THE PLAYBOOK
Your Guide to Delivering an Outstanding Big Ideas Camp

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This guide has been divided into ten sections, each of which focuses on a different area of the Big Ideas program.

The first three chapters, **How to Use this Guide, Introduction to the Big Ideas Program** and **Overview of Business Design**, are intended to give you essential background about the program and its underlying framework, including the key concepts that will be used throughout camp.

The fourth and fifth chapters, **Program Preparation and Management**, and **Facilitating the Camp**, focus on what you need to do to prepare before and during the camp. You’ll find a list of materials required and a daily checklist to keep you organized and general tips and details of the desired learning outcomes throughout the camp.

Chapters six through nine take you through **Empathy and Need Finding, Ideation and Prototyping, Business Strategy** and the **Innovation Challenge** to help you to understand the theory a little more deeply, set in the context of each day’s activities. These sections also include tips on challenges you may encounter and how you can overcome them.

The final chapter, **Personal Mastery in Business Design**, helps you become more comfortable with the content you’ll be teaching. You’ll find a number of exercises and self-reflective activities that will give you a chance to deepen your own expertise with Business Design between now and the kick-off of your first camp week.
“I use the word innovation instead of creativity. People tend to think that creativity is something that you are born with, something God-given. I don't buy it. I believe that you can practice, practice, practice and become better. All you need is the confidence to believe you can.”
– David Kelley

The Big Ideas! Camp is a brand new program in creativity, design and innovation being piloted at four university sites across southern Ontario this summer.

Really, the camp began as a question. Could we teach innovation – true, breakthrough and lasting innovation – to kids as young as 10 years old? It is a question that piqued the interest of all the partners in the project.

WHO ARE THE PARTNERS?

The Federal Economic Development Agency for Southern Ontario (FedDev)
Created in 2009 to support the economic growth of the region, FedDev works to help businesses and communities become more competitive, innovative and diversified. Through its Youth STEM initiative, FedDev has invested millions of dollars in projects aimed at encouraging kids to pursue education and careers in science, technology, engineering and math (STEM). The end goal? A more innovative Ontario. With this project, FedDev was keen to explore entrepreneurship and innovation in way that brings STEM and business closer together.

The Institute for Competitiveness and Prosperity (ICP)
The lead partner on this project, ICP is the research arm of the Ontario government’s Task Force on Competitiveness, Prosperity and Economic Progress. Formed more than a decade ago, ICP works to understand key drivers of prosperity and innovation, aiming to be an influential voice on economic policy in Ontario and across Canada. This project was of special interest to ICP as an opportunity to have a real impact on the innovative capacity of Canada’s youth.

The Rotman School of Management, University of Toronto (Rotman)
Since the arrival of its Dean, Roger Martin, in 1998, Rotman has become Canada’s leading business school. Rotman built its reputation in part on an innovative curriculum that features Integrative Thinking and Business Design, two critical problem solving tools for the wicked problems of business. For Rotman, Big Ideas! is an opportunity to adapt MBA content to a new audience and venue: kids at summer camp!

Actua
Celebrating its 20th anniversary this year, Actua is Canada’s leading STEM-education organization. Together with member organizations at universities across Canada, Actua provides hands-on, interactive education enrichment experiences in STEM to Canadian youth aged 6 to 16 years. For Actua, the Big Ideas! program is a natural extension of its work into entrepreneurship and the business of science.

The program you’ll be running this summer is the product of a collaborative effort, leveraging support from FedDev, research from ICP, content design from Rotman, and delivery expertise from Actua.
**WHY DO THIS?**

We share the belief that innovation is essential to Canada’s prosperity. New-to-the-world ideas and the businesses that develop from those ideas create new jobs, grow our economy and make our lives better. We’re interested in fostering true innovation – setting kids on a path to build businesses that add real value to people’s lives. It isn’t just invention; it is taking ideas and turning them into sustainable enterprises. The goal of Big ideas! is to give kids real tools to turn themselves into entrepreneurs, nurturing an open mindset that enables creativity and thoughtful risk-taking.

**SO, WHAT ARE WE DOING AGAIN?**

This summer, we’re delivering a unique program that teaches kids aged 10-13 how to apply their knowledge of STEM to the creation of new and successful businesses. The camp content has been adapted from the Business Design curriculum at the Rotman School. This approach, first piloted at Procter & Gamble (P&G) in partnership with Rotman, the Hasso Plattner Institute of Design at Stanford University and the Institute of Design at the Illinois Institute of Technology, asks teams to engage with complex innovation problems using tools from the world of design. The program, adapted to a youth-STEM context, includes empathy and need finding, ideation and prototyping, and business strategy. All of this is covered through individual and team exercises, culminating in a group innovation challenge at the end of the week.

**WHERE IS THIS HAPPENING?**

Five groups will deliver the program for four weeks each this summer:

- **Actua’s national outreach team**
- **Engineering Outreach at University of Toronto**
- **Science Explorations at York University**
- **Venture Engineering and Science at McMaster University**
- **Virtual Ventures at University of Ottawa**

If the program works as well as we hope it will, the intent is to roll out this camp for Actua member organizations nationwide next year.

**WHAT’S THE PLAN?**

The camp is designed to give the kids an opportunity to build skills in three core areas (empathy and need finding, ideation and prototyping, strategy) over the first three days and then to put those skills to use on an innovation challenge that runs over the final two days of the camp.
## Overview of the Week

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<td>Campers are introduced the innovation process, and to the concept of innovation and entrepreneurship. They learn that entrepreneurs are able to identify what people need, to generate ideas to meet that need and to create a business from those ideas. Campers work through fun challenges to build empathy and to identify other people’s needs.</td>
<td>This day is about creativity. Campers practice making connections, generating varied ideas and getting feedback to make the ideas better. They explore where ideas come from and practice coming up with their own new ideas. In the afternoon, campers learn how to translate ideas into 2D and 3D prototypes, building models of ideas. Campers then get feedback and iterate to make their ideas better.</td>
<td>This day is all about business. The campers learn about making connected and reinforcing choices to develop a winning strategy. Using a young entrepreneur’s water bottle as inspiration, campers play a game to develop a winning business strategy. After lunch, the campers go on a field trip to visit a local business and learn about how it works.</td>
<td>Participants are presented with an innovation challenge, in which they apply concepts of empathy &amp; need finding, ideation &amp; prototyping, and business strategy to generate a solution. They begin by exploring their own models and assumptions, then conduct interviews and observe users in real time. They brainstorm and cluster ideas to define needs, build personas, generate and prototype models of their solutions and get feedback to create a better models. The campers work to develop a winning business strategy for their idea. They learn about the importance of storytelling and prepare a short pitch for their business.</td>
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<td>Business Design in 90 minutes</td>
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<td>Understanding of an entrepreneur as someone who can turn an idea into an enterprise</td>
<td>Tools for ideation: brainstorming, clustering, co-creation</td>
<td>Understand the concepts of business strategy, competitive advantage and capabilities</td>
<td>Business Strategy</td>
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<td>Understanding of innovation as process of identifying and meeting needs – both invention and commercialization of an idea</td>
<td>Understanding the value of a large volume ideas as a way to find themes and deeper meaning</td>
<td>Practice making connected choices as a part of building a business</td>
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<td>Tools: observation, interviewing, experience, imagination</td>
<td>Understanding that building a prototype makes it easier to share an idea with others</td>
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<td>Understanding that feedback is key to making ideas better</td>
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<td>Practice &amp; Presentations</td>
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<td>Action learning: application of all tools to a single problem</td>
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<td>Understand how the tools come together to create an innovation process that can apply across contexts</td>
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<td>Practice presenting their ideas to a group</td>
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The experience of this camp will be a little different than at some other STEM-based camps, though the kids will engage with STEM concepts during the exercises. Instructors are encouraged to bring their own STEM-expertise to bear on these exercises, especially on the innovation challenge. In the end, a camper’s story through the week might look something like this:

**Day 5: Telling a Story**

“This morning, we got into the business stuff again – we thought about how we could create a business out of our idea for the innovation challenge. I didn’t realize there were so many ways we could do that!

Then we learned about storytelling and how important it is. We prepared a story for our business and presented it to the group. It was nerve-wracking but fun!

I never thought about business in this way before – I could see myself doing something like this one day!”

**Day 4: Innovation Challenge**

“This morning, we came up with tons of ideas that I think will solve the challenge! Our team built a prototype and we shared it with another team who was able to give us ideas to make it better!”

**Day 3: Business Strategy**

“This morning, we came up with a business for a 14-year old entrepreneur who created a new water bottle. We chose our customer, where we were going to manufacture it and sell it. We even calculated the profits we would get!

In the afternoon, we visited this cool entrepreneur who showed us the stuff he was working on. He showed us his first prototype and it was made of the same materials that we used to build our prototypes!”

**Day 2: Ideation & Prototyping**

“We came up with a lot of ideas and got to make prototypes of them using materials I’ve got at home.

In the afternoon, we worked on a challenge for Nike. They wanted us to figure out what tennis athletes need and create a new product for them!”

**Day 1: Empathy & Need Finding**

“This morning, we imagined what it was like for a 5-year old to get an MRI – it can get pretty scary! We figured out how to make it better for them.”

“We came up with a lot of ideas and got to make prototypes of them using materials I've got at home.

In the afternoon, we worked on a challenge for Nike. They wanted us to figure out what tennis athletes need and create a new product for them!”

**Day 1:**

**Empathy & Need Finding**

“Today, I learned about entrepreneurs and how to figure out what people need.

We did this exercise where we imagined what it was like for a 5-year old to get an MRI – it can get pretty scary! We figured out how to make it better for them.”
Innovation is our modern obsession. That isn’t to say it is new. Of course it isn’t. Innovation has always existed, since our ancestors first figured out how to carve primitive tools from rocks and wood. Even then it was clear that the individuals and groups with access to the best technology, the latest innovations, had the best chance to survive and thrive. But over the last 150 years, innovation has been worshiped like never before. As we shifted from farms to factories, innovation has become ever more central to business and individual success. Innovation produces tremendous rewards – placing inventors and innovators like Carlos Slim (telecommunications), Bill Gates (software), and Michael Bloomberg (media and information) at the very top of the list of the world’s billionaires. And a lack of innovation spells doom, as once-great companies like Nortel and General Motors sadly discovered.

Virtually every company in the world sets innovation as one of its core aspirations. They all want to be like Apple – a powerhouse of innovation, delivering one breakthrough new product after another. But few are able to be Apple, no matter how much R&D money they throw at the problem. And even Apple stumbles from time to time. Why is innovation so hard? It is hard because we fail to understand what it is and how to teach it. We fetishize entrepreneurial success without examining how it is produced. We pretend that innovation arises from a scientific flash of insight rather than doing the hard work of decoding its secrets.

As long as innovation is the domain of genius inventors in university laboratories and savvy technologists in basements and garages, it is difficult – even impossible – to replicate. But it doesn’t need to be like that. We can examine what innovation is and how it is produced. We can hold it up to the light and learn from it, demystifying it and turning it into something each of us can do.

That’s the secret of business design.

That innovation isn’t actually so mysterious after all. That successful entrepreneurs aren’t so different from you and I. That they have a process for innovation we can all employ. We just have to learn how.

Innovation, for our purposes, is the invention of new-to-the-world ideas and the commercialization of those ideas. It is the provision of new products or services that add real value to people’s lives. This is a very particular definition. Lots of people would argue that innovation is only the first part – the spark of a new idea. But for us, innovation is both the creation of an idea and its implementation. True innovation can take centuries or decades, if that is how long it takes to get from an idea to its practical use. Given the power of true innovation, we believe the hard work and time required, is worth it.

This kind of innovation all starts with a meaningful unmet need in the world – an underserved customer or an unsolved problem. Successful entrepreneurs have an approach to business that says “it is my job to look at what it isn’t done and what isn’t served as an opportunity rather than a frustration.”

When these entrepreneurs find a need, they then ask how they might meet that need in a unique and valuable way – and how they might build a sustainable enterprise out of it. That’s the process of innovation, of business design, that we’re teaching in the Big Ideas! camp.

To successfully build a business from an idea, to meet an unmet need and to make money doing it, effective entrepreneurs progress through three stages, using three essential tools that are the heart of creativity, design and innovation.
1. EMPATHY AND NEED FINDING

Empathy is the ability to know what another person feels and to see the world from their perspective. In order to find an unmet need in the world, we need to understand the world from other people’s perspectives. Otherwise, we’d only be able to create products and services for ourselves.

Empathy requires engagement with other people – through observation, interviews and experience. We can watch what they do; we can interview them about themselves and their experiences; and we can put ourselves in their shoes and attempt to experience their lives for ourselves. From these kinds of interactions, we can start to understand other people a little bit better.

That’s the first step towards finding a need. A need is simply a state in which something is sub-optimal from another person’s perspective. It is some deficiency which, if addressed, could make things better for them. We all have needs – from the general ones Maslow identified (physiological, safety, belonging, esteem and actualization) to more individual and situation-specific needs.

But needs may not be obvious right away. Some, like warmth and water, are. But others may require a leap of imagination. In the 1960s, Douglas Englebart identified a need for an easier way to navigate around a computer than a keyboard. He called his user interface device a mouse (reportedly because the cord dangled like a tail). Eventually, the concept gained serious traction when Steve Jobs included a mouse with his Macintosh computers in 1984. Jobs was the first to really recognize and meet the need for a wide range of people.

2. IDEATION AND PROTOTYPING

The next stage of innovation is taking a need and figuring out how to serve it. Here, the process is stochastic rather than deterministic. We aren’t trying to converge quickly on a single right answer, because it may not yet exist. Instead, we want to play and explore, we want to try different things out and think by doing. This begins with ideation – a process for generating, developing and communicating ideas. And from those ideas, we prototype – we build rough forms suggestive of an idea, forms we can play with, break and rebuild, forms we can learn from.

