



Leveling Up as a Designer

Week 0: First Lecture

Growth requires intention, guided by
reflection on experience

Product Design

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BRIGHAM YOUNG UNIVERSITY



**DESIGN
EXPLORATION
RESEARCH
GROUP**

Outline

- **Opening** (Why We're Here)
- **About Design** (Our Practice)
- **Syllabus** (Course Orientation)
- **Grand Rounds** (Case Study)
- **Sketching Practice** (Brain Shift)
- **Designette** (Implementation)

Opening

Start With Why

Why are you here, in this class?

A satellite view of Earth from space, showing the Americas and surrounding oceans. The text "Start With Why" is overlaid in white.

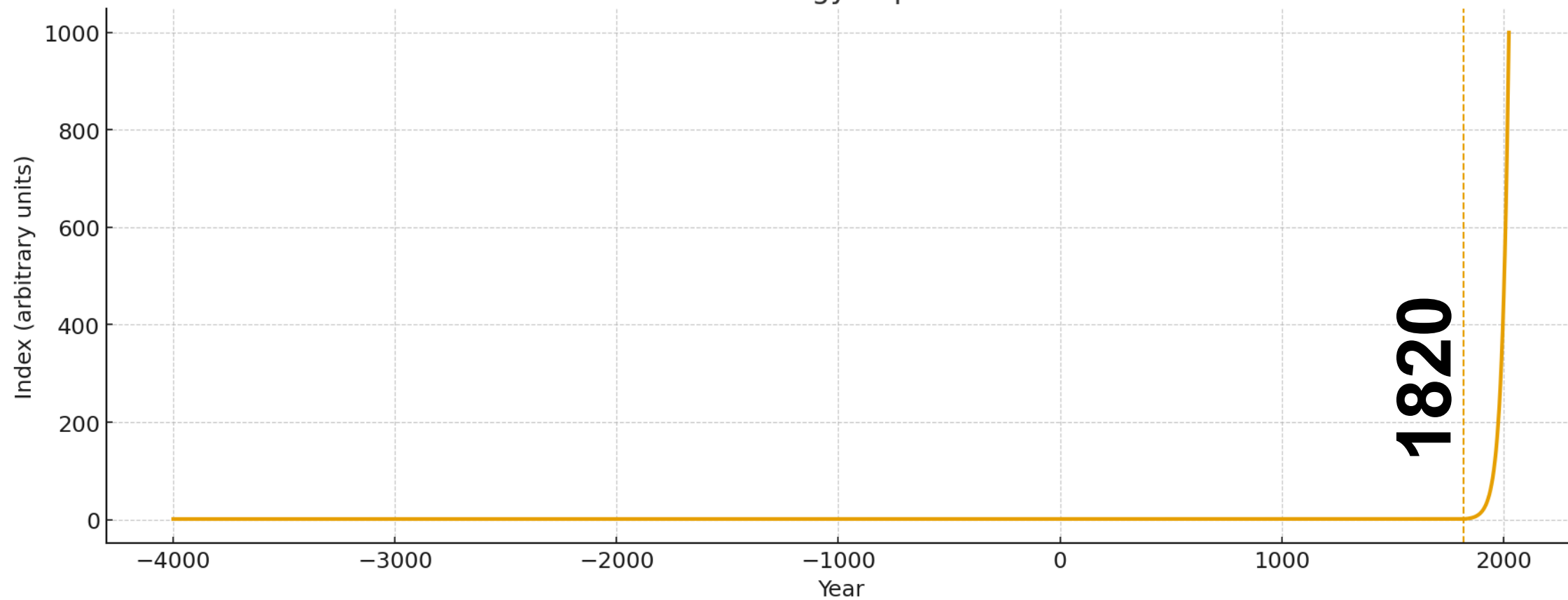
Start With Why

“God left us the world unfinished for man to work his skill upon. He left the electricity in the cloud, the oil in the earth. He left the rivers unbridged and the forests unfelled and the cities unbuilt. God gives to man the challenge of raw materials, not the ease of unfinished things. He leaves the pictures unpainted and the music unsung and the problems unsolved, that man might know the joys and glories of creation.”

