Development of an Online Entrepreneurial Training Course for Sustainable Technology

First steps:

Global Design Challenge

- Small traditional A+D school (~1000 students)
- 100% online team members, NEVER meet
- Multidisciplinary teams but NO MBAs
- Get students "out of building" for customer interviews
- 8 customer interviews / wk
- Use LaunchPad Central
- Incorporate prototyping
- 10-wk curriculum (used LLP 10-wk)
- Required class for PIA program (abundance model)
- 4 teams
- Driving criteria = sustainability

MCAD

Unit 2: BMC + Customer Interviews (7 wks)

- 9 building blocks from company intends to make $
- Testing BMC Hypothesis
- Establish Product/Market Fit
- 8 "real" 1-1 interviews / wk
- Discovery transitions (LPC)
- Instructor feedback (LPC)
- Weekly presentation cycles (3x)
  - what they thought?
  - what they learned?
  - what they will do next?

Unit 3: E-team Grant Proposals (4 wks)

Next steps

- E-Team grant proposals in May 2014
- evaluate + refine course "postmortem"
- offer again in Spring 2015
- open to the public?
- discuss course w/ LPC reps -- get advice
- consider other means to add "in-person" elements (e.g., VoiceThread)?

Spring 2013

Fall 2013

Spring 2014

Spring 2015

Steve's LLP Courses

- 10-wk class @ Berkeley + Stanford
- In-person setting
- Small, cross-disciplinary teams (mostly MBA + engineers)
- Apply to get in (scarcity model)
- Limit # teams (3)
- Get students "out of building"
- 10 customer interviews / wk
- Use LaunchPad Central
- Incorporate prototyping
- Driving criteria = $100M/yr startups

Unit 1: Biz Fundamentals (4 wks)

Lessons learned

Development of an Online Entrepreneurial Training Course for Sustainable Technology

Jake Cook: Instructor
Cindy Gilbert: Director + Faculty
Sustainable Design Program

NCIIA Open Conference
March 2014

MCAD

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March 2014

cindy_gilbert@mcad.edu
mcad.edu/sustainable
mcadsustainabledesign.com
@mcadsustaindsgn

MCAD

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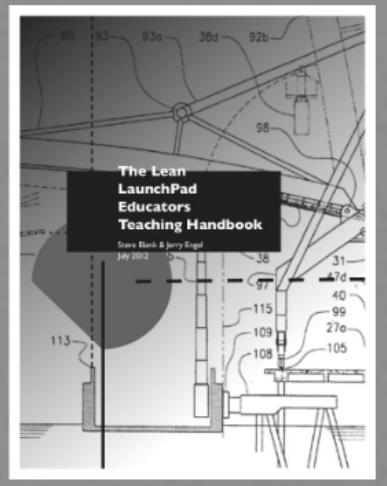
First steps:

NCIIA
National Collegiate Inventors & Innovators Alliance



Global Design Challenge
Instructor: Jake Cook
SD-7030

Steve's LLP Courses

- 10-wk class @ Berkeley + Stanford
- In-person setting
- Small, cross-disciplinary teams (mostly MBA + engineers)
- Apply to get in (scarcity model)
- Limit # teams (8)
- Get students "out of building"
- 10 customer interviews / wk
- Use LaunchPad Central
- Incorporate prototyping
- Driving criteria = $100M/yr startups

