+)
- Tech savvy
- Owns smartphone
- Wants to help
- Pain points overcome empathy

Social media?
- Mobile app?
- Website?

Better service experience?
- Seating made from what?
- Plastic, signage, energy

Print Ads?
- Printer: Paper, ink, energy

Outdoor signage?
- Printer: Plastic, paper, ink, energy

Sourced global vs. local?
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
- 30% delayed initiation of breastfeeding
- 58% 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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