— **Thomas S. Monson**
1988 First Presidency Message



Technology Explosion



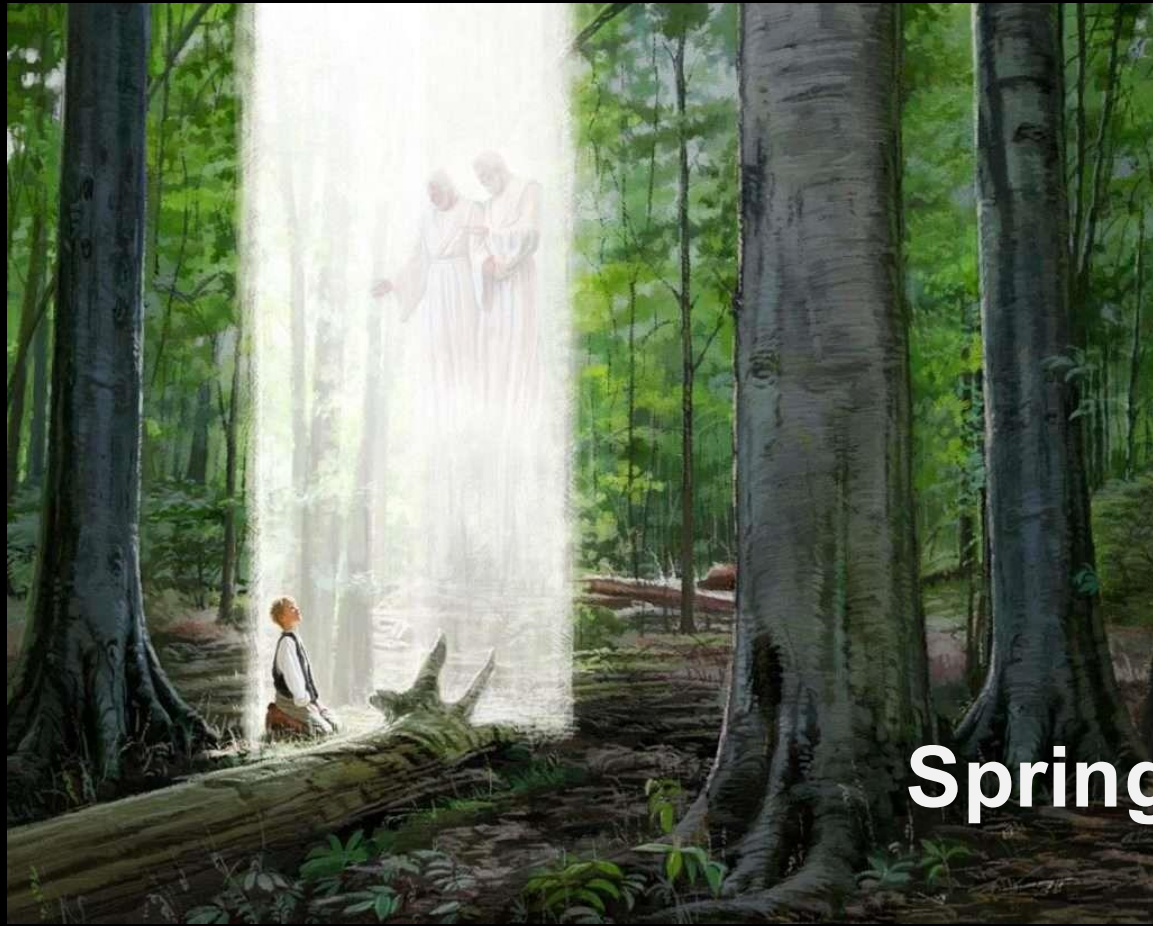


~ March 26, 1820



April 21, 1820

Domain	Before 1820 (Flat Progress)	After 1820 (Exponential Acceleration)
Transportation	Horses, sailing ships, wagons, canals. Speed unchanged for millennia.	Steam locomotives (1829), steamships, automobiles (1886), airplanes (1903), space travel (1961). From animal to machine speed.
Communication	Letters, couriers, printing press, Pony Express equivalents.	Telegraph (1840s), telephone (1876), radio (1890s). From weeks per message to seconds per message to instant message.
Energy & Power	Muscle, firewood, windmills, waterwheels, early coal steam engines.	Faraday’s induction (1831), generators, motors, electric grids (1880s), nuclear power (1951). Global-scale, universal power.
Manufacturing	Craftsmanship, manual tools, water/steam power.	Electrified factories, Bessemer steel (1856), mass production, assembly lines, robotic manufacturing (1961), additive manufacturing (1981).
Data & Knowledge	Printing press, newspapers, books; slow geographic spread.	Telegraph networks, photography (1839), typewriters, punch cards, early computers, Internet (1983), cloud computing (pre 2006), LLM (2018).
Health & Medicine	Folk practices, no anesthesia, no germ theory, crude surgery.	Anesthesia (1846), antiseptics (1867), X-rays (1895), electrified sanitation, robotic surgery (1985). Science-driven medicine.
Everyday Life	Daylight, candles, agrarian rhythms, manual labor.	Refrigeration (1834), electric lighting (1879), appliances (sewing (1830) & washing (1907) machines), urbanization, electrified homes. Night became productive.