Global Design Challenge

? • Small traditional A+D school (<1000 students)
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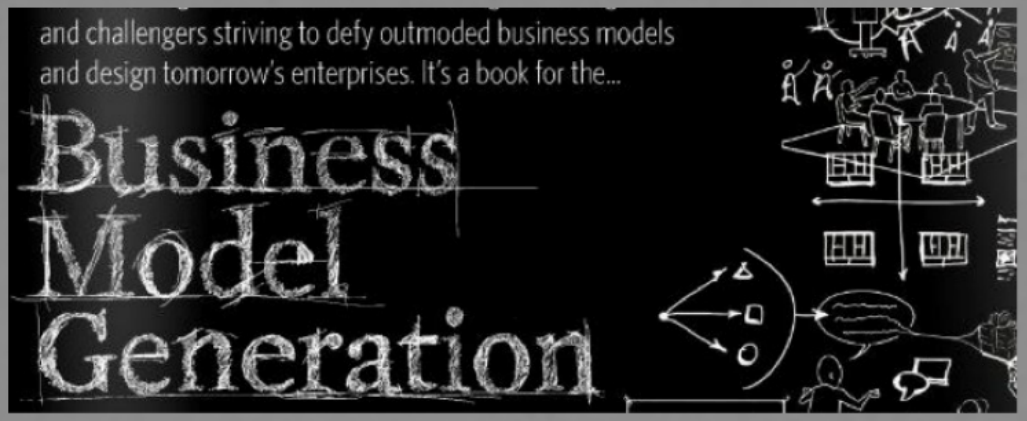
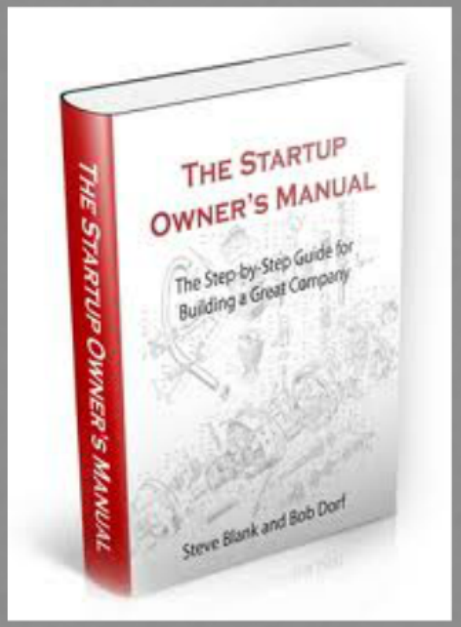
• Driving criteria = sustainability

MCAD


and challengers striving to defy outmoded business models
and design tomorrow's enterprises. It's a book for the...
Business
Model
Generation

LOOK INSIDE
INTERVIEWING USERS
by STEVE PORTIGAL


THE STARTUP OWNER'S MANUAL
The Step-by-Step Guide for Building a Great Company
Steve Blank and Bob Dorf

Bb
Blackboard

LPC

Unit 1: Biz Fundamentals (4 wks)

The Business Model Canvas

Designed for: The Ultimate Lemonade Stand
Designed by: Jake Hvistendahl
Date: 1/18/14
Version: 1

Key Partners
- Lemon and Food Suppliers
- The Local Park Board
- Local Advertisers

Key Activities
- Delivery and Sales
- Distributing Information
- Making Lemonade

Key Resources
- The Pedal Stand
- Website and GPS tracker app
- Resupply Truck

Value Propositions
- Provide Refreshment
- Provide Information
- Provide emergency support

Customer Relationships
- Free Services
- Service Oriented
- Direct Communication

Channels
- Website
- Direct Sales
- Online Tracking

Customer Segments
- Recreational Bikers
- Joggers
- Families using facilities

Cost Structure
- Purchase and Maintenance of the stand
- Wages
- Inventory Costs

Revenue Streams
- Subsidies from park board
- Sales of lemonade and edibles
- Advertising sponsorships from local bike shops

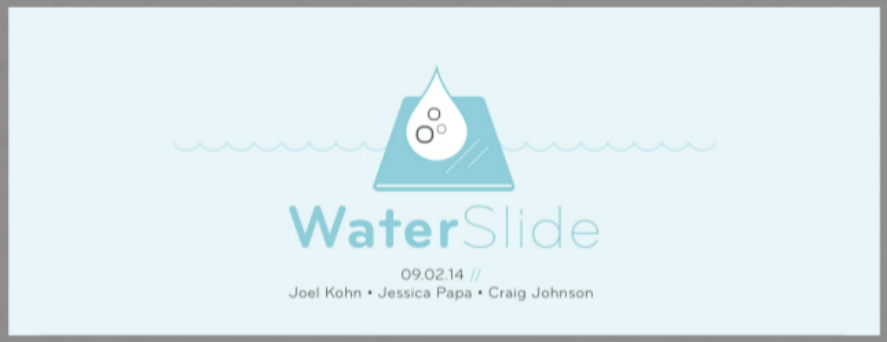
DESIGNED BY: Business Model Foundry AG
The makers of Business Model Generation and Strategyzer