Prototyping isn’t about creating a perfect, beautiful thing. It is about designing something just good enough to try. We want to test it, to see how and why it fails, so we can build the next, better prototype. To do this, we start with a low-resolution prototype and show it to users, we get them to try it, to respond and to play. Gaining feedback from users is a critical to being able to make your prototype, and your idea, better.

Most single-focused innovation processes do the opposite. They keep the idea away from the rest of the world until the last possible second – and so the folks behind the idea have no way of knowing, until it is too late, how people will respond to it or what they could do to make things better. A key part of prototyping is getting rich feedback, actually co-creating with users to make the ideas even better.
Why do so few scientists and inventors benefit directly from their inventions? Why is that so often someone else gets rich instead? Whether it is Nicola Tesla or the McDonald brothers, it often takes a different perspective to exploit an idea than to create it. The lens that lets us turn an idea into an enterprise is business strategy.

The goal of this stage is to design systems and strategies that support an innovation, sustainably and competitively. Think of the iPod. Who invented it? Apple’s Jonathan Ive designed it, based on other people’s inventions. And it is beautifully designed object. But that alone didn’t make it successful. The iPod was massively successful thanks not just to the idea but to:

- Finding and delighting a customer
- The iTunes support system, a competitive advantage that the bridged content and platform effectively – a strategy that let customers do what they wanted to do with their music
- Apple’s capability for powerful branding and marketing

A strategy is a set of choices that lead to some competitive advantage, some way in which your offering is more valuable to consumers than competitive offerings. Business design means looking at all our innovations through this prism. How could you build an enterprise or system around your idea? How could you sustainably attract customers and make money with it?

These three stages are the essence of business design; they are crucial tools that a designer uses to create the world around her. Adopted by entrepreneurs and businesspeople, they can transform organizations and create real, lasting innovation.

What does that look like inside a real business? Consider Glad garbage bags. Yes, that’s right, garbage bags. Lots of people hate them. They hate them because they tear, and leak and smell bad. Not many people would miss taking out the garbage as a favourite activity. So maybe, just maybe, garbage could be fruitful grounds for innovation.

The researchers at P&G know a lot about plastic. But until they got to know just what customers really needed when it comes to garbage bags, they couldn’t create something to meet those needs. It turns out, what people really want is a bag that doesn’t tear. Watching consumers accidently poke holes in even the thickest bags, the researchers began to wonder how to make the plastic stretchier rather than thicker. So, they created a new plastic technology known as SELFING (Structurally Elastic-Like Film). The plastic is deeply embossed with a diamond-shaped pattern, which gives a unique elasticity and lets the bag stretch around objects instead of letting the objects poke through.

The team at P&G tried the new plastic, called Force Flex, out with consumers and got great feedback about how to make the bags even better (like introducing odour reducers). But the real innovation came at the strategy stage. It turns out that there were already two big competitors making garbage bags, and not enough customers to go around. If P&G simply entered the market, it was a good bet everyone would lose money. So the team at P&G asked what kind of strategy could let them win with the new technology. The answer, it turns out, was a unique partnership with one of those competitors – Clorox. Clorox and P&G are fierce competitors in a lot of product categories. But, for garbage bags, they created a special joint venture in which Clorox got to use P&G’s new technology for its Glad product line and P&G got a cut of the profits. The result was a highly successful, fast-growing business, rather than a bloodbath – as it would have been had P&G started selling the product themselves.
“I would not give a fig for the simplicity this side of complexity, but I would give my life for the simplicity on the other side of complexity.”
- Oliver Wendell Holmes

The Big Ideas! camp may be different than other camps that you may have run in the past. To create a great experience for the campers, a good amount of advance preparation is required. This section will guide you through what needs to be done before the camp, during the camp and after the camp is finished. You can use this section as a checklist to make sure you haven’t missed anything.

PHASE I: BEFORE THE CAMP

4 WEEKS BEFORE
- Create your alternate innovation challenge for Day 4 and 5 of the camp. You’ll need some time to think through the information the kids will need and to recruit experts and users to interview.
- Review your activity sheets closely. Note any questions you still have, and get in touch with Adam Main and Justin Chan for answers.
- Return to the facilitator guide. A good addition to the activity sheets, this facilitator’s guide will give you tips and tricks to make this a great experience for the campers.
- Physically check your room set-up. Knowing what equipment is in the space, how the tables are arranged and if the furniture can be moved around will be important to how you run your camp.
- Confirm the technology and AV equipment needed for the camp is booked; you’ll need a computer, speakers, a projector and screen.

3 WEEKS BEFORE
- Confirm the field visit for Day 3. This likely will be one of the highlights for the campers and it’s important to make sure that the host is appropriate, fun and engaging. Note that if a site visit isn’t possible, you might have an entrepreneur visit the camp.
- Try out some of the exercises for yourself. Practice facilitating some of the exercises with friends or teammates. There are also exercises in this guide that you can try on your own to get more comfortable and familiar with the content.

2 WEEKS BEFORE
- Recruit users (one per group) and 1-2 experts to interview for the innovation challenge on Day 4. Make sure you recruit 1 or 2 extra people just in case someone doesn’t show up.
- Give these users their pre-work to complete within 7 days.

1 WEEK BEFORE
- Organize the materials and handouts. There will be a lot of materials used in the camp and it’ll help you to organize them by activity before the camp starts.
- Collect and print out the pre-work from the users you recruited for the innovation challenge.
This is a materials list that you can use to keep track what you need for the camp, organized by Day. (Members are responsible for purchasing materials unless otherwise noted. All materials should be purchased well in advance of the start of camp. PowerPoint presentations can be found on the Big Ideas portal).

NOTE: Not all materials are photographed. Those with an ‘*’ beside it, are not included in the photo.

The photos are meant to provide a visual guide for the materials needed for each exercise. Please refer to the specific information below the photo for the exact materials and quantities needed.

### DAY 1

**Pre-survey**
- 24 surveys
  (1 per camper - provided by Actua)*
- 24 pens
  (1 per camper)*

**Digital camera**
(to capture activities throughout the week)

**Business Design in 90 minutes**
- 6 Basic bins (1 per table of 4-6 campers)
  - 12 coloured markers
  - 12 black Sharpies
  - 2 pairs of scissors
  - 1 roll of clear tape
  - 2 rolls of masking tape
  - 2 glue sticks
- 2 meters of string
- 6 rolls of masking tape
- 12 carrots
- 12 can openers
- 12 cans of food
- 12 potato peelers
- 1 Good Grips peeler
- 8 pairs of oven mitts
- 90 blank sheets of paper*
- 12 Innovation Mini Challenge Worksheets
  (1 per pair – provided by Actua)
- The Visual Alphabet Poster
  (per class – provided by Actua)
- 12 garbage bags (1 per pair)*
GE MRI Exercise
- 6 Basic bins (1 per table of 4-6 campers)
- 12 coloured markers
- 12 black Sharpies
- 2 pairs of scissors
- 1 roll of clear tape
- 2 rolls of masking tape
- 2 glue sticks
- 2 magnets
- 24 MRI Worksheets
  (1 per camper – provided by Actua)
- 30 large cardboard boxes (1-2 per group)*
- 6 tape measures (1 per group)
- 6 hospital gowns (1 per group)
- 12 blank sheets of paper (2 per group)*
- 6 sets of Prototyping materials (1 per group)
  - 4 binder clips
  - 2 medium-size cardboard boxes*
  - 4 pipe cleaners
  - 4 small paper plates
  - 4 large paper plates
  - 4 paper cups
  - 2 pots of modeling clay
  - 2 sheets of Bristol board*
  - 50cm of aluminum foil
  - 10 popsicle sticks
  - 6 googly eyes
  - 5 paper clips
  - 4 foam sheets
- You can add more materials as long as they are common things that can be found at a dollar store, grocery store or mass merchandisers like Wal-Mart

Portfolio & Debrief
- 24 Portfolios (1 per camper)
- 6 Basic bins (1 per table of 4-6 campers)
  - 12 coloured markers
  - 12 black Sharpies
  - 2 pairs of scissors
  - 1 roll of clear tape
  - 2 rolls of masking tape
  - 2 glue sticks
- 24 full page labels (1 per camper)*
- Assorted stickers – stars, animals, etc.
- 24 Empathy Reflection Worksheet #1 (1 per camper – provided by Actua)
- 24 Empathy Reflection Worksheet #2 (1 per camper – provided by Actua)
- 24 Empathy Reflection Worksheet #3 (1 per camper – provided by Actua)
- 24 Empathy Reflection Worksheet #4 (1 per camper – provided by Actua)
- 3 sheets of Flip chart paper*
- 24 pads of sticky notes (1 pad per camper)
**Marshmallow Exercise**
- 1 horn*
- 12 materials packages (2 per group)
- 20 pieces of spaghetti
- 1 meter of string
- 1 meter of masking tape*
- 1 marshmallow
- 1 Ziploc bag – to hold materials
- 1 measuring tape (per class)
- 1 pair of scissors (per group)
- 12 sheets of paper (2 per group)*
- 24 pens (1 per camper)
- 1 garbage bag – for cleanup (per class)

**Where do ideas come from?**
- 1 set of laminated ‘Evolution of the Telephone’ photos (provided by Actua)
- 1 roll of masking tape*

**Chicken Exercise**
- 6 Basic bins (1 per table of 4-6 campers)
  - 12 coloured markers
  - 12 black Sharpies
  - 2 pairs of scissors
  - 1 roll of clear tape
  - 2 rolls of masking tape
  - 2 glue sticks
- 24 Chicken Exercise – Brainstorming Worksheets (1 per camper – provided by Actua)
- 24 clipboards (1 per camper)
- 12 sheets of Flip chart paper (1 per pair)*
- 24 pads of sticky notes (1 pad per camper)
- 48 half sheets of 8.5 x 11 paper (4 half sheets per camper)
- 24 markers/Sharpies (1 per camper)
- 72 dot stickers (3 per camper)
- 12 sets of Prototyping materials (1 per pair)
  - 4 binder clips
  - 2 medium-size cardboard boxes*
  - 4 pipe cleaners
  - 4 small paper plates
  - 4 large paper plates
  - 4 paper cups
  - 2 pots of modeling clay
  - 2 sheets of Bristol board*
  - 50cm of aluminum foil
  - 10 popsicle sticks
  - 6 googly eyes
  - 5 paper clips
  - 4 foam sheets
- You can add more materials as long as they are they common things that can be found at a dollar store, grocery store or mass merchandisers like Wal-Mart
DAY 2

The Nike Challenge
- 1 horn*
- 6 Basic bins (1 per table of 4-6 campers)
  - 12 coloured markers
  - 12 black Sharpies
  - 2 pairs of scissors
  - 1 roll of clear tape
  - 2 rolls of masking tape
  - 2 glue sticks
- 12 Nike Challenge Worksheets
  (1 per pair – provided by Actua)
- 24 pads of sticky notes (1 pad per camper)
- 72 dot stickers (3 per camper)
- 12 blank sheets of paper (1 per pair)*
- 12 sets of Prototyping materials (1 per group)
  - 4 binder clips
  - 2 medium-size cardboard boxes*
  - 4 pipe cleaners
  - 4 small paper plates
  - 4 large paper plates
  - 4 paper cups
  - 2 pots of modeling clay
  - 2 sheets of Bristol board*
  - 50cm of aluminum foil
  - 10 popsicle sticks
  - 6 googly eyes
  - 5 paper clips
  - 4 foam sheets
- You can add more materials as long as they are common things that can be found at a dollar store, grocery store or mass merchandisers like Wal-Mart

Portfolio & Debrief
- 24 Portfolios (1 per camper)
- 6 Basic bins (1 per table of 4-6 campers)
  - 12 coloured markers
  - 12 black Sharpies
  - 2 pairs of scissors
  - 1 roll of clear tape
  - 2 rolls of masking tape
  - 2 glue sticks
- 24 full page labels (1 per camper)*
- Assorted stickers – stars, animals, etc.
- 24 Ideation & Prototyping Reflection Worksheet #1 (1 per camper – provided by Actua)
- 24 Ideation & Prototyping Reflection Worksheet #2 (1 per camper – provided by Actua)
- 24 Ideation & Prototyping Reflection Worksheet #3 (1 per camper – provided by Actua)
- 3 sheets of Flip chart paper*
- 24 pads of sticky notes (1 pad per camper)
DAY 3

Business Game
- 1 horn*
- 1 Carter’s Water Bottle (per class – provided by Actua)
- 6 sets of business game materials
  (1 per team provided by Actua)
- One set includes:
  - 1 Water Industry Package
  - 1 Company Package
  - 1 Competition Package
  - 1 Customer Package
  - 1 Competitive Advantage Package
  - 1 Capabilities Package
  - 1 Manufacturing Package
  - 1 Where-to-sell Package
  - 1 Strategy Package
  - 1 Game Board
- 6 Basic bins (1 per table of 4-6 campers)
  - 12 coloured markers
  - 12 black Sharpies
  - 2 pairs of scissors
  - 1 roll of clear tape
  - 2 rolls of masking tape
  - 2 glue sticks
- 30 assorted age-appropriate magazines (5 per team)*
- 192 sheets of blank paper (32 per team)*

Field Trip
- 24 sheets of blank paper (1 per camper)*
- 24 pens (1 per camper)*
- Permission forms (1 per camper)*
- Transit tickets/tokens, as needed*
- Thank you note/gift for host*