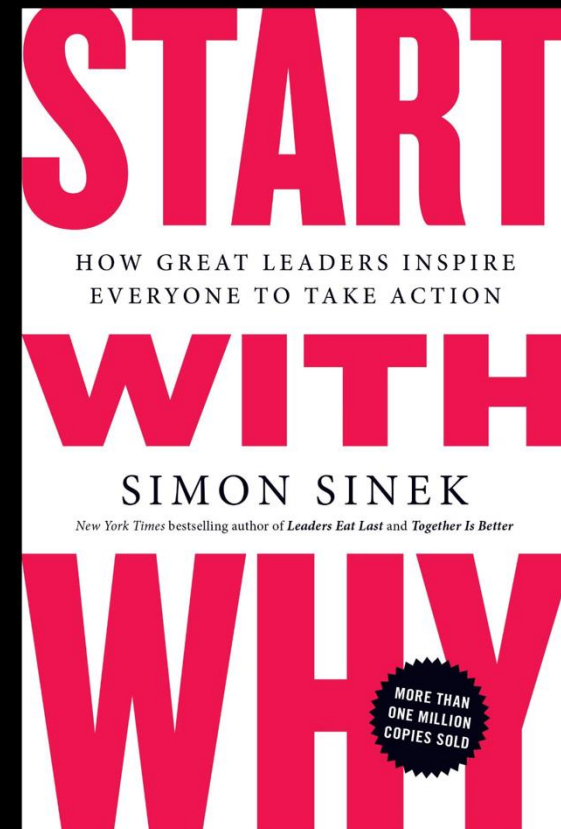
Spring 1820



Dr. Kenneth Solen (Chemical Engineering)
Technology: A Sacred Explosion, Convocation
Remarks, Ira A. Fulton College of Engineering &
Technology, BYU, August 18, 2006