Strategyzer
strategyzer.com

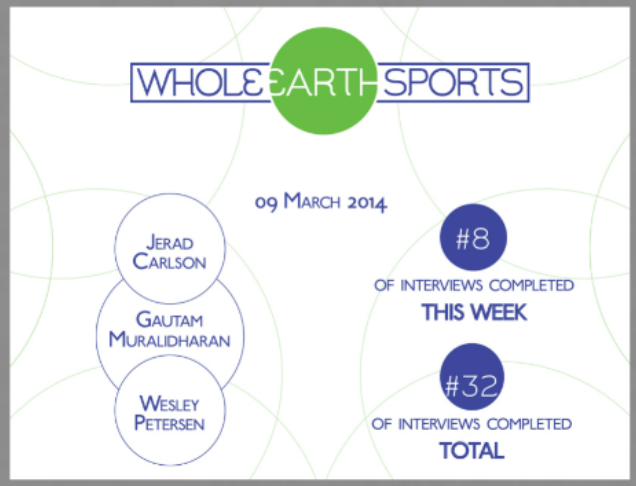
	Regular lemonade $4.00 apiece 5K units per month	$20,000	Regular lemonade $4.00 apiece 5K units per month	$20,000	Regular lemonade $4.00 apiece 5K units per month	$20,000	Regular lemonade $4.00 apiece 5K units per month	$20,000	Regular lemonade $4.00 apiece 5K units per month	$20,000	Regular lemonade $4.00 apiece 5K units per month	$20,000	Regular lemonade $4.00 apiece 5K units per month	$17,500
	Hard lemonde $6.50 apiece 2K units per month	$13,000	Hard lemonde $6.50 apiece 2K units per month	$13,000	Hard lemonde $6.50 apiece 2K units per month	$13,000	Hard lemonde $6.50 apiece 2K units per month	$13,000	Hard lemonde $6.50 apiece 2K units per month	$13,000	Hard lemonde $6.50 apiece 2K units per month	$13,000	Hard lemonde $6.50 apiece 2K units per month	$12,000
Income	Total Income	$33,000		$33,000		$33,000		$33,000		$33,000		$33,000		$29,500
Expense	Small business loan for food truck ($50K on 24-month payback schedule with 5% interest)	$2,194	Small business loan for food truck ($50K on 24-month payback schedule with 5% interest)	$2,194	Small business loan for food truck ($50K on 24-month payback schedule with 5% interest)	$2,194	Small business loan for food truck ($50K on 24-month payback schedule with 5% interest)	$2,194	Small business loan for food truck ($50K on 24-month payback schedule with 5% interest)	$2,194	Small business loan for food truck ($50K on 24-month payback schedule with 5% interest)	$2,194	Small business loan for food truck ($50K on 24-month payback schedule with 5% interest)	$2,194
	General liability insurance payments	$292	General liability insurance payments	$292	General liability insurance payments	$292	General liability insurance payments	$292	General liability insurance payments	$292	General liability insurance payments	$292	General liability insurance payments	$292
	Vehicle insurance	$208	Vehicle insurance	$208	Vehicle insurance	$208	Vehicle insurance	$208	Vehicle insurance	$208	Vehicle insurance	$208	Vehicle insurance	$208
	Workers comp insurance	$583	Workers comp insurance	$583	Workers comp insurance	$583	Workers comp insurance	$583	Workers comp insurance	$583	Workers comp insurance	$583	Workers comp insurance	$583
	Wages (168 hours per week at $7.25/hour)	$4,872	Wages (168 hours per week at $7.25/hour)	$4,872	Wages (168 hours per week at $7.25/hour)	$4,872	Wages (168 hours per week at $7.25/hour)	$4,872	Wages (168 hours per week at $7.25/hour)	$4,872	Wages (168 hours per week at $7.25/hour)	$4,872	Wages (168 hours per week at $7.25/hour)	$4,872
	FICA taxes on wages (7.65%)	$372	FICA taxes on wages (7.65%)	$372	FICA taxes on wages (7.65%)	$372	FICA taxes on wages (7.65%)	$372	FICA taxes on wages (7.65%)	$372	FICA taxes on wages (7.65%)	$372	FICA taxes on wages (7.65%)	$372
	City of Minneapolis Liquor License	$533	City of Minneapolis Liquor License	$533	City of Minneapolis Liquor License	$533	City of Minneapolis Liquor License	$533	City of Minneapolis Liquor License	$533	City of Minneapolis Liquor License	$533	City of Minneapolis Liquor License	$533
	656 gallons of water	$3	656 gallons of water	$3	656 gallons of water	$3	656 gallons of water	$3	656 gallons of water	$3	656 gallons of water	$3	656 gallons of water	$3
	875 pounds of organic sugar	$3,141	875 pounds of organic sugar	$3,141	875 pounds of organic sugar	$3,141	875 pounds of organic sugar	$3,141	875 pounds of organic sugar	$3,141	875 pounds of organic sugar	$3,141	875 pounds of organic sugar	$3,141
	5,600 lbs of lemons	$9,408	5,600 lbs of lemons	$9,408	5,600 lbs of lemons	$9,408	5,600 lbs of lemons	$9,408	5,600 lbs of lemons	$9,408	5,600 lbs of lemons	$9,408	5,600 lbs of lemons	$9,408
	15.5 gallons of vodka per month	$1,587	15.5 gallons of vodka per month	$1,587	15.5 gallons of vodka per month	$1,587	15.5 gallons of vodka per month	$1,587	15.5 gallons of vodka per month	$1,587	15.5 gallons of vodka per month	$1,587	15.5 gallons of vodka per month	$1,587
	4 tanks of gas (200 gallons)	$650	4 tanks of gas (200 gallons)	$650	4 tanks of gas (200 gallons)	$650	4 tanks of gas (200 gallons)	$650	4 tanks of gas (200 gallons)	$650	4 tanks of gas (200 gallons)	$650	4 tanks of gas (200 gallons)	$650
	Total Expense	$23,843		$23,843		$23,843		$23,843		$23,843		$23,843		$23,843
	Profit Margin	172%	Profit Margin	172%	Profit Margin	172%	Profit Margin	172%	Profit Margin	172%	Profit Margin	172%	Profit Margin	181%
Cash on hand		$9,157		$9,157		$9,157		$9,157		$9,157		$9,157		$5,657
Cash to run per day		$795		$795		$795		$795		$795		$795		$795
Days til crush runs out		11.5		11.5		11.5		11.5		11.5		11.5		7.1