Portfolio & Debrief
- 24 Portfolios (1 per camper)
- 6 Basic bins (1 per table of 4-6 campers)
  - 12 coloured markers
  - 12 black Sharpies
  - 2 pairs of scissors
  - 1 roll of clear tape
  - 2 rolls of masking tape
  - 2 glue sticks
- 24 full page labels (1 per camper)*
- Assorted stickers – stars, animals, etc.
- 24 Business Strategy Reflection Worksheet #1 (1 per camper – provided by Actua)
- 24 Business Strategy Reflection Worksheet #2 (1 per camper – provided by Actua)
- 24 Business Strategy Reflection Worksheet #3 (1 per camper – provided by Actua)
- 3 sheets of Flip chart paper*
- 24 pads of sticky notes (1 pad per camper)
Introduction to Challenge
• 24 Portfolios (1 per camper)*

Causal Modeling
• 6 Basic bins (1 per table of 4-6 campers)
• 12 coloured markers
• 12 black Sharpies
• 2 pairs of scissors
• 1 roll of clear tape
• 2 rolls of masking tape
• 2 glue sticks
• 24 sheets of blank paper (1 per camper)*

Observation & Interviews
• 24 clipboards (1 per camper)
• 24 Observation Worksheets (1 per camper – provided by Actua)
• 24 Expert Interview Worksheets (1 per camper - provided by Actua)
• 24 User Interviews Worksheets (1 per camper - provided by Actua)
• 6 sets of users’ photos (provided by the users recruited)*
• 24 pens – attached to the clipboard with tape and string (1 per camper)
• 1 roll of clear tape (per class)
• 1 ball of string (per class)
• 6 Innovation Challenge Work Posters
(1 per team - provided by Actua)
• 6 Basic bins (1 per table of 4-6 campers)*
• 12 coloured markers
• 12 black Sharpies
• 2 pairs of scissors
• 1 roll of clear tape
• 2 rolls of masking tape
• 2 glue sticks

Need Finding & Personas
• 6 Innovation Challenge Work Posters (1 per team - provided by Actua)
• 6 Basic bins (1 per table of 4-6 campers)*
• 12 coloured markers
• 12 black Sharpies
• 2 pairs of scissors
• 1 roll of clear tape
• 2 rolls of masking tape
• 2 glue sticks
• 30 assorted age appropriate magazines (5 per team)

Ideation & Clustering
• 6 Basic bins (1 per table of 4-6 campers)
• 12 coloured markers
• 12 black Sharpies
• 2 pairs of scissors
• 1 roll of clear tape
• 2 rolls of masking tape
• 2 glue sticks
• 6 sheets of flip chart paper (1 per team)*
• 24 pads of sticky notes (1 pad per camper)*
Sketching and Feedback
- 6 Basic bins (1 per table of 4-6 campers)*
  - 12 coloured markers
  - 12 black Sharpies
  - 2 pairs of scissors
  - 1 roll of clear tape
  - 2 rolls of masking tape
  - 2 glue sticks
- 6 sheets of Flip chart paper (1 per team)*
- 24 Feedback Worksheets (1 per camper – provided by Actua)

Prototyping
- 6 Basic bins (1 per table of 4-6 campers)
  - 12 coloured markers
  - 12 black Sharpies
  - 2 pairs of scissors
  - 1 roll of clear tape
  - 2 rolls of masking tape
  - 2 glue sticks
- 6 sets of Prototyping materials (1 per group)
  - 4 binder clips
  - 2 medium-size cardboard boxes*
  - 4 pipe cleaners
  - 4 small paper plates
  - 4 large paper plates
  - 4 paper cups
  - 2 pots of modeling clay
  - 2 sheets of Bristol board*
  - 50cm of aluminum foil
  - 10 popsicle sticks
  - 6 googly eyes
  - 5 paper clips
  - 4 foam sheets
- You can add more materials as long as they are they common things that can be found at a dollar store, grocery store or mass merchandisers like Wal-Mart

Portfolio & Debrief
- 24 Portfolios (1 per camper)
- 6 Basic bins (1 per table of 4-6 campers)*
  - 12 coloured markers
  - 12 black Sharpies
  - 2 pairs of scissors
  - 1 roll of clear tape
  - 2 rolls of masking tape
  - 2 glue sticks
- 24 full page labels (1 per camper)*
- Assorted stickers – stars, animals, etc.
- 24 Innovation Challenge 1 Reflection Worksheet #1 (1 per camper – provided by Actua)
- 24 Innovation Challenge 1 Reflection Worksheet #2 (1 per camper – provided by Actua)
- 24 Innovation Challenge 1 Reflection Worksheet #3 (1 per camper – provided by Actua)
- 3 sheets of Flip chart paper*
- 24 pads of sticky notes (1 pad per camper)
Zoo Game
- 1 Animal card deck (for class – provided by Actua)

Ways to Build a Business & Business Strategy
- 1 Nano Fridge prototype
- 6 Innovation Challenge Work Posters
  (1 per team – provided by Actua)*
- 6 Basic bins (1 per table of 4-6 campers)*
  - 12 coloured markers
  - 12 black Sharpies
  - 2 pairs of scissors
  - 1 roll of clear tape
  - 2 rolls of masking tape
  - 2 glue sticks

Prototyping Round 2
- 6 Innovation Challenge Work Posters
  (1 per team – provided by Actua)*
- 6 Basic bins (1 per table of 4-6 campers)
  - 12 coloured markers
  - 12 black Sharpies
  - 2 pairs of scissors
  - 1 roll of clear tape
  - 2 rolls of masking tape
  - 2 glue sticks
- 6 sets of Prototyping materials (1 per group)
  - 4 binder clips
  - 2 medium-size cardboard boxes*
  - 4 pipe cleaners
  - 4 small paper plates
  - 4 large paper plates
  - 4 paper cups
  - 2 pots of modeling clay
  - 2 sheets of Bristol board*
  - 50cm of aluminum foil
  - 10 popsicle sticks
  - 6 googly eyes
  - 5 paper clips
  - 4 foam sheets
- You can add more materials as long as they are common things that can be found at a dollar store, grocery store or mass merchandisers like Wal-Mart

Storytelling
- 24 clipboards (1 per camper)
- 48 sheets of blank paper (2 sheets per camper)*
- 24 pens – attached to the clipboard with tape and string (1 per camper)
- 1 roll of clear tape (per class)
- 1 ball of string (per class)
DAY 4

Pitch Prep
- 6 Basic bins (1 per table of 4-6 campers)
  - 12 coloured markers
  - 12 black Sharpies
  - 2 pairs of scissors
  - 1 roll of clear tape
  - 2 rolls of masking tape
  - 2 glue sticks

Portfolio & Debrief
- 24 Portfolios (1 per camper)
- 6 Basic bins (1 per table of 4-6 campers)
  - 12 coloured markers
  - 12 black Sharpies
  - 2 pairs of scissors
  - 1 roll of clear tape
  - 2 rolls of masking tape
  - 2 glue sticks
- 24 full page labels (1 per camper)*
- Assorted stickers – stars, animals, etc.
- 24 Innovation Challenge 2 Reflection Worksheet #1 (1 per camper – provided by Actua)
- 24 Innovation Challenge 2 Reflection Worksheet #2 (1 per camper – provided by Actua)
- 24 Innovation Challenge 2 Reflection Worksheet #3 (1 per camper – provided by Actua)
- 24 Innovation Challenge 2 Reflection Worksheet #4 (1 per camper – provided by Actua)
- 24 Yearbook sheet (1 per camper – provided by Actua)
- 3 sheets of Flip chart paper*
- 24 pads of sticky notes (1 pad per camper)

Post-survey
- 24 surveys (1 per camper - provided by Actua)*
- 24 pens (1 per camper)*
PHASE 2: DURING THE CAMP

There will be a lot of activity happening during the week of the camp. Use these checklists to help keep track of what you need to do every day.

THE FRIDAY BEFORE

- Check that you have all the materials ready and printed for the entire week
- Check that you have all materials ready for Day 1:
  - Pre-survey
  - Business Design in 90 Minutes
  - Introduction to Empathy & Finding Problems to Solve
  - GE MRI Example
  - Portfolios
  - Digital Camera
- Confirm that all technology works: computer, speakers and projector
- Load the Day 1 slides and any other materials needed on the computer
- Set-up and decorate room

DAY 1

- Set up materials needed for morning session at each table
- Check that all technology works: computer, speakers and projector
- Have campers complete pre-survey and collect them upon completion
- Confirm via email or phone with host of field visit on Day 3
- At the end of the day, complete Daily Reflection sheets
- Prepare all materials for Day 2:
  - Marshmallow Exercise
  - Chicken Exercise
  - Tennis Canada Challenge
  - Portfolios
  - Digital Camera
- Load the Day 2 slides and any other materials needed on the computer
- Clean up and set-up room for Day 2

DAY 2

- Set up materials needed for morning session at each table
- Check that all technology works: computer, speakers and projector
- Email your users to confirm the date and time on Day 4 (this will help you find out if there are any last minute changes in people’s schedules)
- At the end of the day, complete Daily Reflection sheets
- Sign thank you card for host(s) of Day 3 field visit
- Prepare all materials for Day 3:
  - Board Game including All Game Pieces
  - Portfolios
  - Digital Camera
- Load the Day 3 slides and any other materials needed on the computer
- Clean up and set-up room for Day 3
DAY 3
• Set up materials needed for morning session at each table
• Check that all technology works: computer, speakers and projector
• Give thank you card to host(s) at the end of the field visit
• At the end of the day, complete Daily Reflection sheets
• Prepare all materials for Day 4:
  • Introduction to Challenge
  • Causal Modeling
  • Observation
  • User Interviews
  • Personas
  • Ideation & Prototyping
  • Feedback
  • Prototyping II
  • Portfolios
  • Digital Camera
• Sign thank you card for users and experts for Day 4
• Load the Day 4 slides and any other materials needed on the computer
• Clean up and set-up room for Day 4

DAY 4
• Set up materials needed for morning session at each table
• Check that all technology works: computer, speakers and projector
• Give thank you card to users and experts at the end of the interview
• At the end of the day, complete Daily Reflection sheets
• Complete and sign camp certificates
• Prepare all materials for Day 5:
  • Ways to Build a Business
  • Business Strategy Example
  • Business Strategy Development
  • Prototyping III
  • Storytelling
  • Prepping the Pitch
  • Presentations
  • Certificates
  • Post-survey
  • Portfolios
  • Digital Camera
• Clean up and set-up room for Day 5
• Load the Day 5 slides and any other materials needed on the computer
• Optional: Create a slideshow of photos from the week

DAY 5
• Set up materials needed for morning session at each table
• Check that all technology works: computer, speakers and projector
• Have campers complete post-survey and collect them upon completion
• At the end of the day, complete Daily Reflection sheets
• Optional: Present slideshow of photos from the week to campers
• Clean up
If you have a space where you can modify the set-up, it’s important to think about the different ways you could arrange the room to engage the campers during the different activities.

*Here are some general tips for each day:*

**Day 1: Need Finding**
1. For the business design run-through, place the campers at tables and chairs in groups of 4.
2. For the MRI exercise, create working space around the tables to enable the campers to build the MRIs on the floor.

**Day 2: Ideation & Prototyping**
1. For the morning exercise, Walkabout, create an open space free of furniture if possible so that the campers can move around freely.
2. For the Marshmallow Challenge, set up enough tables for each group to have their own standing work area.
3. For the Chicken Exercise and the Nike Challenge, the campers will be working in pairs so a maximum of 4 people per table would be ideal.

**Day 3: Business Strategy**
1. Arrange tables and chairs for groups of 4-5 campers per table.
2. If you cannot move the tables, ensure that each group has space to post their board game on the wall or a place where the group can work together.

**Day 4: Innovation Challenge**
1. Arrange tables and chairs for groups of 3-4 campers per table.
2. If possible, provide enough space around the tables where the campers can work on the floor or on the table to prototype.
3. Ensure that each group has space to post their mind map on the wall or a place where they can work on it nearby. The mind map can go on top of a table but you will need to clear the table at the end of the day, so the campers can work on the table on the morning of Day 5.

**Day 5: Innovation Challenge**
1. Arrange tables and chairs for groups of 3-4 campers per table.
2. If possible, provide enough space around the tables where the campers can work on the floor or on the table to prototype.
3. Ensure that each group has space to post their mind map on the wall or a place where they can work on it nearby.
4. During lunch hour, if possible, push the tables to the side of the room. These tables will remain out of the way for the rest of the afternoon.
5. Teach the campers about storytelling while sitting on the floor in a circle.
6. For practicing presentations, have the groups work in different areas of the room.
7. For the presentations, if possible, have campers sit on the floor and bring chairs in for any guests who will be attending.
8. Post the group project posters around the room for display when parents arrive.

**PHASE 3: AFTER THE CAMP**

**Post-camp Checklist**
1. Collect and give the pre- and post-surveys to your Camp Director.
2. Collect and give your Daily Reflection worksheets to your Camp Director.
Facilitating the Camp

“Becoming is better than being.” – Carol Dweck

Everybody is a teacher. After all, teaching is simply about sharing our knowledge and experience with someone else. Your teaching pedagogy encompasses not just what you want to teach but how you teach it. It is influenced by the learning outcomes you are trying to achieve, the environment you want to create, what you choose to emphasize and the way you frame your role. Rather than keep all of these choices implicit, it is worth sketching each one out in turn. This can deepen your mastery and increase your teaching effectiveness.

LEARNING OUTCOMES

Learning outcomes are the behaviours and skills that we are trying to achieve through the activities. The learning outcomes are tied to the business design process and the skills necessary to become an innovative entrepreneur. The learning outcomes map against the three stages of the design process, with an additional more meta-mindset outcome layered on. The desired learning outcomes include:

1. Empathy and Need Finding
   • A cognitive understanding of empathy as the ability to put oneself in the shoes of another person.
   • A personal experience of empathy that generates an ability to feel empathy for another person.
   • Openness to and curiosity about other people’s experiences and perspectives, laddering up to a willingness to seek out and embrace those perspectives.
   • An ability to infer needs from observed data, gathered through observation, interviews and experience.
   • Hopefully, an ability to generate needs beyond obvious and physiological needs (like food and shelter), capturing some deeper, more intuitive and psychological needs (like comfort, belonging, predictability, creativity etc.).