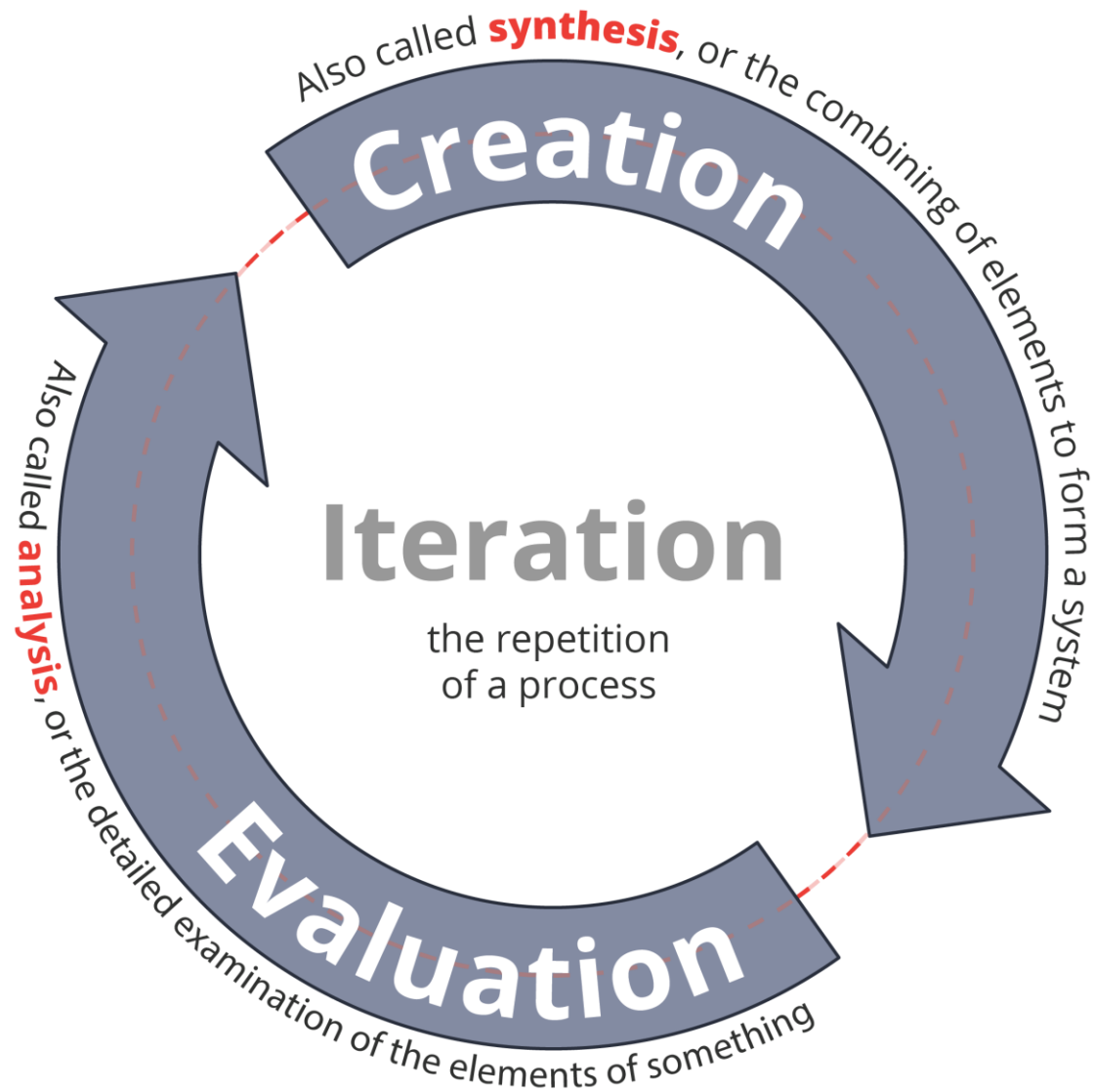
Start With Why



About Design

An introduction to the course

DESIGN



Think deeper about

DESIGN

then you ever have before

Talk more intelligently about

Think deeper about

DESIGN

then you ever have before

More intentionally practice

Talk more intelligently about

Think deeper about

DESIGN

then you ever have before



practice

practiced

practice makes per...

practice what one...

practicer

< > Dictionary
5 found

A

A

Q practice



All

American English

American English Thesaurus

British English

British English Thesaurus

Portuguese



prac·tice | 'praktəs |

noun

- 1 the actual application or use of an idea, belief, or method, as opposed to theories relating to it: *the principles and practice of teaching* | he **put** his self-defense training **into practice** by helping police arrest the armed robber.
 - the carrying out or exercise of a profession, especially that of a doctor or lawyer: *he abandoned medical practice for the Church.*
 - the business or premises of a doctor or lawyer: *Dr. Weiss has a practice in Essex.*
- 2 the customary, habitual, or expected procedure or way of doing of something: *current nursing practice* | [*count noun*] : *modern child-rearing practices.*
 - an established method of legal procedure.
- 3 repeated exercise in or performance of an activity or skill so as to acquire or maintain proficiency in it: *it must have taken a lot of practice to become so fluent.*
 - a period of time spent practicing an activity or skill: *daily choir practices.*

verb [*with object*] (*British practise*)

- 1 perform (an activity) or exercise (a skill) repeatedly or regularly in order to improve or maintain one's proficiency: *I need to practice my French* | [*no object*] : *they were practicing for the Olympics.*
- 2 carry out or perform (a particular activity, method, or custom) habitually or regularly: *we still practice some of these rituals today.*
 - actively pursue or be engaged in (a particular profession or occupation): *he began to practice law* | [*no object*] : *he practiced as an attorney.*
 - observe the teaching and rules of (a particular religion): *they are free to practice their religion without fear of persecution.*

The Practice

Shipping
Creative
Work

BESTSELLING AUTHOR OF
THIS IS MARKETING

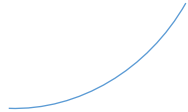
SETH GODIN

Good daily habits and routine, when done consistently over time, increase your chances of impacting the world.



I know a lot of creative people who have become famous, who have won awards, who are successful in every field, and this is what they have in common. It's not a talent. It's not something that the muse touched them and not someone else.

“inspiration”



Seth Godin

I know a lot of creative people who have become famous, who have won awards, who are successful in every field, and this is what they have in common. It's not a talent. It's not something that the muse touched them and not someone else.

“inspiration”

They simply do the work.