ASSUMPTIONS
10 sales per hour of operation equals just under 7,000 sales per month; assume majority of these will be non-alcoholic
12 oz servings
2 whole lemons per serving
1/4 cup sugar per serving
2 cups granulated sugar per pound
Organic sugar $3.99 per pound
2.5 lemons in a pound
$1.68/lb organic lemons
1 oz vodka per hard lemonde/25 oz per 750 ml bottle at $20/bottle
City of Minneapolis consumption unit for water is 748 gallons.
$3.32 per unit
Minneapolis class E liquor license $6396 annually

VeggiePillar Nutrition App for Kids
Kate Mohn | kmohn@mcad.edu | 1.30.2014
The Problem
Team


WaterSlide
09.02.14 //
Joel Kohn • Jessica Papa • Craig Johnson

THE LIVING CUPBOARD
JAKE HVISTENDAHL
TIM HUTCHENS
WAI-JING MAN


WHOLE EARTH SPORTS
09 MARCH 2014
JERAD CARLSON
GAUTAM MURALIDHARAN
WESLEY PETERSEN
#8
OF INTERVIEWS COMPLETED
THIS WEEK
#32
OF INTERVIEWS COMPLETED
TOTAL

VeggiePillar Nutrition App for Kids

Kate Mohn | kmohn@mcad.edu | 1.30.2014

WaterSlide

09.02.14 //

Joel Kohn • Jessica Papa • Craig Johnson

The Living Cupboard - Early Prototype

- Two nested bottles create an interior chamber to grow the plants and form a hollow wall where the plant roots can be aeroponically irrigated.

- The base holds a vermiculture system.

- A chute pulls out of the side for easy disposal of food scraps into the composting system.

- The heat producing ballast is placed above the plants and a single light hangs in the middle of the grow chamber.

- Small cups hold plants on the side walls, and a reflective material on the side walls ensures the light finds the plants.

VeggiePillar Prototype Version 1.0

VeggiePillar is an interactive educational app that uses QR codes to help children become familiar with healthy foods while at the market.

I see an eggplant!
Can you say eggplant?

1.

2.

3.

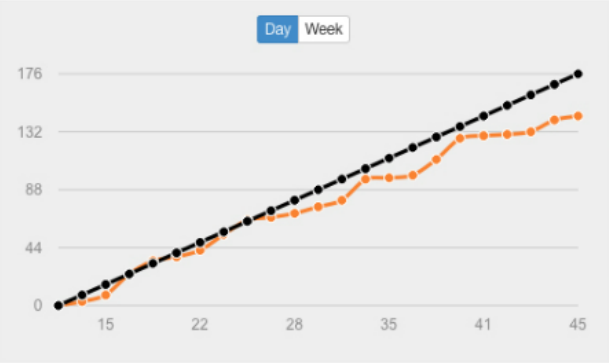
Team VeggiePillar: Michal Crawford-Zimring, DeWayne Esson, Kate Mohn