2. Ideation and Prototyping
   • Cognitive understanding of ideation as a process for generating many different ideas towards a better possible answer.
   • Ability to generate many ideas tied to user needs and to cluster/label those ideas in a meaningful way to advance understanding.
   • Inclination and demonstrated ability to build on the ideas of others.
   • Recognition of the value of low-resolution prototyping as a way to clarify one’s own thinking, to get immediate concrete feedback from users and, most importantly, to use that feedback to improve the idea and build better next-version prototypes.

3. Business Strategy
   • Cognitive understanding of business strategy as a critical stage in the innovation process, in which the entrepreneur makes a series of interconnected choices to build competitive advantage.
   • Ability to make clear, interconnected and reinforcing choices in the face of complexity and to help others frame these choices.
   • Ability to articulate thoughtful reasons for the choices made.

4. Mindset
   • Recognition of the value of an open, growth mindset in creative problem solving.
   • Ability to demonstrate curiosity about the world, other people and new ideas.
   • Acknowledgment of the possibility of a better answer than the one we have right now.
CREATING THE SPACE

To create a great experience for your participants, you will need to create a space that mirrors the experience that you want them to have. By space, we mean both a physical environment and an emotional and social dynamic. Within your location, you may have relatively little control over the first, but you’ll have a clear opportunity to build the second. Here are a few guiding principles:

Your space should be **safe**, both physically and emotionally. During the week there will lots of materials and movement in the room – you’ll need to take care that materials are put away safely so that no one is injured. At least twice during the week, you’ll also have the opportunity to take your campers out of your main space to the broader university or city (during the innovation challenge observation stage and during the entrepreneur/company site visit). In new spaces, you’ll need to be extra vigilant for hazards and risks. Beyond these basics, you’ll need to ensure that the space is safe emotionally. In order to help the participants get the most of these new experiences and try something new, you’ll need to build a supportive group environment that allows zero tolerance for bullying or violence and builds norms around supportive, collaborative group work. For more on creating a psychologically safe space, look back to your Actua instructor training.

Your space should be **open**, an environment that encourages students to try something that is different and new. An open environment is one in which questions and curiosity are encouraged. Rather than focus on finding a single right answer, focus on encouraging the students to explore multiple possibilities and to play with ideas. Work to instill the creative confidence to try new things and fail at them without fear of embarrassment or negative consequences. The single best way to do this is to demonstrate your own willingness to try and to fail. Do this unashamedly, and be willing to share your own learning journey, as well as stories of great entrepreneurs who failed early on.

The space should be filled with **possibilities**. At its core, this weeklong experience is meant to give participants the ability and willingness to identify problems that they could solve and then to try solve them. Creating a space that gives the campers an opportunity to try new ideas when they are struck by inspiration can reinforce the lessons of this camp. Some simple ideas that encourage possibilities include:

- **Covering tables with craft paper to encourage doodling (which will also help save your tables from damage too!).**
- **Creating a prototyping station where campers can choose to prototype (draw, build or role-play) during breaks and free time.**
- **Displaying their work throughout the space as it is created; each prototype can inspire the next. (Definitely try to keep prototypes around and on display until the end of the week).**
“Sometimes, I’ve believed as many as six impossible things before breakfast.”
– Lewis Carroll

Leading a group of people through a creative process is both exciting and scary. It’s exciting because you are helping them create something completely new and unknown to the world, and yet, it’s scary because you are helping them to create something completely new and unknown to the world. The tricky thing about the creative process is that, by its very nature, we can’t know where it will take us. There is real uncertainty in that, and uncertainty can feel uncomfortable – for you and for the campers. Beyond your regular duties as an instructor, helping participants through a design-driven process means you’ll need to keep a few roles in mind. You’ll need to be a guide, a sherpa and a sage throughout the week.

As a guide, your focus will be on explaining the process and the activities: what are we doing, for how long and to what end? Here, the activity plans will be an important resource, as they provide details on the steps everyone should be taking, how, when and why. The steps are not meant to be formulaic, but to provide a path to follow (even when the end result is not entirely clear). Think of the role as a guide providing the map of the territory; you don’t dictate every turn of the journey but you do help structure the choices to avoid the dead-ends and dangerous cliffs. As a guide, your job is to set the campers up to explore.

As a sherpa, you will have to do some of the heavy lifting for your group. At times, the heavy lifting looks like prep work (e.g. packing materials ahead of time and setting up the room); other times heavy lifting means helping your group to take a leap of faith, to play, to explore, or to focus. Sometimes, a group will get stuck or frustrated. They may be spinning unhelpfully on a task or have problems collaborating effectively. Your job here is to get them through the muck – whatever that muck may be. This part of the role often means thinking quickly in the moment to design helpful questions. It may mean stepping back to let the group work through the problem on its own. And sometimes it will mean explicitly diving into the ideas and the content with the campers to nudge them towards a more successful path. As a Sherpa, your job is to ensure that the campers don’t get stuck.

As a sage, you are the wise elder that campers can turn to for guidance. You speak from experience, not to give “the answer” but to help keep their spirits up and to encourage them to find the answers on their own. Design-led innovation is not a straight path; there are many turns, hills and valleys, and it can be an emotional journey. There can be moments of delight and flow, when the group recognizes a key insight or knows exactly what they want to do and how to move ahead. There can be disappointment, when an idea falls flat or they don’t get the feedback that they would like. There can be frustration, when they struggle to express ideas, to turn ideas to prototypes or to work effectively with others. Monitoring the peaks and valleys that the participants and groups experience is key, so that you can provide them the advice they need in that moment. As the sage, your job is to keep them focused on the possibility that they are on a path to something really amazing.
Day 1: Empathy and Need Finding

The Big Ideas! program begins with a rapid-fire run through the design process: empathy and need finding, ideation and prototyping, and business strategy. The reason to begin with a quick dash through the process is three-fold: 1) it is a fun and high energy way to start the week; 2) it is an opportunity to lay out the process, giving campers a sense of where they are going through the week; and 3) it gives campers an immediate experience of the process, a kinesthetic learning approach that should complement the theory they’ll be learning through stories and thinking exercises.

The bulk of the first day is then centred on empathy and need finding. The single most important foundational idea – the very core – of a design-driven approach to innovation is that everything begins with the user, the person who will buy and use your innovation. This approach is sometimes called human-centred design because it begins not with technology or ideas, but with attempting to understand a human being. Why is this an important place to start? Because true innovation exists for a purpose – inventions that are not adopted and used by someone in the world may be interesting to the inventor but will not become meaningful innovations. Innovation is both the invention and the commercialization of an idea. For an idea to be commercialized successfully, it has to be valuable to people in some important way – it has to meet a need or solve a problem.

So understanding people’s needs is the first step of innovation. Unfortunately, people can’t always articulate their needs in a clear way; they may not even be aware of them. And they certainly aren’t aware of the different ways in which those needs might be met. That means that we need tools and techniques for inferring needs from what people say and do, as well as from what they don’t say and do. To do this, we need empathy for other people.

Empathy is the ability to understand the feelings of other people. It is an ability to know what another person feels and to see the world from their perspective, “as if” you were actually that person. Imagine I tell you my mother recently passed away. What goes through your mind? Do you wonder how I feel about that? Or does your mind leap to how you would feel if you were me? This second reaction is sympathy. You feel sad for me, because you would be sad if you were me. But perhaps I am not sad. Perhaps I am angry at losing her. Or relieved that her suffering is finally over. Sympathy is an inward-looking response. Empathy is outward looking. An empathic response would be an attempt to understand how I actually feel.

Empathy is a complex subject, with lots of neuroscience and psychology behind it. There is interesting work on the connection between emotion, microexpressions and emotional intelligence (Google Paul Eckman to learn more), emotional contagion (how strong emotions spread from one person to another), automatic empathy (your visceral, physical reaction when I describe a recent injury) and on the precursors of empathy (a baby’s motor mimicry, and the way toddlers are unable to separate their own experience from another’s experience; if one toddler falls and is hurt, the other toddlers in the room will also go to their mothers for comfort). But the most famous scientific work on empathy began in 1996 in Italy, where a group of scientists lead by Giaccomo Rizzolatti was studying the brains of macaque monkeys. The monkeys were hooked to electrodes in effort to map what parts of the brain responded to different stimuli. One day, a researcher walked into the lab and picked up an object (alas, just what the object was is lost to history. We hope it was a banana!).
One of the monkeys watched the researcher and a strange thing happened. The computer showed that the motor neurons in the monkey’s brain activated – in the same area of the brain that would have fired if the money himself had picked up the object. The team dubbed the motor neurons that lit up “mirror neurons” and speculated that they exist to help us learn through imitation. What was now clear is that we are hardwired for empathy. We just need some tools to help us hone what comes naturally.

The empathy and need-finding tools we’re using in this program are:

- **Observation**: One key component of empathy is an ability to read the emotions of other people. Most of the time, these are expressed through body language and tone, rather than words. So, one of the first steps towards empathy is active engagement in observation. This involves taking in information and inferring meaning as two discrete acts.

- **Interviewing**: It may be the case that people can’t identify and explain their needs in answer to a direct question. But there is much to be learned from people’s stories. Asking someone to share an experience – what they did, why they did it, how they felt – can provide a window into their needs.

- **Experience**: Sometimes, it is important to actually put yourself into an experience in order to truly understand it – to become a shopper, a patient or a person with limited mobility. So we’ll do that too.

**KEY ACTIVITIES**

In order to help campers identify needs, there is a series of specific activities on day 1: Observation, Open-ended Interviews, Experiences and Need Finding.

**Observation** is the ability to articulate information gathered with our senses and add meaning to it. Whether the data is gathered by sight, hearing, touch or taste, the first step in observation is to attempt to clearly identify and articulate the facts, as distinct from our interpretation of them. Humans are constantly taking in information, but we often conflate facts (the apple is red) and interpretations (the apple is tasty). So, the first step is to hold off judgment to simply record what we see, hear, taste or touch. Then, the second step to observation is adding interpretation – layering on meaning and judgment to our understanding of the facts.

To be more concrete about the difference, suppose you were observing an experience of drinking a cup of coffee. Facts might include: the temperature of the coffee, its colour, its scent, its taste. “It has a slight bitter flavor” is a fact; “The bitter flavor is unpleasant” is an interpretation. “She smiled after she took a sip” is a fact; “She’s enjoying the coffee” is an interpretation. It is important to note that we can’t stop our minds from interpreting facts; we do it almost instantly. But we can consciously work to slow down and tease the process apart, in order to avoid falling prey to automatic biases.
Open-ended interviews help us explore the world more deeply through the use of stories. In a traditional interview, an interviewer typically has a long list of questions that pursue a particular line of thought and the discussion proceeds in a back-and-forth volley between interviewer and interviewee. An open-ended interview, on the other hand is structured to elicit longer and more detailed answers from the interviewee, answers that capture something of their experience of the world. To do this, we focus on two questions:

1. **Could you tell me a story about...?**
2. **Why?**

A traditional interview might begin with questions like “Do you like science?” or “How many times do you wear jeans per week?” The answers to these questions usually yield single-word answers, from which it’s difficult to gain meaningful information. An open-ended interview would begin with questions like ‘Could you tell me about your very best experience with science…” or “Tell me a story about these jeans…” To learn more from the story, we simply ask “Why.”

Asking open-ended questions can be difficult at first. In our standard operating mode, we are busily forming follow-up questions instead of listening closely to what is being said. So, the campers may need some practice shifting their questioning approach. Here are a few examples of how you might help them turn a closed question into an open-ended question:

<table>
<thead>
<tr>
<th>Example of a Closed Question</th>
<th>An Open-Ended Alternative</th>
</tr>
</thead>
<tbody>
<tr>
<td>Do you like school?</td>
<td>Tell me a story about going to school.</td>
</tr>
<tr>
<td>How do you get to school?</td>
<td>Tell me a story about how you travel to school.</td>
</tr>
<tr>
<td>What’s your favorite subject?</td>
<td>Tell me a story about when you feel successful at school.</td>
</tr>
<tr>
<td>Who is your favorite teacher?</td>
<td>Tell me a story about a class that you enjoy.</td>
</tr>
</tbody>
</table>

**Experiences** can be the most powerful way to learn and build empathy for other people. To gain some real, personal experience – even by proxy – of another person’s life is an incredibly powerful learning opportunity. Rotman DesignWorks and other design-led innovation organizations often use experience-based approaches to deepen understanding and find unmet needs. IDEO, the world’s leading industrial design firm, was working with a hospital, which was interested in improving the hospital workflow. The IDEO team wanted to understand that experience first-hand and so asked to experience the hospital as a patient would. An IDEO staffer arrived at Emergency with a “broken leg” and went through the whole process of admission, treatment and release. He took a video camera along and recorded the experience from the patient’s perspective. When the team reviewed the tape, they saw hours upon hours of blank walls and ceiling tiles interspersed with moments of chaos and confusion.
Jane Fulton Suri, Chief Creative Officer at IDEO, recounts in the book *Made to Stick* by Chip and Dan Heath that when the hospital staff was shown the video it had an immediate impact. “The first reaction was always something like ‘Oh, I never realized...’” Suri says she likes the word realized. Before the hospital workers saw the video, the problem wasn’t quite real. Afterward, she said, “There’s an immediate motivation to fix things. It’s no longer just some problem on a problem list.” In other words, all of a sudden, it was possible to see and understand real needs like information, comfort and entertainment.