Seth Godin



Leveling Up as a Designer

Week 0: First Lecture

Growth requires intention, guided by
reflection on experience

Product Design

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BRIGHAM YOUNG UNIVERSITY



 x96



 81

008777130

 598

Week's Theme | Growth requires intention, guided by reflection on experience



Syllabus

And actually, the Product Design Handbook



PRODUCT DESIGN HANDBOOK

GUIDED ACTIVITIES FOR BUILDING
ADVANCED DESIGN CAPABILITY

Christopher A. Mattson, PhD
BRIGHAM YOUNG UNIVERSITY



Inside the Handbook

PART I: Why This Handbook Exists	1
Introduction	2
PART II: Weekly Study Guides	6
Weekly Study Guides	7
Week 0 Study Guide: Leveling Up as a Designer	8
Week 1 Study Guide: The Role of the Product/Engineering Designer	13
Week 2 Study Guide: Framing and Reframing Design Problems	23
Week 3 Study Guide: Human-Centered Design + User Empathy	31
Week 4 Study Guide: Design Thinking in Practice	39
Week 5 Study Guide: Creativity and Concept Generation	47
Week 6 Study Guide: Value Proposition and Product-Market Fit	56
Week 7 Study Guide: Design for X (DFX)	64
Week 8 Study Guide: Design Management (BOM costs, planning)	73
Week 9 Study Guide: Systems Thinking + Lifecycle Design	83
Week 10 Study Guide: Sustainability and Ethics in Product Design	92
Week 11 Study Guide: Cultural and Global Design Contexts	100
Week 12 Study Guide: Storytelling and Communication in Design	109
Week 13 Study Guide: Carrying Design Forward	118
PART III: Projects and Deliverables	123
Projects and Deliverables	124
Assignment 1: Design Philosophy	125
Assignment 2: Reading Assignment	132
Assignment 3: Sketching Assignment	136
Assignment 4: Designette Assignment	140
Assignment 5: Personal Design Project	144
Assignment 6: Product Pitch Assignment	149
Assignment 7: Design Portfolio Assignment	154

PART IV: Reference Material	160
Reference Material	161
Course Calendar	162
Assignment Areas and Subassignments	162
Reading Schedule	165
Sketching Schedule	167
Project Schedule	169
Project Domains	170
Engineering Design Principles	173
Course Syllabus	175
PART V: Assignment Examples	185
Assignment Examples	186
Personal Engineering Design Philosophy Example	187
Reading Assignment Example	194
Sketching Assignment Example	196
Designette Assignment Example	197
Personal Design Project Example	200
Product Pitch Assignment Example	225
Design Portfolio Assignment Example	226
Acknowledgments	228
Image Credits	229
References	230
About the Author	234
Publication Information	235

Assignments

Design Philosophy (10 %)

Reading Assignments (10%)

Sketching Assignments (5%)

Designette Assignments (15%)

Design Project Assignment (10%)

Product Pitch Assignment (5%)

Portfolio Assignment (45%)

7 What You'll Need for This Course

To complete the work in this course, you will need the following:

1. For Learning

- Product Design Handbook (digital)
- *Engineering Design Essentials* (physical)
- *Product Development* (digital or physical)

2. For Sketching

- Sketchbook
- BIC Cristal Medium ballpoint pen
- Clear ruler

3. For Documenting Your Development

- Project notebook (physical)
- Design Portfolio working file (digital)



Weekly Rhythm

Monday: Study Guide / Read / Reflect*

Tuesday: Class & Project

Wednesday: Designette & Project

Thursday: Class & Project**

Friday: Project & Project

Saturday: Submit***

...and sketch 10 min/day M-F



- 2026 Fall
- Home

Announcements

Assignments

Grades

Pages

Modules

Discussions

Notebook



Collapse All

Export Course Content

▼ Course Instructions
Start Here Now (this is critical)
Accessing Course Content
Navigating the Rest of the Course

- View Course Stream
- View Course Calendar
- View Course Notifications

- To Do
- [Welcome and Delivera...](#)

ME EN 576-001:
Product Design
Aug 28 at 10:24am

×
- [First day of Semester A...](#)

ME EN 576-001:
Product Design
Sep 2 at 7:37am

×
- [Initial Design Philosoph...](#)

ME EN 576-001:
Product Design
20 points |
Sep 2 at 11:59pm

×
- [Sketching Kickstart](#)

ME EN 576-001:
Product Design
Sep 5 at 11:59pm

×
- [Week 0: Project Domai...](#)

ME EN 576-001:
Product Design
Sep 5 at 11:59pm

×
- [Week 0: Reading Respo...](#)

ME EN 576-001:
Product Design
7.69 points |
Sep 5 at 11:59pm

×

- Account
- Dashboard
- Courses
- Calendar
- Inbox
- History
- BYU Canvas Info & Help