Image sources: Deviant art, iStockPhoto, Prezi, Keystone 54

LaunchPad Central

MCAD LLP Spring 2014 MCAD

Team Instructor Mentor



	Yesterday	This Week	Total
Customer Interviews	9	17	144
Hypotheses to Test	0	5	167
Invalidated Hypotheses	1	3	35
Mentor Engagements	0	0	0
Instructor Engagements	0	96	158
My Engagements	0	0	0

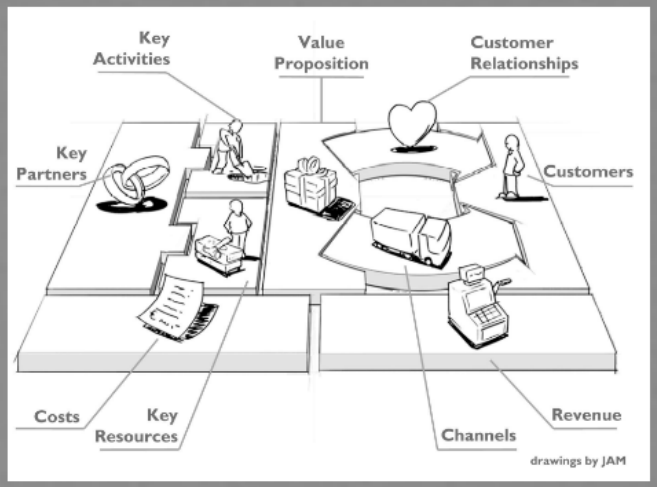
Current Rankings

Yesterday | This Week | Total

Position	Team Name	Customer Interviews	Hypotheses to Test	Invalidated Hypotheses	Mentor Engagements	Instructor Engagements
1	**Living Cupboard** Living Cupboard	40	26	5	0	32
2	**VeggiePillar Nutriti...** VeggiePillar	40	31	4	0	41
3	**WaterSlide** WaterSlide is a mobile water quality lab based on a microsco ...	35	58	23	0	48
4	**WESports** MCAD WESports A sports equipment rental service that pr ...	29	52	3	0	37

Unit 2: BMC + Customer Interviews (7 wks)

- 9 building blocks: how company intends to make $
- Testing BMC hypotheses
- Establish Product/Market Fit
- 8 **real** interviews / wk
- Discovery narratives (LPC)
- Instructor feedback (LPC)
- Weekly presentation decks (Bb)
  - what they thought?
  - what they learned?
  - what they will do next?



Customer Interview : In Person Meeting with Laura, Director - non-profit, 114th.org

Michal Crawford-Zimring, VeggiePillar Nutrition App for Kids 03/12/2014

How many children do you care for?

8 year old son and 5 year old daughter

How important do you think it is to teach your kids about healthy eating?

Very important

How important do you think it is for kids to maintain a healthy weight for their age?

Important

Do you talk to/teach your kids about healthy eating? How do you do that?

Continuously. we regularly go to exotic markets and take something new home and prepare it. We talk about advertisin buy certain products. We discuss whether the claims may be true or not.

Do you have any anxieties about making sure your kid is heating healthy? If yes, what are they?

Not right now. My kids are pretty aware of what good foods are and what's in them.

How do you feel about fast food and processed foods.

I'm fine with it. We have a 90% - 10% rule. So every once in a while we might do fast food.

Do you buy particular kinds of food -- local? organic?

We buy local and organic. We buy from a local farm - Frog Hollow

Do your kids have favorite foods? Dislikes?

My son likes 'green' smoothies (with kale), my daughter likes a lot of things - potstickers, mac and cheese

Could you walk me through a day with your kids meals and food choices?

Breakfast -- eggs, yogurt with fruit and granola, oatmeal

Lunch -- my son gets a vegetarian lunch at school. my daughter takes fruit and yogurt (the school does not allow sugar)

Snacks - 'green smoothies' fruit

Dinner - we have two vegetarian meals a week, we eat fish and meat. 1/2 the plate is veggies

What kind of resources do you use now to find out about good food choices?

Magazines - Cooking Light, Real Simple, almost anything Mark Bitman writes

Electronic Devices:

Do your kids use electronic devices - phones, ipads, etc?

Yes - they use ours and they have a tablet. We have 3 ipads

Do you monitor screen time

100% -- we're taking a break from ipads for a month. They were spending too much time on them.

Do you own smartphones, computers and tablets?

Customer Interview : Video Chat with Mary Karius, Director of Volunteer Water Quality Monitoring, Hennepin County Environmental Services Wetland Health Evaluation Program

Joel Kohn, WaterSlide 03/12/2014

Thought

We thought that we were providing value to the volunteer primarily, so they should be the main customer.