**Need finding** is an attempt to identify gaps between what could be and what is, between the user’s desired state or experience and the actual one. That gap becomes an opportunity if it can be filled. Why focus on needs instead of solutions? Because needs last longer than any single answer does. For millennia, humans have had a need to capture our memories. The technologies that we have used to meet that meet have ranged from cave drawings to paintings to printed books to film cameras to digital cameras to iPhones. The need remained the same; the way of meeting the need evolved. So focus on the need, and ask how might we serve it better than it is served today.

At core, need finding is about interpreting the information you have gleaned from observation, interviews and experiences to infer where a gap may be. Needs can be identified across a number of different dimensions, and should be grounded in a specific instance. Needs are articulated in a particular form to reinforce this: “When it comes x, Sasha needs y”. Typically, the campers will find straightforward functional (physical, communication) needs more easily than more complex and psychological needs (social, identity and emotional). You may need to spur them with examples of more complex needs across these categories.

Imagine we observed a group of students. We might find some of the follow needs:

<table>
<thead>
<tr>
<th>Simple</th>
<th>Complex</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Social</strong></td>
<td></td>
</tr>
<tr>
<td>When it comes to studying, she needs alone time</td>
<td>When it comes to after-school planning, she needs to be meaningfully connected to friends outside of school</td>
</tr>
<tr>
<td><strong>Physical</strong></td>
<td></td>
</tr>
<tr>
<td>When it comes to travelling to school, she needs a convenient transit route</td>
<td>When it comes to commuting, she needs to get to school on time without hassles</td>
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<tr>
<td><strong>Identity</strong></td>
<td></td>
</tr>
<tr>
<td>When it comes to classroom discussions, he needs to be able to express himself</td>
<td>When it comes to recycling, he needs to feel like a responsible citizen</td>
</tr>
<tr>
<td><strong>Communication</strong></td>
<td></td>
</tr>
<tr>
<td>When it comes to school projects, he needs to be informed of expectations</td>
<td>When it comes to working together in a group, he needs to be able to share and receive information seamlessly</td>
</tr>
<tr>
<td><strong>Emotional</strong></td>
<td></td>
</tr>
<tr>
<td>When it comes to learning about art, he needs to have fun</td>
<td>When it comes to writing an exams, he needs to feel confident and calm</td>
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</tbody>
</table>
**Need-finding** is one of the trickiest and hardest activities to guide. It is difficult because the campers are attempting to make sense of a lot of information and may feel a bit in the weeds. Allow some time and encourage groups to explore beyond their first instincts. It may also be helpful to keep in mind a few rules of thumb for need finding:

<table>
<thead>
<tr>
<th>A need is not a solution</th>
<th>The need you identify should not have a solution embedded within it. For example, ‘Alice needs an environmentally friendly car’ highlights a very specific solution. A need that highlights the insight might be, ‘Alice needs an environmentally sustainable way of commuting short distances.’</th>
</tr>
</thead>
<tbody>
<tr>
<td>A need opens possibilities</td>
<td>A good need will allow for a number of possible routes to solution. In the above example, by using the word “car” we have narrowed the solution set dramatically. Alternately, commuting short distances might allow for a number of possibilities.</td>
</tr>
<tr>
<td>A need is meaningful</td>
<td>The need should be something that your user or interviewee would very happy to have solved. It should feel like an important need, such that solving it would be valuable. The campers should feel excited about this need.</td>
</tr>
</tbody>
</table>

To help a group identify a need, start by asking what was interesting, surprising or cool from their observation, interviews and experiences. Needs aren’t always obvious, so it can be helpful to encourage campers to look for different cues and ask “why.” Look at:

- **Thoughtless acts** – when someone does something unexpected, without seeming to think about it. Think of a person wrapping the string of a teabag around the handle of a mug to keep the string from falling into the cup. Why do they do it? What is the need? Perhaps a simple need to keep the tag out of the water that isn’t met by the standard product.

- **Workarounds** – when someone “misuses” a product in an unintended way as a hack or shortcut to make their lives easier – like when a parent drapes shopping bags over the handles of a baby carriage. Why do they do it? What is the need? Perhaps a need for storage and access that a traditional carriage doesn’t provide.

- **Surprises and contradictions** – when a person says one thing and seems to do another. For instance, a young woman says she is very environmental, but doesn’t compost because she hates mess and odour. Why? What’s the need? Perhaps she needs a way to compost that feels clean and hygienic.
On day one, your primary role is to establish the tone and norms that will continue throughout the week. As you lead the participants through the empathy and need finding activities, it is helpful to model the behaviour that you are hoping the students will exhibit:

**Ask Open-Ended Questions**

By using your own open-ended questions, you’ll demonstrate a way of being campers can emulate when they interact with others and you’ll provide examples of good questions to ask. Practice asking ‘tell me more about...’, or ‘can you explain...’. Encouraging the campers to share their thinking robustly will help them understand why it’s important for others to do so as well.

**Be Curious**

Being curious extends not just to the activities that you’ll be leading, but to the world around you. Convey your interest in the campers, the content and the exercises as genuinely as possible by mindfully engaging in what you’re doing; try not to think ahead to the next activity or conversation too much – focus on what is happening right here and right now.

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**TROUBLESHOOTING TIPS & TRICKS**

<table>
<thead>
<tr>
<th>What’s happening?</th>
<th>Why might this be happening?</th>
<th>What can you do?</th>
</tr>
</thead>
<tbody>
<tr>
<td>Observation: Campers are conflating facts and interpretation</td>
<td>They aren’t aware of how quickly and easily we build inferences</td>
<td>Push them to separate the two stages, ask them to begin only with the things they can see, hear, touch or taste to determine the facts; then, identify the specific interpretations as distinct from data noted earlier.</td>
</tr>
<tr>
<td>Interviews: Campers are asking pointed, close-ended questions (e.g. How much did that cost? Did that make you happy? How many times a day do you do that?)</td>
<td>They want to maintain control of the interview They are not actively listening to the interviewee They aren’t sure how to ask open questions, so default to a familiar style</td>
<td>Remind them to speak less, listen more. Ask how they could rephrase a pointed question into an open-ended question. Be ready with some suggestions if they need help. Acknowledge that it is hard to learn a new skill and provide additional opportunities for practice.</td>
</tr>
<tr>
<td>Need finding: Needs identified are superficial or overly simple</td>
<td>The group has not thought deeply about the underlying motivation behind what someone is saying or doing</td>
<td>Suggest they ask ‘why is that important?’ multiple times (why? why? why?). Remind the group that needs can be found by thinking about multiple dimensions: social, physical, and emotional.</td>
</tr>
</tbody>
</table>
Empathy can change lives! The GE MRI story is a great example of this. MRIs are a great innovation; they allow us to look inside the human body without surgery or the use of dangerous radiation. But the process of getting an MRI can be torturous. It requires the patient to lie very still for a long period of time while the machine whirls and clicks loudly as it works around them. Few adults look forward to an MRI, but we accept the experience because the rewards are so high and the risks so low. But what if the patient isn’t an adult but a child? The folks at GE Healthcare, the makers of big and expensive MRI equipment, discovered that 70-80% of kids have to be sedated for an MRI. Sedation isn’t ideal, because any time we have to use anesthesia, there is a risk of complications.

Why was the sedation necessary? Through observation, interviewing and experience, GE discovered it was because the kids were terrified of the machines or didn’t have the willpower to stay still as long as needed. The experience was massively anxiety producing and massively boring at the same time! The kids have to wait a long time and then leave their parents to enter the machine all alone. The machine is big and loud and scary. How, GE asked, could they reinvent the experience to make it not scary and not boring? Could it even be fun and exciting, they asked? Could the big MRI machine be more like the machines kids love, like roller coasters and video games? How might they turn an ordeal into an adventure? By thinking about the whole experience from a kid’s point of view!

In the end, GE reimagined the MRI experience without changing much about the machine itself. Now, well before the MRI, the kids are introduced to a story that features a big machine – a submarine, say, or a pirate ship. When they get to the MRI suite, the machine is decorated with decals to look like a pirate ship or a submarine. The same story continues while they are in the machine. The child becomes a character, who, at one part of the story, has to lie very still in order to defeat the bad guys. When they tried this approach, GE found that 90% fewer kids had to be sedated. That’s a huge shift and real reduction of risk, thanks to empathy and need finding.

### WHY DO EMPATHY AND NEED FINDING MATTER?

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<th>What can you do?</th>
</tr>
</thead>
<tbody>
<tr>
<td>Need finding: Campers have anxiety about their ability to solve for a need</td>
<td>The group is hesitant about selecting a need they cannot immediately solve because they fear going outside their comfort zone. The need is too broad and not well defined.</td>
<td>Assure them that not knowing what the answer will be is part of the process; they will come up with ideas in the next part of the process! Suggest they go back to the research to find context for the need. Where and when does the need occur? In what way? Why does it matter at core?</td>
</tr>
<tr>
<td>Need finding: The need is too specific and sounds like a solution. For example, Alice needs an environmentally friendly car (solution) to get to work.</td>
<td>The group is jumping ahead and already thinking of solutions. The group is thinking narrowly of specific rather than deep needs.</td>
<td>Ask them what is missing from the user’s life? For example, if Alice needs an environmentally friendly car to get to work, what is missing in her life that leads to that need? Why might Alice need an environmentally friendly car?</td>
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What’s another example?

How about the University of Toronto? UofT is one of the world’s top research universities. It is where researchers discovered insulin in 1921, constructed the first practical electron microscope in 1938 and identified the first stem cell in 1963. So research is at the very heart of what the university does. But, in order to make these amazing discoveries, researchers need the right equipment and materials, which can be very, very expensive and complicated to buy. A small department at the university, called Procurement Services, exists to help these researchers buy the equipment they need, like a giant microscope or a supercomputer that could cost millions of dollars.

Procurement is led by Eddy Jin. He and his team make sure that the researchers follow the rules when it comes to spending research grants because if they don’t, the money can be taken away by the funders. Unfortunately, few researchers seemed to care about following the rules, especially when it came to buying the most cost-effective equipment. As much as the department wanted to help the researchers follow the rules, the researchers avoided Eddy and his team if they could. The Procurement department wasn’t sure why this was happening!

To gain a better understanding of the problem, the team interviewed researchers in the Chemistry, Pharmacy and Social Science departments. They asked the researchers to tell stories about buying equipment for their research. When Eddy and his team heard the stories and put themselves shoes of the researchers, a light bulb went off! They were able to understand what these scientists might be thinking:

“Why do I have to read all of this information? Most of this doesn’t apply to me.”
“All of this paperwork is getting in the way of me doing what I love: my research.”
“I don’t really care about following the rules. All that matters is my research.”
“I was ready to buy the equipment I needed when Procurement pulled the plug on me. I must have filled out a form wrong.”

They also were able to understand what the researchers might be feeling:

“I’m excited to go into the lab every day. My research could potentially change the world.”
“I don’t feel like I can trust a lot of people to help me do my research. I think some people are there just to tell me to follow these rules.”

For a long time, the Procurement department had insisted that researchers spend time on the things that weren’t important to them, creating anger and resentment towards Eddy’s team. The Procurement department was actually getting in the way of what these researchers loved doing most, which was their research and experiments.

Based on these interviews, the team was able to identify the needs of the researchers:

• The researchers need information in a simple and convenient way when it comes to policies and procedures.
• A researcher needs to trust those around him when it comes to his research.

After Eddy and his team began to understand these needs, it transformed how they worked with the researchers. Instead of acting like the police, telling the researchers what to do and enforcing the rules, Eddy’s team now works to be the researchers’ partner by simplifying things so the researchers can focus on what they love. By following a new process, Eddy’s team was able to save the university over a million dollars, helping the researchers buy the right equipment and still follow the rules. They became a friend and trusted advisor – and now, researchers who use to avoid Eddy seek him out in the hallways!
Day 2: Ideation and Prototyping

“The best way to have a good idea is to have a lot of ideas.”
— Dr. Linus Pauling

The second day of the program is built around, well, building. The campers will spend the day generating both ideas and prototypes. There are a number of key insights at that should come out of the day:

• Creativity is for everyone – it doesn’t belong just to artists and designers.

• Creativity is about coming up with ideas, making connections and imaging what could be instead of focusing only on what is. We can all do this – we just need some tools and some practice.

• More ideas are better than one idea – creativity isn’t about finding the single right answer. It is about exploring many possibilities, including wild ideas that could be the seed of something great.

• Ideas can only advance so far when they are in your head – to get clearer about the ideas and the thinking behind them, get them out of your head and down on paper. Sketch out the idea to advance your thinking and make it more concrete.

• Once an idea is down on paper, you have the very best opportunity to make it better. Sketching out the idea and building a simple low-resolution 3D prototype of the it lets you more easily share the idea with others, getting their reactions and suggestions to advance the idea.

• Keeping the prototypes as rough as possible early on reduces costs, speeds up learning and avoids emotional attachment to any one idea.

Low-resolution prototypes are models created with everyday materials, like modeling clay, craft sticks and cardboard.
Low-resolution models are helpful because:

- You can cheaply and easily pursue many different ideas, without committing to any one idea too early.
- You can test the feasibility of the general concept right at the beginning of the process, which can help avoid extensive rework later on.
- You can get honest feedback from users and real suggestions for change. The rough nature of the prototype encourages users to give you feedback about the idea itself, rather than about details and features. It gives the sense that you could easily change your idea, which encourages users to be more open and honest about what works and what doesn’t. A higher-resolution, functional technical prototype suggests you’ve already worked hard on the idea, investing a lot of time and a lot of money. Users, in this case, are less likely to provide substantive feedback because they are afraid to disappoint you or feel it is too late to reimagine the idea from first principles. Working technical prototypes do have an important role to play, but much later in the process.