Grand Rounds

A Case Study Discussion

Design Brief | Failed Bracket

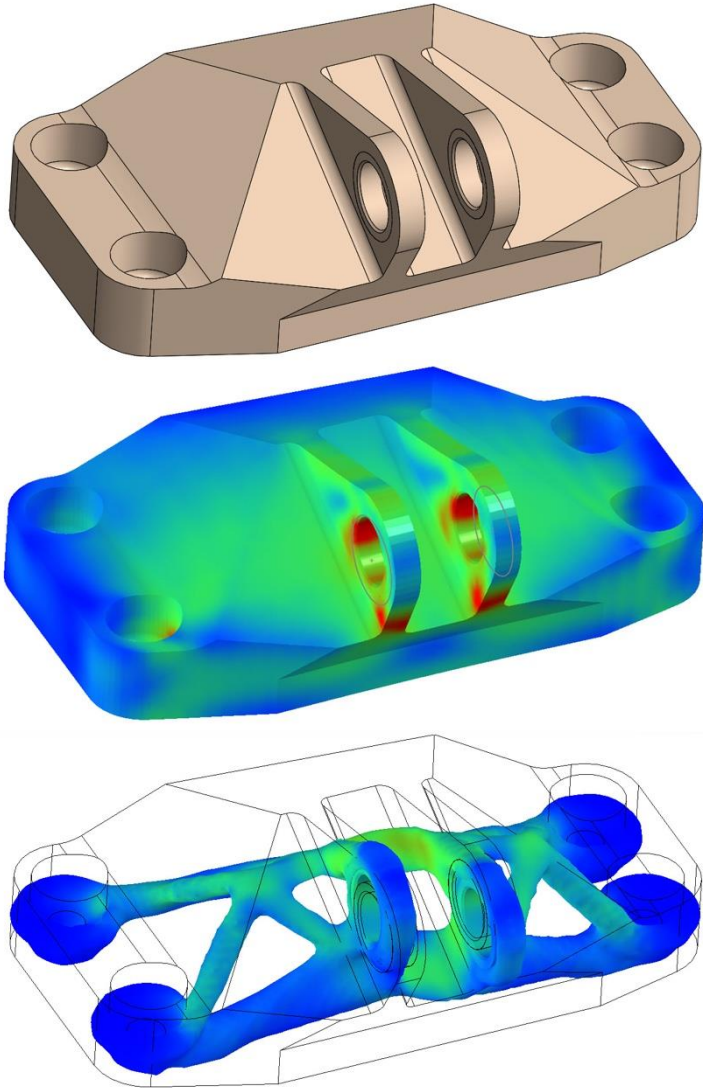
An auto manufacturer is preparing to release its first EV Truck.

The design is currently in the Producibility Refinement stage of product development.

A problem with the rear gate hinge emerges: 7 out of 100 parts are failing when exposed to simulated extreme use cases (dynamic loading applied to open rear gate).

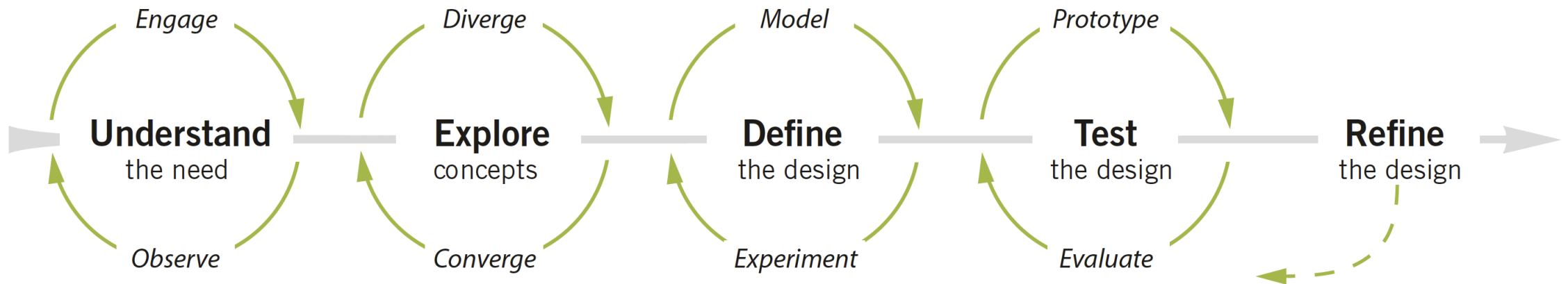
The rollout date is in jeopardy, and there is significant pressure on you and your team to fix this problem.

What do you do?



Representation of part (not actual part)

Where in the implementation of the basic design process did the team fail?