Learned

Mary's program in Hennepin County, MN is split into stream and wetland monitoring. The stream portion is called River Watch and is geared toward high school education and outreach. The local government buys and uses the data. This portion is exclusively youth-oriented. There is a consideration of the quality of this data. The wetland portion has paid staff whose salaries come from grant funding and through payments to use the data collected. There is a significant amount of QA and QC for the wetland portion of the monitoring program.

All of Mary's program portion monitor based on invertebrates (insects). This is an historical relic, as the organization did not make the conscious decision to exclusively monitor insects; it simply came as the result of 20+ years of only paying attention to insects and the build-up of in-house expertise. In western Hennepin, the organization has 15-16 years of continuous invertebrate data.

QA and QC work by Mary double-checking 10% of all stream monitoring results. The wetland teams each have a certain number of sites, one of which belongs to another team for a cross-check.

Volunteers need a reason to keep coming back. With the school, the motivation is connected to coursework, and there is another class every year. Volunteers tend to gravitate toward projects where the data have a purpose or where the volunteers can see the data in use.

Mary thought that the app idea, the map in particular, would have implications far beyond simply monitoring for bacteria. While her organization does not do bacterial testing, Mary would be open to checking out any kind of app geared toward monitoring water quality. (The subtext was that it would be free to download.)

Action

We need to focus on the payer and the real value we are providing. The app should probably be free for anyone to download and use.

Hypotheses Feedback

Customer Segments

- 👍 "must have" Government-based Environmental Monitors
- 👍 "must have" Non-profit Environmental Groups
- 👍 "must have" Primary/Secondary Education

Channels

- 👍 "must have" Word of Mouth

Revenue Streams

- ■ "nice to have" Data Management Packages
- ■ "nice to have" free to use app, but costs to share data
- 👍 "must have" Reporting Packages
- 👍 "must have" offering licensing to organizations
- 👎 "don't care" Initial 3-month license for $10
- 👎 "don't care" Subsequent quarterly license $2.50

Customer Relationships

- 👍 "must have" Build communities - Word of Mouth
- 👍 "must have" User Relationship - Sharing of Data etc.
- 👍 "must have" Social sharing/mapping of data
- ■ "nice to have" Reminders to check water body health

Value Propositions

- 👍 "must have" Data comes to org/agency in a consistent format.
- 👍 "must have" adding transparency to sampling process
- 👍 "must have" Ecouraging user to continue volunteering
- ■ "nice to have" creating photo archive of bacterial samples

Key Insights

The volunteer is not a customer. The volunteer is simply a user; we cannot expect a volunteer to pay to perform the voluntary action. The action already represents a donation of time, energy, and likely gasoline to some higher purpose.

testing hypotheses + product/market fit

Week « < 5 > » | Interview Summary | Playbook | Export

Key Partners

- Suppliers: Coders/app developers
- Partnership: Apple and Android app stores

Key Activities

- Production: Design of app
- Production: Development and coding of app
- Production: Deliver product to consumers via app stores

Key Resources

- Physical: IT infrastructure for development
- Intellectual: Branding and software coding
- Human: Staff of coders and marketers

Value Propositions

- Educating children about healthy eating choices
- Easy access via established online app selling venues
- Being entertained while also learning about healthy eating
- Alleviating anxiety about providing children with adequate education about nutrition
- Providing educational media for children
- ~~Keeping kids from having tantrums~~

Customer Relationships

- Self-service via online vendors
- Personal assistance via social media and tech support channels

Channels

- Awareness/Evaluation: Web, word-of-mouth, social media, and target marketing
- Purchase/Delivery: Online via existing networks for purchasing apps
- After sales: Feedback through web and social media

Customer Segments

- Busy parents who want to educate their kids about healthy eating choices
- Kids
- Grandparents
- Other caretakers of children

Cost Structure

- Business model is both value- and cost-driven--want the best product for the price
- Variable development costs depending on wages of developers, marketers, tech support, and related staff

Revenue Streams

- Transaction revenues resulting from one-time customer payments
- Asset sale model of business
- Fixed pricing

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testing hypotheses +
product/market fit

Week « ‹ 5 › » | Interview Summary | Playbook | Export

Key Partners

- Alliance with WNCA as buyer/seller -reduction of risk
- App Developer
- ~~A Vanderbilt University research group will be required to supply the slides.~~

Key Activities

- ★ **Finding an app developer**
- Production and assembly
- Production of Analysis Software
- Problem Solving
- Creation of platform/network