Creating ideas and building prototypes is fun. Typically, there is a lot of energy and enthusiasm that builds throughout these activities. But it can be easy to get caught up in the momentum of building and become committed to refining a single “right” answer. It is important to reiterate throughout the day why we are building at this stage – it is all about helping us make the idea better!

**Ideation**

Ideation is the generation of new ideas. There are lots of ways of doing this but by far the most common is brainstorming. Of course, brainstorming has a bit of a patchy reputation; almost all of us have struggled through a brainstorming session where nothing seemed to be accomplished and all the ideas fell flat. Most often, brainstorming fails because we fail to follow some basic rules and to remember the real intent of the session. Brainstorming isn’t about assessing and ordering ideas – that will come later. Brainstorming is about getting as many ideas out as possible, without any evaluation or censoring. The rules of brainstorming, as expressed in this camp, are:

- Say what you’re thinking (Don’t worry if it is a bad idea – we want ALL the ideas)
- Go for quantity (Try to get as many ideas as possible)
- No judgment (Don’t criticize any ideas)
- Listen! (Build on other people’s ideas; Avoid side conversations)
- Be visual (Draw and sketch to capture the idea if words don’t quite do it)
Clustering

The end of a brainstorming session can be a daunting moment. We’ve generated a whole slew of ideas – and there are sticky notes everywhere. Now what?

Now, we look for themes by clustering ideas together and putting a label on those themes. Clustering helps us order and combine ideas, and can also inspire further ideas that build on the ideas within a theme. For the chicken exercise, for instance, you might have a long list of possible ways to keep the neighbour’s chicken out of the garden:

• Move
• Build a moat
• Get a dog
• Make friends with the neighbour
• Build a fence
• Call animal control
• Get a cat
• Grow veggies the chicken doesn’t like
• Beg neighbor for help
• Ask for eggs from neighbour to compensate
• Ask neighbor to move

These could be clustered as follows:

• Moat, fence (barriers)
• Get a dog, get a cat (chicken scare tactics)
• Call animal control (outside authorities)
• Grow veggies the chicken doesn’t like (change incentives)
• Move, get neighbor to move (relocation option)
• Beg neighbour, make friends with neighbour, ask for eggs from neighbour to compensate (deal with the neighbour)

And ideas could be added:

• Moat, fence, shrubs, elevate the garden (barriers)
• Get a dog, get a cat, build a “scarechicken” (chicken scare tactics)
• Call animal control, call police (outside authorities)
• Grow veggies the chicken doesn’t like, put chicken feed out away from garden (change incentives)
• Move, get neighbour to move, get chicken to move (relocation options)
• Beg neighbour, make friends with neighbour, offer reward to neighbour, ask for eggs from neighbour to compensate (deal with the neighbour)

When clustering, the idea is to look for different kinds of themes across the ideas. What are the different ways the ideas are similar to other ideas, and which ideas seem to come together under a category? Clustering themes can help crystalize and develop the ideas further.

After clustering, the challenge is decide which ideas to prototype. At camp, because we have only a short amount of time, the campers will be asked to build a single prototype solution – but it could combine elements of different themes and ideas that work together well (i.e. an elevated garden with a “scarechicken,” similar to a scarecrow). There is no magic to picking the themes and ideas to work on; it is just a matter of asking what seems fun and exciting to us? What would we like to play with and develop further? What would we like to get feedback on?
Prototyping

Prototyping is about visualizing an idea in some way. The goal of building any prototype is to get an answer to your questions about the idea.

Prototypes can be created in a number of ways:

- Sketch: a quick line drawing that captures the essence of the idea
- Diagram: a more detailed sketch that shows the relationship between elements of the idea
- Low-resolution 3D model: a simple model made of basic materials
- Role-play: an action-based model that attempts to show how people would interact with or experience the idea

Prototyping can help with:

- Bringing the group together. Often times, people in the group have different perspectives on how best to meet a need. As groups sketch ideas and build prototypes, they can work through ways to bring these ideas together cohesively, asking how might that work and how could we build it. This is an important part of the process and it helps the group incorporate their disparate ideas.
- Creating a feeling of success. Prototyping allows the team to quickly demonstrate their core idea and how it might work.
- Identifying what is valuable. By enabling concrete feedback from the user, prototypes can help groups identify what is valuable and conversely, what isn’t valuable about the idea.
- Identifying and solving problems. At each level of prototyping, groups learn more about how their idea might work. As their ideas develop, they will encounter problems and work to resolve them.

Feedback

Feedback is a powerful way to learn, but it isn’t something that comes naturally to us. Often, negative feedback can feel like a failure, and is seen as something to be defended against. In a design-based approach, the attitude towards negative feedback and even to failure is flipped on its head. It is important to express to the campers just how little we learn from success and just how much we learn from failure. Failure is the best thing that can happen to an idea; it lets you know what doesn’t work immediately and gives you a chance to fix those problems.

When it comes to feedback and failure, thinking about Carol Dweck’s work on the growth mindset may be helpful. Dweck is a Stanford psychologist who has spent decades studying the way in which our mindset affects our lives. Her work highlights two specific mindsets:

- A growth mindset: a belief that your basic qualities (intelligence, creativity, kindness) are things you can cultivate through your efforts. In this mindset, if you fail a test, you see it as a sign you should study harder. Effort is seen as worthwhile and important.

- A fixed mindset: a belief that our qualities are set in stone. Here, if you fail a test, you assume it means you are stupid or untalented. Effort is a sign that you aren’t smart enough.
A growth mindset produces resilience and perseverance – we try harder, work longer and bounce back from setbacks. It is a key to creativity. The good thing is that a mindset is a choice, and that we can demonstrate our own growth mindset to others, encouraging them to take a similar approach. In Dweck’s book *Mindset*, she highlights lots of examples of the positive impact of a growth mindset and of embracing failure. Here’s just one: Michael Jordan. Widely seen as the greatest basketball player of his era – if not of all time – Jordan was cut from his high school basketball team. That failure turned Jordan into the hardest-working player in the game. He famously thought more about the shots he missed than the ones he made; he dedicated himself to learning and to growth. He saw his mistakes – his failures – as an opportunity to improve. This is the mindset that helps us get the most we can from prototyping and feedback.

Feedback is helpful to:

• Test your idea. Finding out what doesn’t work early on can save you time and money. User feedback is the fastest and easiest way to learn this.
• Identify changes. Feedback helps the team discover what they should keep and what should change about their prototype.
• Get to a better idea faster. If you wait until the final product is created to get feedback, it may be too late and too expensive to create something amazing.

While feedback is incredibly helpful and powerful, it’s not always easy to hear. Here are a few tips to remember:

• Negative feedback should be expected and is a part of the process. Remember, the goal of prototyping is to get information, not to get it right.
• The goal when listening to feedback is to look for changes that you can incorporate into your next prototype, not to get validation that the idea is cool.
• Feedback is another opportunity to learn about your potential users and what they might need. You might discover an even more powerful need at the stage!

**Putting it Together: Ideation, Prototyping and Feedback**

Ideation, prototyping and feedback should always be done together. Ideation does not happen only at the outset; as you build and get feedback, you’ll continue to improve and change the idea. Since these activities are inextricably linked, here are a few things to keep in mind to understand the layering of the activities:

• Work through multiple prototypes. Providing the opportunity to do multiple prototypes on the same need ensures that there is no need to get it ‘right.’
• Build different kinds of prototypes. By prototyping in different ways (i.e. sketching, diagram, 3D or role-play), you can gain different kinds of insights about how your idea might work.
• Allow time to incorporate feedback. Feedback isn’t helpful if you don’t put it to use. Make sure there is always to an opportunity to incorporate the feedback into the next prototype.
Setting Up

As a facilitator of the ideation, prototyping and feedback process, your role is to:
• Help the campers come up with as many ideas as they can to meet the needs of the user. Push them in wild, funny or obscure directions.
• Create a safe environment where ALL (legal and ethical) ideas are welcome. There is no such thing as a stupid idea. Remember, ideas are only the beginning of something more.
• Manage the camper’s expectations. They should expect that their ideas will be critiqued – and that’s ok.

Here are some suggestions of how you might help participants push their ideas further. For a given key idea you can:

Vary the theme. For example, if all the ideas for increasing recycling are about signage, ask:
• What if signs were used in a different way?
• What if signs were used after the materials are recycled?
• What else could signs signal?
• What is it about signs that are so important? Could we accomplish what signs do in a very different way?

Vary the context. For example, if all the ideas for the recycling process are located in the garbage room, ask:
• What if you had to recycle in an airplane bathroom? How might it work?
• What if you had to recycle without gravity?
• What if you had to recycle in your car?

Change the ‘shape’ of the idea. For example, if all the ideas for recycling look like boxes, ask:
• What if your ideas couldn’t be box-shaped?
• What if you had to fit your idea in a shoebox?
• What if you had to fit your idea into a balloon?

<table>
<thead>
<tr>
<th>Key Question to Ask Users</th>
<th>Why this Question Matters</th>
<th>Suggested Variations</th>
</tr>
</thead>
</table>
| What do you like?         | It helps us understand the elements of the idea that work and resonate with the user in the current form | - What idea do you like best and why?  
- What’s cool about the prototype?  
- What would you keep from this idea? |
| What questions do you have? | It helps explore the things that are unclear and exposes possible areas for improvement | - What questions do you have about the idea?  
- What seems confusing about the idea?  
- What seems unclear to you? |
| How might you improve the idea? | It helps involve the user in the creative process and highlights things that could improve in future versions | - How would you improve it?  
- What would make this idea better?  
- How else might you use this idea?  
- What do you wish we would do? |
As a part of the experience, campers will be learning how to solicit feedback, and how to give feedback. Since you’ll be giving lots of feedback throughout the week, you can demonstrate a helpful approach to it. Here are some sentence starters:

<table>
<thead>
<tr>
<th>Key Question Being Asked</th>
<th>Helpful sentence starters (for giving feedback)</th>
</tr>
</thead>
<tbody>
<tr>
<td>What do you like?</td>
<td>- I really liked...</td>
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<td></td>
<td>- Yes, and...</td>
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<tr>
<td>What questions do you have?</td>
<td>- I’m wondering about...</td>
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<td></td>
<td>- Can you explain...</td>
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<tr>
<td>How might you to improve the idea?</td>
<td>- You might want to think about...</td>
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<td></td>
<td>- What if you could...</td>
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<tr>
<td></td>
<td>- You know what would be awesome...</td>
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<td>- I wish...</td>
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There are two simple habits that can help campers make the most of feedback:

1. Take notes. If we rely on our memories for feedback, chances are we’ll miss a lot of detail and nuance.
2. Build again! Post-feedback, the instinct should be to build again right away, to incorporate and add to new ideas while they are fresh in our minds.

**Modeling Behaviour**

Demonstrating the behaviour we want from the kids through our own actions can be a powerful teaching mechanism. Here are a few ways that you can model helpful behaviours:

- **Be excited!** If creating new ideas is exciting for you, it’ll be exciting to them.
- **Use the phrases ‘Yes, and..’ and ‘What if...’** a lot throughout the process.
- **Be wackier, crazier and weirder than the participants during idea generation.** This will help campers feel comfortable sharing their own ideas with the group.
- **Don’t judge ideas.** Simply build on the ideas and show how to make an idea even better.
- **Give constructive feedback.** Your feedback should be clear and specific. Instead of saying that you like or don’t like the idea, explain why. For example, “I like the way you protected the chicken from being hurt. The way you leave room in the bubble wrap will ensure the chicken won’t suffocate.”
- **Say thank you.** Show appreciation for feedback, remembering that it is a gift. Feedback is the fastest and cheapest way to improve ideas.
### TROUBLESHOOTING TIPS & TRICKS

<table>
<thead>
<tr>
<th>What’s happening?</th>
<th>Why might this be happening?</th>
<th>What can you do?</th>
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<tbody>
<tr>
<td>Ideation: Campers aren’t generating many ideas</td>
<td>After the first spurt of ideas are exhausted, campers aren’t sure what to do</td>
<td>Join the group for a few minutes. Look at the ideas on the sticky notes and build on them explicitly by asking ‘What if we could...?’</td>
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<td>‘Push on one of the ideas in a number of different ways:</td>
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<td></td>
<td>- Change the theme or location (What if you were in space?)</td>
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<td>- Change the context (What if you were Disney?)</td>
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<td></td>
<td>- Break constraints (What if you had a $1 million dollars?)</td>
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</tr>
<tr>
<td></td>
<td>- Create constraints (What if you only had $1?)</td>
<td></td>
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<tr>
<td>Ideation: Campers are only focused on the ideas that they generate themselves</td>
<td>A camper is ignoring others and dominating discussion</td>
<td>Suggest a new methodology: Ask ‘Why don’t we take turns coming up with ideas? Let’s take 30 seconds to come up with ideas on our own and we’ll share them with each other one at a time.’</td>
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<td></td>
<td>A camper is behaving in a way that intimidates others in the group</td>
<td>Remind them that, as individuals, we can’t always think of the best ideas by ourselves; we need others to contribute to it and make it better and bigger. Even though Steve Jobs came up with the initial idea for the Macintosh, Steve Wozniak made the idea better.</td>
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<td></td>
<td>A camper believes that their ideas are the best and that only those ideas should be used</td>
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<tr>
<td>Ideation: Campers aren’t building on others’ ideas</td>
<td>An individual explicitly says ‘That’s a dumb idea,’ or ‘That would never work’</td>
<td>Remind them that all crazy and seemingly bad ideas have a nugget of a good idea in them; it’s important to capture the crazy ideas because they can lead to really innovative solutions. For example, before the Apple iPod, no one thought we would ever want our music collections to be housed in our pockets.</td>
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<tr>
<td>Ideation: Campers aren’t coming up with wild or crazy ideas</td>
<td>Campers are scared to say an idea that might be seen as bad or stupid</td>
<td>Model the behaviour of coming up with crazy ideas by participating in the group’s brainstorm session for a few minutes; share crazy ideas so that the group knows how far they can go.</td>
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**Why do ideation, prototyping and feedback matter?**

**Prototyping and Google Glasses**

We’re pretty attached to our digital devices. Look around a coffee shop, a classroom during a break, a shopping mall or a streetcar: You’ll see lots of people engrossed in emails, texts, tweets or Angry Birds on their hand-held devises and smartphones. These devices allow us to stay connected, to build social networks and to communicate in an instant. But they are also isolating. By allowing us to slip into a digital world, they can cut us off from the immediate world around us.