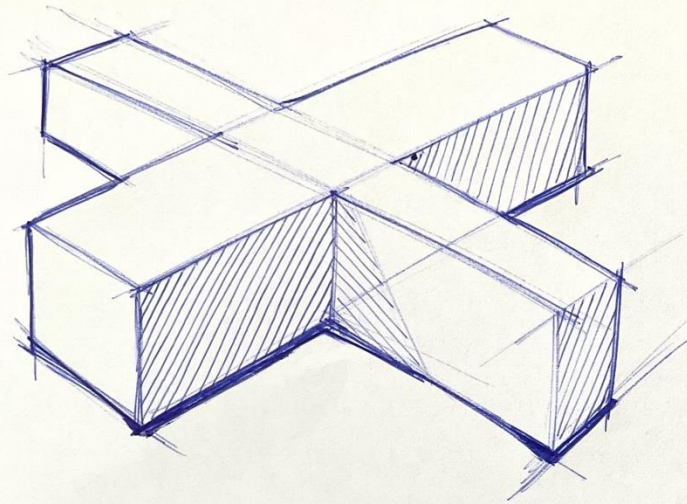
Sketching

Skill Development

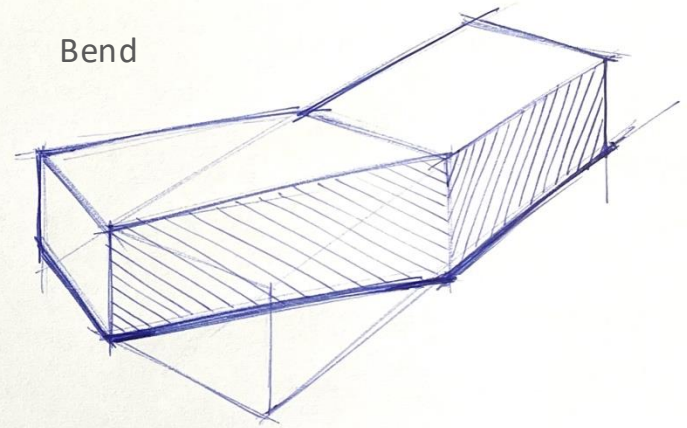
SKETCH THIS (8 minutes)

Be observant
to details, try
to copy those
details.

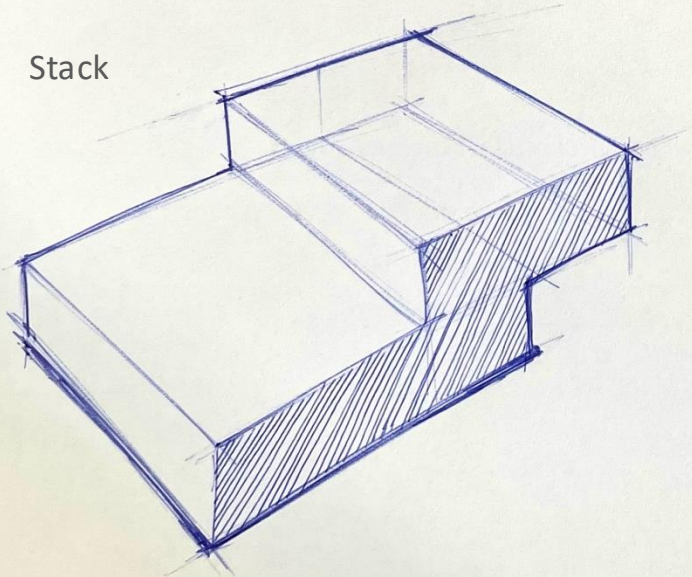
Intersect



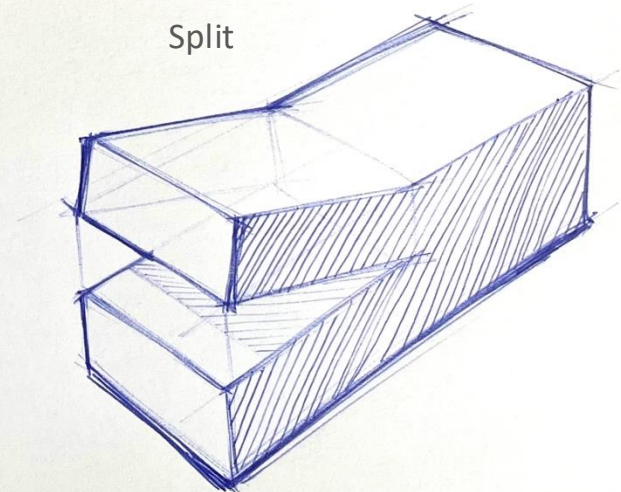
Bend



Stack



Split



Designette

A short, focused design challenge

Designette (15 minutes)

Subject: Hand Pulled Cart in Developing-World Contexts

Purpose: Observe, critique, and redesigning a simple but consequential product, linking back to the theme that growth requires practice and reflection.