Key Resources

- Intellectual- Structure / Process of Product
- Human Resources -Marketing and Sales
- Human Resources - IT platform
- ~~Manufacturing Facility~~
- ~~Source Material --Tied to Chrissy Initially~~
- ~~Revenue Stream - tied to Hartwell, initially~~

Value Propositions

- Ease of Use
- Data sharing and standardization
- Gathering water quality data
- ~~Sample collection and analysis can happen at the same place.~~
- ~~Quicker turn-around than plate-and-incubate is valuable.~~
- ~~Waste Reduction~~
- ★ **creating photo archive of bacterial samples**
- ★ **adding transparency to sampling process**

Customer Relationships

- Co- creation- relationship with WNC non-profit during production
- Build communities - Word of Mouth
- User Relationship - Sharing of Data etc.
- ★ **Reviews in app stores**

Channels

- ★ **Free trial connected to trade magazine or other product**
- ★ **targeted ads linking to WaterSlide website or iTunes**
- ★ **Electronic banner ads in online journals**
- ★ **Booth at trade show/conference**
- ★ **apple app store**
- ★ **fliers at conferences**

Customer Segments

- Government-based Environmental Monitors
- Non-profit Environmental Groups
- ~~Aid organizations/Emergency response (eg Red Cross)~~
- ~~Academic Research-based Env. Monitors~~
- Well Owners/Users
- Businesses with natural water interactions. (eg summer camp with a swimming lake)
- Primary/Secondary Education
- Waste Water Treatment Plants
- ~~Private monitoring service providers.~~
- Regional NC DENR offices.

Cost Structure

- Value Driven - Product Attributes / Features Aid in Sales
- Influenced by Economies of Scale
- Developmental Costs -experimentation, development, mockups, testing
- Fixed Costs - Wages, Overhead
- ~~hardware: retail estimate for required parts $500.00 per unit.~~
- ★ **app development fees**

Revenue Streams

- Data Management Packages
- Reporting Packages
- ~~selling units: $1000 - $2000 per unit.~~
- ~~Offering a mobile testing service~~
- ~~Licensing our technology to others.~~
- ★ **offering licensing to organizations**

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WaterSlide

Lessons learned

!

Designers are natural entrepreneurs
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- freelancers
- empathetic + HCD
- design thinking + systems thinking
- picked up BMC + cashflow easily

but need help with....
- forming GOOD hypotheses
- establishing Product/Market Fit
- being willing to pivot

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Online collaboration works but...
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- need to be organized
- have regular meetings
- more work for instructor (email vs. verbal)
- LPC a must!!!

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Required course works but...
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OK to "pivot"
- frequent student surveys
- grading pivot at wk 8
- better capture/assess
  - individual effort in teams
  - foster team to team ixn
  - push better hypothesis testing