Google is pretty invested in this mobile technology world; its Android operating system is the world’s most widely used smartphone software. Android-powered devices accounted for almost 70% of the 700 million smartphones sold globally in 2012. So Google is also very interested in the challenge that hand-held devices create – the disconnection challenge. They began to play with the idea of a wearable device – a device that would allow for digital connection without sacrificing a real-time experience of the world around us. The hypothesis was that projecting data in front of our eyes could accomplish this tricky balance.
To test the hypothesis at the earliest stage possible, Google engineers constructed a series of prototypes. The first challenge was to test the experience of projecting data into the world in front of us. In one day, the team, led by Tom Chi, used found materials (things found at their desk and in their cafeteria) and some ingenuity to hack together a very simple prototype:

![Projection Prototype](http://www.geek.com)

Then, of course, it was important to prototype a way to interact with the data and to test wearability. Multiple rapid prototypes were created on these fronts. The materials? Hairbands, fishing line, chopsticks, modeling clay, paper and wire.

Of course, later prototypes got more sophisticated and technical:

![Technical Prototype](http://www.fastcodesign.com/1669937/googles-project-glass-inside-the-problem-solving-and-prototyping)

Until they arrived at the version currently being user tested:

![The Current Version](http://www.thetimes.co.uk/tto/technology/gadgets/article3716672.ece)
How about a Less High-Tech Example?

Okay, let’s talk M&Ms. M&Ms are a pretty low-tech product. Launched in 1941 by Mars, they are small, button-shaped chocolates coated in colourful candy and printed with a letter ‘m’. In 2004, Mars launched My M&Ms, a service in which individuals can order customized versions of the classic M&M, with their own message or image printed on the candy. It had begun as an idea in the R&D department’s advanced lab in New Jersey in 2000. To test the idea of customizable messages, the team hacked together prototypes using printers bought at their local Staples store. Eventually, the research team created ink-jet printing technology that would allow printing on a curved candy surface and began to roll out the idea.

Prototypes and User Feedback

What’s this?

It’s a surgical device. At least, it is a prototype of one. In 2001, IDEO, the design and innovation consultancy, was working for Gyrus ACMI to develop new otolaryngology tools (that’s ear, nose and throat to most of us). Early on, the team brought in surgeons to tell stories and share experiences as part of the need finding process. A discussion arose around a particular procedure and the group began to brainstorm together on a tool that could make it more efficient. To get tangible quickly, one of the IDEO designers gathered some materials from around the office and literally taped together a prototype of the device and asked the surgeons to play with it. The end result was the Diego Powered Dissector System, which grew sales by more than 300% in 4 years and quadrupled market share. Here’s the final tool:
Business strategy is the third crucial stage for entrepreneurship and innovation. It is the stage that makes the difference between a cool idea and a great business. Business strategy explains why, when two people have the same great idea around the same time, only one gets the credit. Think of Alexander Graham Bell and Antonio Meucci. Both could lay claim to the invention of the telephone. In fact, Meucci’s sketches and patent applications suggest he may actually have the stronger case. But Bell went down in history. Why?

It turns out Bell’s father-in-law, Gardiner Greene Hubbard, was pretty savvy businessman. After Bell offered to sell the patent for the telephone to Western Union for $100,000 and was rebuffed (“nothing but a toy,” they sniffed), Hubbard organized the Bell Telephone Company to sell telephones but also to create the infrastructure to support the widespread use of the phone. Like Thomas Edison, who created General Electric to support the dissemination of the light bulb, Hubbard understood that the invention alone wasn’t enough – to be successful, it has to be commercialized through a business. That’s the point of business strategy.

In the camp context, we’re explaining business strategy as the answers to a set of questions. Those answers fit together to build the business behind the idea.

At this point, a few definitions may be handy:

- A business is an organization that exists to trade goods or services with a customer. To quote Peter Ducker, the most influential business thinker of the last century, a business exists to create a customer.

- A strategy is a plan you make to achieve a goal. So, a business strategy is a set of choices that are made with the aim of winning with the customer, against the competition.

- A competitive advantage is the way in which you are better than the competition along some dimension that customers value, like service, or quality or cost. It is why a customer chooses to buy from you.

- Capabilities are the activities at which a company excels. Not everything a company does is a capability; capabilities are the outstanding activities that actually produce competitive advantage.

- Economies of scale are cost advantages that emerge as the level of production increases. Though the total cost of production goes up, the marginal cost to produce each unit goes down as efficiencies are gained through batching, buying supplies in larger quantities, etc.

- Marketing is the set of activities that communicate the value of a product or service to customers, including branding, advertising, pricing, packaging, etc.

- A brand is the name, image and personality of a product, service or company.

- Distribution is the process of making a product or service available to customers, through a channel (like a store or dealer) or directly (by establishing your own retail or online store).

- Profit is one way to measure a company’s success. It is a calculation of revenues (number of sales multiplied by selling price) minus costs.
The concepts that are important to highlight when it comes to strategy are:

- **Strategy is about making choices.** No company can be all things to all people, and so organizations have to choose what they will and what they won’t do, where they will focus and where they won’t, which customer they will target and which they will not.

- **Strategy is also about winning.** If a company doesn’t set out to win, it won’t. If all it wants to do is sell some products to some customers, it will lose to a competitor that sets out to win those customers, to serve and delight them. During the 1980s and 1990’s, General Motors, Ford and Chrysler set out to stay alive and sell some cars. Toyota and Honda set out to win with customers. No surprise, the Big 3 wound up in or on the brink of bankruptcy while Honda and Toyota lead the market.

- **Competitive advantage – how you win** - falls into two categories:
  - **Low cost:** In this case, a company creates scale or production advantages that enable it to produce the product (or service) for less than competitors can. In chocolate, Mars has lower costs than Hershey because it uses lower-cost ingredients and produces as many products as it can from the same production line (which is why 3 Musketeers, Mars and Snickers are all the same shape and size). Having low costs could mean that the company passes the savings on to customers, like Wal-Mart does. Or the company could choose to reinvest that cost savings into the product (like Toyota does) or keep it as additional profit.
  - **Differentiation:** A company can also focus on being special in some way (e.g. quality, technology, design, etc.) that causes customers to be willing to pay a price premium for its products and services.

- **All the choices a company makes will either reinforce or detract from the core strategy.** To win, it is important that all of the choices be consistent and reinforcing. When thinking through strategy, the choices need to be considered together as well as individually. It is important to ask how well each choice fits with the other choices.

### KEY ACTIVITIES

The strategy component of the Big Ideas! camp is built around a real-life case – a young entrepreneur named Carter Kostler, who invented a new water bottle and is beginning to build a business around it. In designing ‘Carter’s Water Bottle - The Strategy Game,’ we made a few key choices:

- **It’s a game –** There is lots of theory behind strategy; it can be difficult to talk about business strategy without making the discussion feel a lot like school. So, we created a game in which the lessons can emerge organically. Hopefully, the campers will find it both fun and challenging.

- **Campers work in small teams -** A great strategy is rarely crafted alone. In business and school, difficult decisions are made as a part of a team. This game provides a safe zone in which to practice having this kind of discussion.
• It’s fast - We’ve done a number of tests to see how long it takes kids at different ages to review the materials and make decisions. We’ve attempted to set the timing so that it feels fast-paced but doable. At some stages, the campers will feel like they have enough time and at others they will feel rushed. This is intentional – there should be a reasonable sense of urgency in the game.

• It’s about making choices – Again, strategy is about making integrated choices to win. This game highlights that there are no perfect choices, as there are no single right answers in life. Teams will make choices based on what they believe is most important at any given time – and may regret choices later on, as we all do from time to time. In order for the campers to feel a sense of commitment, we use stickers to affix the choices on the game board. The large game board helps the participants see all the choices they’ve made in one spot.

Here are a few things to keep in mind when you are leading the campers through the game:

• Encourage debate within the groups (especially when they’re choosing which customer segment to pursue; this is a crucial choice because it is so early in the game; This is an opportunity for campers to express what they have learned about the industry, company and competition to identify a compelling customer segment.). There is no “right” answer, but there are better and worse ones. Some choices leave few good options later in the game.

• Draw their attention to potentially important data. From time to time, campers will ignore a piece of possibly vital information. Don’t hesitate to draw the information to the campers’ attention in order to make the choice process more challenging or thoughtful: For example, participants may be drawn to the ‘Anti-Water Advocates’ because they believe they can “convert” them into water drinkers. You might say: “That could be an interesting strategy. It says here that they are 10% of the population. Do you think that’s a big enough of a segment to approach?”

• Remember, these choices are sticky. Organizations can’t win if they change their minds all the time. That’s why it so important to be thoughtful about the choices in advance. You can’t go back and change your choices at a whim. So, in this game, once a choice is on the game board, it is made and can’t be unmade. Fortunately, there aren’t that many really bad choices among the possible outcomes.

• Outcomes aren’t always predictable. In life, and especially in business, you will need to make decisions with imperfect information. In the game, there is enough information to make an informed choice and to substantiate your position but you can’t know the future so the consequences for later choices aren’t always clear. As an instructor, you should encourage your campers to reflect on what they have selected for a particular choice.

• Yes, it’s real! Carter Kostler is a 14 year-old from Virginia Beach, Virginia and really did invent the Define bottle. We came across his story after he was nominated to present to First Lady Michelle Obama as a part of the End Childhood Obesity campaign.
As an instructor, your main role is to lead the teams through the different stages of the activity. This means:

1. You need to make sure each team is moving through each step effectively
   • Use a timer to keep track of each stage and sub-stage. Falling behind by a few minutes at each stage can add a lot of time overall.
   • Check in with each team to see how they are progressing, just in case a team is stuck and needs a nudge from you.

2. You can help groups think critically about the choices they are making to create a strategy. You can do this by:
   • Helping campers identify how each choice connects to the ones before it. (“You chose Penny Pinchers as the customer, and are now considering Flavour Engineering as a capability. How do you see those as fitting together?”)
   • Helping campers make sense of the information in a short amount of time; encourage them to read aloud to save time rather than passing the pages along to read individually.
   • Creating an atmosphere that encourages friendly and respectful debate.
   • Creating an environment where everyone’s thoughts are shared and valued.
   A great strategy is rarely crafted alone.

Since the campers will see this game as a contest, resist the urge to provide too much direction on what to choose. It is important everyone sees the process as fair and sees you as impartial.

At the end of the game, once the groups have presented their strategies, you will need to provide feedback. Here are a few questions to keep in mind:

*Did they ignore or not account for key information?*
   • Not all information in the game is obvious (just like life!). Groups should attempt to dig for information in the sheets provided to them and should read everything carefully. If they don’t, they may make suboptimal choices.
   • In some cases, the group may disagree with the information provided. In those cases, it will be important that they share their thinking and reasoning as to why they disagree and why they made the choice they did on that basis.

*Did they explain their thinking during the presentation?*
   • Keep focused on the idea that strategy is about interconnected choices. If it is unclear how a group’s choices connect, ask them to clarify or explain their thinking.

*Did they try to tell their story?*
   • Success in the game hinges on getting the right profit calculation based on their choices but also on sharing a compelling explanation of the strategic choices. For example, in one of our early beta-tests, one group of students explained that the market share they estimated was higher based on a straw poll they did in their class. Ultimately this group of students got considerable praise for taking a creative approach and for completing their calculations correctly using their data.
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<tr>
<th>What’s happening?</th>
<th>Why might this be happening?</th>
<th>What can you do?</th>
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<tbody>
<tr>
<td>Campers make a decision very quickly</td>
<td>There may be a dominant individual in the group who has expressed the choice and shut down discussion. The group may not feel invested in the activity</td>
<td>Ask the group to explain the thinking behind the choice. Ask what other choices were considered and why they were not selected. Demonstrate your own enthusiasm for the game and for grappling with the difficult choices. Remind them that there will be consequences to the choices later in the game, and that choices cannot be changed.</td>
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<tr>
<td>Campers find it difficult to make a decision</td>
<td>There may be a lot of strong opinions in the group and each person is trying to persuade the group that they are right. They may be overwhelmed by the number of choices and variables, and not sure of the “right” answer</td>
<td>Help move toward consensus by seeking to understand each different perspective (Try “Let’s hear Paul’s perspective…”). From there, you can eliminate some choices that aren’t mentioned and begin to explore what might make a good choice at this stage. You can always resort to voting or rock-paper-scissors or dotmocracy (used on day 2) if time runs out. Remind campers that the game, like life, is ambiguous and they should just make the best choice they can with the information provided.</td>
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<tr>
<td>Campers are not able to figure out how to make connected choices</td>
<td>Campers are making choices without considering the information from earlier stages of the game</td>
<td>Prompt the group by asking what they learned from previous packages of information that might relate to this choice, and by asking how they see each option as fitting with previous choices. (e.g. If the campers are making a competitive advantage choice that doesn’t make sense with their customer, ask ‘how does this [competitive advantage] choice fit with your customer segment?’)</td>
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<td>Campers are not reading the information packages</td>
<td>Campers feel overwhelmed by the amount of information</td>
<td>Encourage different team members to take turns reading the materials aloud. Remind them that each sheet may have some critical information that could help them with the game.</td>
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<tr>
<td>Campers make up information</td>
<td>Campers are tired and/or feel overwhelmed by the information</td>
<td>Identify the information that was made up. Provide some direction as to where they might find the correct piece of information. (e.g. They suggest that Penny Pinchers will purchase water bottles for $20. Say: “$20 seems like a lot of money. Did one of the information cards say how much money they were willing to pay? Which one? What did it say?”</td>
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### THE FIELD VISIT

Another highlight of the week is the opportunity to visit a company or bring an entrepreneur to the camp. The camp was designed to include this element for a few reasons:
- It makes entrepreneurship more concrete and meaningful if campers can make a personal connection to it.
- It is helpful to have an outside, credible voice reinforcing the lessons of the camp.
- It allows for a new location or a change in the kind of instruction, which helps campers with different learning styles.
- It’s fun!