Tasks:

1. 3 minutes — Individually observe the following image. Note 3 features that reflect good design decisions, and 3 features that raise concerns.
2. 4 minutes — Sketch the cart, annotating your observations. Highlight at least 2 design tradeoffs that are evident in the current design.
3. 5 minutes — Redesign one aspect of the cart. Create a quick sketch showing your improvement, with at least one annotation of how it is better.
4. 3 minutes — Pair and share: discuss one insight about how reflective critique led you to a growth-oriented design improvement.



3 minutes —
Observe the
image. Note 3
features that
reflect good
design decisions,
and 3 features
that raise
concerns.



4 minutes —
Sketch the cart,
annotating your
observations.
Highlight at least
2 design
tradeoffs that
are evident in
the current
design.



5 minutes —
Redesign one
aspect of the
cart. Create a
quick sketch
showing your
improvement,
with at least one
annotation of
how it is better.



3 minutes —
Pair and share:
discuss one
insight about
how reflective
critique led you
to a growth-
oriented design
improvement.

Ending



After class open the study guide Week 0 and do the work

0.1 Study Plan

Day	Task	Expected Time
W	1. Complete and digitally submit the Initial Design Philosophy Statement	30 minutes
	2. Read the syllabus and explore the course website	20 minutes
Th	1. Attend and be engaged in the class period	75 minutes
	2. Read Sections 1 & 2 of <i>Engineering Design Essentials</i> (Sec. 0.2)	20 minutes
F	1. Read Sections 3 & 4 of <i>Engineering Design Essentials</i> (Sec. 0.2)	20 minutes
	2. Read and do "Visual Thinking Exercises for Engineers" (Sec. 0.2)	30 minutes
	3. Complete the Weekly Reading Response	15 minutes
	4. Advance your design project through early exploration (Sec. 0.4)	60 minutes
Sa	1. Digitally submit the Weekly Reading Response, sketching result, and Project Domain Reflection Memo	15 minutes
		Total: 4 h 45 m



**On MONDAY
open the
study guide
Week 1 and
do the work**

1.1 Study Plan

Day	Task	Expected Time
M	1. Prepare yourself by completing and internalizing the readings (Sec. 1.2)	62 minutes
	2. Complete and digitally submit the Weekly Reading Response	20 minutes
	3. Complete the daily sketching exercise (Sec. 1.3)	10 minutes
T	1. Attend and be engaged in the class period	75 minutes
	2. Advance your design project inspired by this week's learning (Sec. 1.5)	30 minutes
	3. Complete daily sketching exercise (Sec. 1.3)	10 minutes
W	1. Complete the designette (Sec. 1.4)	60 minutes
	2. Advance your design project inspired by this week's learning (Sec. 1.5)	30 minutes
	3. Identify gaps in understanding and prepare for lecture Q&A	10 minutes
	4. Complete daily sketching exercise (Sec. 1.3)	10 minutes
Th	1. Bring the completed Designette to class for informal review and discussion; attend and be engaged in the class period	75 minutes
	2. Advance your design project inspired by this week's learning (Sec. 1.5)	30 minutes
	3. Complete daily sketching exercise (Sec. 1.3)	10 minutes
F	1. Advance your design project inspired by this week's learning (Sec. 1.5)	60 minutes
	2. Complete daily sketching exercise (Sec. 1.3)	10 minutes
Sa	1. Digitally submit the Designette and the required, ungraded Design Opportunity Framing Page	15 minutes
		Total: 8 h 37 m

	Su	M	T	W	Th	F	S	
Week 0								Design Philosophy & Engineering Design Essentials
Week 1			L	D	L			Complete Opportunity Development -- Initiate
Week 2			L	D	L			
Week 3			L	D	L			Complete Opportunity Development – User Insights
Week 4			L	D	L			
Week 5			L	D	L			Complete Concept Development
Week 6			L	D	L			
Week 7			L	D	L			Complete Sub-System Engineering
Week 8			L	D	L			
Week 9			L	D	L			Complete System Refinement
Week 10			L	D	L			
Week 11			L	D	L			Complete Product Pitch
Week 12			L	D	L			
Week 13			L					Design Portfolio Due as Final Exam
Final Exam								

- Focus on Reading
- Focus on Project
- Focus on Resting. Catch Up if Needed
- Focus on Portfolio

- L Lecture Day
- D Designette Day
- Reflection Submission Due
- All Non-Reflection Submissions Due

KEY