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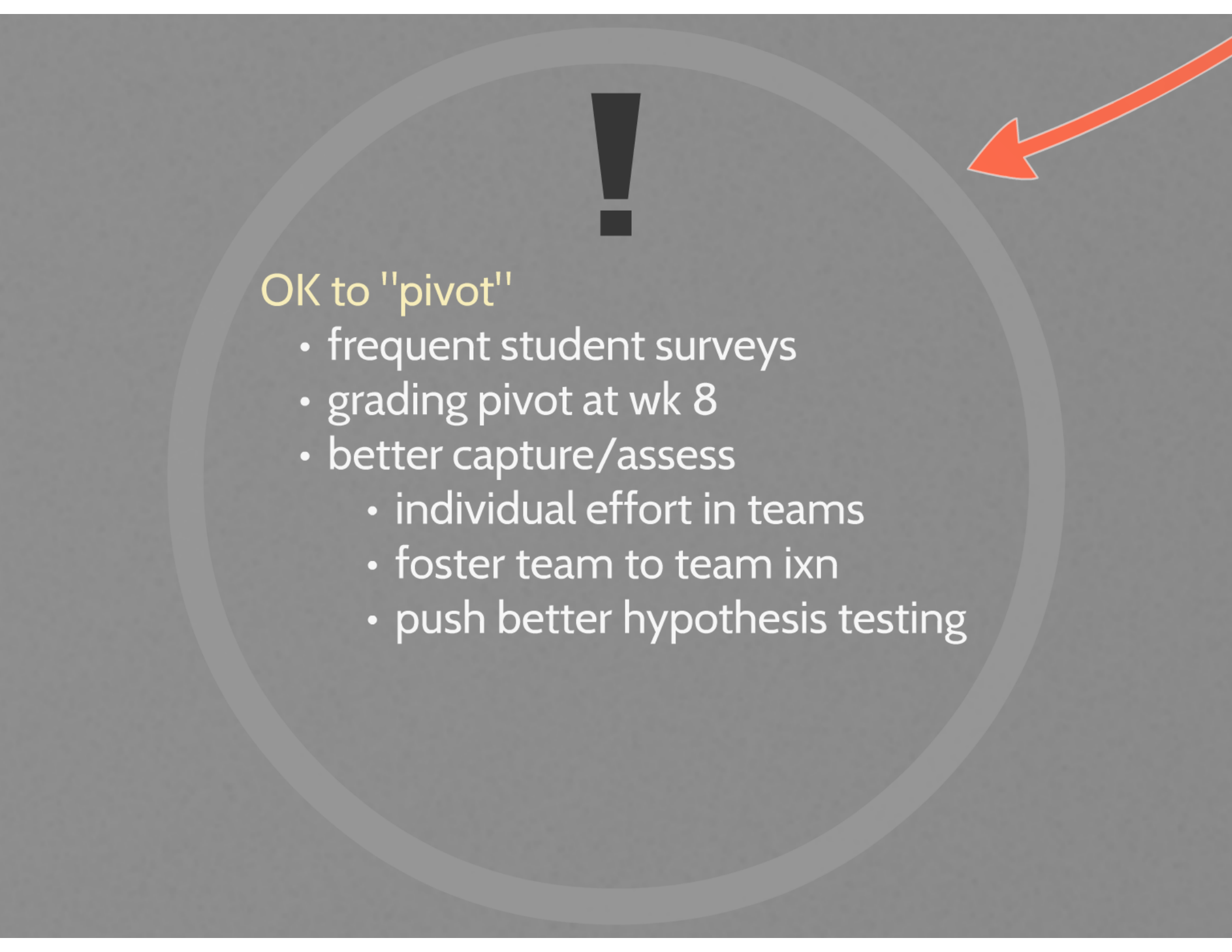
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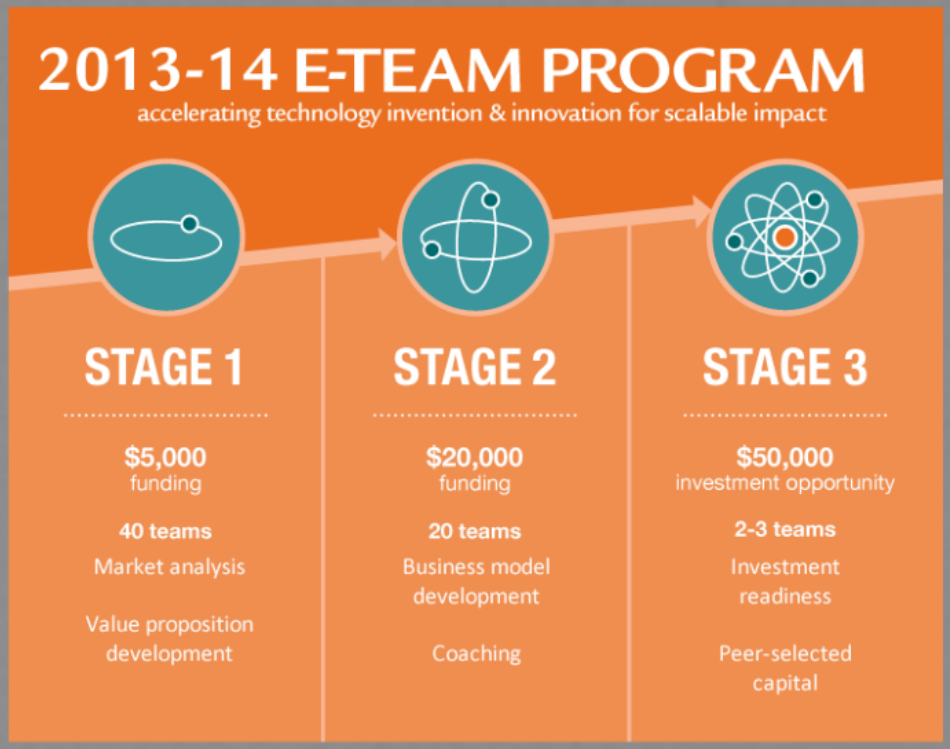
Unit 3: E-team Grant Proposals (4 wks)



Development of an Online Entrepreneurial Training Course for Sustainable Technology

Jake Cook: Instructor
Cindy Gilbert: Director + Faculty
Sustainable Design Program

NCIIA Open Conference
March 2014

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