Here are some criteria that can help you select the business or entrepreneur:

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<tr>
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<th>Why might this be happening?</th>
<th>What can you do?</th>
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<tbody>
<tr>
<td>Campers calculate their profit incorrectly</td>
<td>Campers miss information (e.g. population of Toronto or the expected customer market share) or make a calculation error</td>
<td>Remind the teams that there may be information on the slide that will help them estimate their total profit accurately. Encourage them to check their math.</td>
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<td>Campers don’t understand why one set of choices was better than another</td>
<td>Campers failed to make reinforcing choices and are looking to defend their answers</td>
<td>Debriefing the session will be very important. In this case, it might be helpful to walk through all of the choices based on one customer segment. Engage the participants in a discussion of why some choices were better than other, based on the information provided.</td>
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Once you have a few businesses in mind, approach them to see if they are open to hosting your participants for 1-2 hours or, alternatively, to visiting the camp. Check with your camp director before emailing, to see if he or she wants you to do this step directly or to follow some other route.
Here is a script you could adapt for your email:

“We are holding a Creativity, Innovation and Entrepreneurship camp for 10-13 year olds the week of (insert date here) at (insert university and organization here). We’ll be teaching the kids how to deeply understand customers and their needs, create ideas and build prototypes, and devise business strategy.

During the week, we’d like to give our campers an opportunity to see an innovative business first-hand. We wondered if you would be open to hosting a group of (insert # of kids here) at your offices for 60-90 minutes on the afternoon of Wednesday, (insert date here). We would love for you to share the story of your company and offer your advice to our budding entrepreneurs. Alternatively, if a visit to your offices doesn’t work, perhaps you would consider coming to the camp to speak with the kids. Is either option something you might consider?”

Co-designing the Visit
Once a company has agreed to take part in the visit, discuss the details and provide some guidance as to what would be most interesting and relevant to the campers. For instance:

- An overview of what the company does, and how it does it, at a level appropriate for 10-13 year olds.
- Some examples of how the company learns about its customers, how they design and test products (including, ideally, sharing sketches, prototypes and final products) and how they think about strategy.
- Showing off product design or product development areas in the office, or giving a product demonstration.

Don’t worry if the company doesn’t seem to approach innovation in exactly the way it is taught in the Big Ideas! camp. In that case, focus more on the products, on running a business and on advice for the kids. Ultimately, the visit is about making the idea of working in a business tangible and interesting for the campers.

Planning
It’s best not to leave this to the last minute. It is recommended that you book a visit at least 2-3 weeks in advance of the camp. Confirm the visit by email or phone on Day 1 of the camp.

During the visit, it will be important that the kids are engaged and well behaved, so establish expectations before you leave the camp. Explain the rules for travelling as a group and help campers understand that they are visiting a working business - so they should be respectful and responsible. Check in with your camp director to understand what procedures your camps uses when campers leave the university campus.

In advance of the visit, tell the campers a bit about the company and the person they’ll meet. Encourage them to plan some questions in advance: what do they want to know about the company, about running a business, about the host? You may want to have them write some questions on cue cards. Finally, remember to write a thank you card and have one of the participants present it to the host.
Strategy can change entire industries. Think of coffee shops; they’ve been around for decades and rarely have any “won” in a significant way. They were mostly undifferentiated: the only advantages one coffee shop could typically have over another were location and, sometimes, tastier coffee and donuts. But then came Starbucks. Starbucks chose a customer segment (young urbanites) and figured out how to win with them. It isn’t really about the coffee. Starbucks differentiated itself through an experience – it created a lovely “third place.” It isn’t home, it isn’t the office but it feels like a place you belong. It is comfortable and cool, somewhere you want to hang out. Once you do, you even learn the tribal language (just what is a tall half-caf macchiato anyway?). Starbucks created a winning strategy in a typically losing industry.

Or consider Olay. Once called Oil of Olay, it was a struggling brand – pink cream in a traditional bottle, sold at Wal-Mart for $3.99 – until P&G reinvented it. From a focus on bargain-basement products for women over 50, Olay chose a new customer, identified through extensive research – women aged 35-50, just beginning to notice signs of aging. Olay also created a new competitive advantage: instead of promising to fight wrinkles (like everyone else), P&G invested in a new formulation that could treat the earliest signs of aging, like drier skin and discolouration. Finally, Olay built a number of important capabilities – like an ability to work with dermatologists and magazine editors, independent experts who could verify that, yes, Olay really is just as good as competitors that cost hundreds of dollars more. The new choices turned an aging $750 million brand into a $2.5 billion brand within a decade.
The innovation challenge is an action-learning exercise – an opportunity to see how all the tools and concepts fit together and to experience what it feels like to work all the way through the stages on a single project. While the days are mainly about practice and application, a few new concepts are introduced throughout the challenge to encourage the kids to keep pushing forward; these tools are woven into the final two days and build on the foundational concepts.

KEY ACTIVITIES

The Innovation Challenge is fast-paced and hands-on; it is thinking by doing! The campers will engage in:

- Causal Modeling
- Observation
- Interviewing
- Need finding
- Persona Development
- Ideation
- Sketching
- Prototyping
- User Feedback and Concept Revision
- Brainstorming Ways to Build a Business
- Business Strategy
- Storytelling

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<thead>
<tr>
<th>Activity</th>
<th>Description</th>
<th>Learning Outcome</th>
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<tbody>
<tr>
<td>Causal Modeling</td>
<td>Causal Modeling is the process of identifying and visually mapping cause-and-effect relationships related to a particular topic or phenomenon</td>
<td>Causal models can help us gain a better understanding of the factors that produce specific outcomes and of how those factors are interrelated. They can also help us capture our assumptions about an issue, which lets us test them.</td>
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<tr>
<td>Persona Development</td>
<td>A persona is a fictionalized representation of a user or group of users that the campers interviewed</td>
<td>Creating a persona is a way to crystalize key insights discovered during the empathy and need finding stage. Personifying these insights can align the group and remind them they are designing for actual people.</td>
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<tr>
<td>Brainstorming Ways to Build a Business</td>
<td>A simple ideation tool that connects invention and commercialization by asking how we might build a business from the idea?</td>
<td>The goal of this exercise is to come up with many different ways a group could build a business from an idea. This task provides a transition from ideation and prototyping to strategy.</td>
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<tr>
<td>Storytelling</td>
<td>Storytelling is the way we communicate the “why, how and what” of our ideas to other people</td>
<td>Stories let us share our ideas in a clear, compelling and memorable way; campers will learn that there are simple ways to make our narratives more compelling.</td>
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</table>
As an instructor, your role is two-fold:

1. Provide the background and set-up the challenge. This could be a slight adaptation of the UofT recycling challenge or it could be a STEM-based challenge you develop.
2. Help campers move through the challenge. You will need move quickly but deliberately through the tasks and exercises in order to accomplish everything by the end of the week.

To deliver a great experience, you will need to do three things: articulate an exciting challenge, find good locations for observation and recruit appropriate users for interviews.

Articulating an Exciting Challenge
Again, you may adapt the UofT recycling challenge and use it throughout the summer. Or you may start with the original challenge for the first week of camp and then shift to your own challenge in later weeks. To create your own challenge, refer to the Innovation Challenge Starter Kit.

Identifying Good Locations For Observation
For the observation exercises, groups will need to get out into the world to watch and (if appropriate and safe) interact with users, in order identify possible needs. Here are a few things to keep in mind when choosing the locations:

1. Go where users will be. For the recycling challenge beta-test at UofT, campers went to the Robarts Library cafeteria, a Second Cup kiosk and the Rotman Exchange café.
2. Choose locations that are close by. To maximize actual observation time, try to keep the walking time under 5 minutes.
3. Go places that are safe. Camper safety should be paramount when selecting a challenge and a location. The location should be a place where you can maintain visual contact with all campers in an observation group.

Recruiting Appropriate Users to Interview
You will need to recruit users for the campers to interview. Users are people who can share stories about an activity related to the challenge. These stories will help the camper identify user needs.

Users should be recruited in advance of the camp. In order to recruit these users, you should create a user profile. Think about 3-4 characteristics that could be used to identify potential interviewees, considering factors like age, gender and background.

For the beta-test recycling challenge, the characteristics we sought were:

- Equal number of males and females
- MBA students
- Between 25-30 years old

The next step is actually finding users. Look around your school and community for friendly people who are available at the date/time you need them. Feel free to leverage your personal and extended network to find appropriate interviewees. Note that for each group of campers, you’ll need a different user to interview. Therefore, for 24 campers (assuming 8 groups of 4), you’ll need to recruit 6-8 users.
An important tip: You’ll want to over-recruit people because there is always 1 person who doesn’t show up. Typically you’ll want to recruit at least 1-2 extra users.

Once you’ve found users, give them their pre-work. Before the users come in for the camper interviews, they will need to create a photo-journal. Simply ask the users to take photos of an activity that is related to the challenge and to send you those photos by a set date in advance of the interview. It’s a good idea to get the photos 7 business days before the camp starts, so that you have time to print them out and organize them.

Once you receive the photos from each user, print them out in colour and put them in an envelope with the user’s name on it. Have these envelopes easily accessible when the users arrive for their interviews. Each group of campers should be pre-assigned to a user, to minimize confusion at the beginning of the interviews.

Here’s a script of a letter, including pre-work, that you can send to volunteer interviewees:

Page 1 (Letter):

Thank you for assisting us with our youth camp on Creativity, Design and Innovation! Starting on Monday (insert Day 1 date of the camp), kids aged 10-13 will be learning about empathy, ideation & prototyping and business strategy. On (date of the interview), they will be given a challenge to [redesign the waste and recycling experience for graduate students at UofT (that’s you!)]

This challenge requires gaining an understanding of how people think and feel about [waste, recycling and sustainability.] Your thoughts and opinions are very important to the kids and will be the basis of their innovative solutions.

To help you gather your thoughts, we have created a simple photo exercise for you (see attached). The photos will be used as triggers to elicit stories in the interview with you.

This exercise should be done within the next 3-4 days and should take you no more than 1-2 hours. Please email your photos to (your contact email) no later than (7 business days before the first day of your camp).

We will print your photos and have them ready for your interview session with the kids. At this session, you will meet a small group of campers who would like to hear your stories, using your pictures as a starting point. They will ask you to share your stories in an informal setting for approximately 20 minutes.

Your interview session will be on (insert date, time and location). Please arrive 15 minutes before the scheduled time. There will be an instructor outside of the room to check you in.

Contact Information
If you have any questions, please contact (your name) at (your contact info/email)

Thank you for your help.

Have fun!

(Your name)
Attachment (Pre-Work Instructions):

Photo Exercise Instructions

Over the next 3-4 days, please use your digital camera (or smart phone) to take 12-15 photographs that help you tell stories about: [waste, recycling and sustainability at Rotman.] We are particularly interested in your best and worst stories.

Some tips:

• Take photographs often (12-15 photos are ideal).
• Photos do not have to be perfect. What matters is the content, not how good it looks (resolution isn’t so important).
• Do NOT stage and edit photos. Try to capture things in their natural state or environment.
• Are you wondering what to take picture of? Here are some thought starters:

  People – People you encounter and interact with  
  (e.g. staff, classmates, family, friends)

  Objects – The things you use and interact with  
  (e.g. electronics, tools, assisting devices)

  Environments – Places where you spend your time  
  (e.g. class, coffee shops, office)

  Messages & Media – Sources of information  
  (e.g. websites, books, professors)

  Services – Services and support systems you use  
  (e.g. delivery, call centre, online assessment)

If you have any questions about this exercise, please contact (your name) at (your contact info/email).
<table>
<thead>
<tr>
<th>What’s happening?</th>
<th>Why might this be happening?</th>
<th>What can you do?</th>
</tr>
</thead>
<tbody>
<tr>
<td>Causal Modeling: Campers are</td>
<td>Campers aren’t used to thinking in terms of cause and effect</td>
<td>Provide examples of simple cause-and-effect dynamics (how to get an A on a test) versus simple descriptions (the steps to follow to study for a test).</td>
</tr>
<tr>
<td>identifying descriptive, rather than causal models</td>
<td></td>
<td></td>
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<tr>
<td>Observation: Campers are</td>
<td>Campers aren’t challenging themselves to both observe and interpret, or to look for subtler information</td>
<td></td>
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<tr>
<td>identifying only surface data (e.g.</td>
<td></td>
<td>Ask campers:</td>
</tr>
<tr>
<td>“There is garbage in the recycling bin”)</td>
<td></td>
<td>• Why do you think that might be?</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• How might you explain why (X observation) and (Y observation) is happening?</td>
</tr>
<tr>
<td>Interviewing: Campers are</td>
<td>Campers are looking for a specific answer from the interviewee to confirm their hypothesis</td>
<td>Try to encourage campers to turn closed questions into open-ended questions by demonstrating with examples:</td>
</tr>
<tr>
<td>asking closed (yes/no) questions</td>
<td></td>
<td>• Tell me a story about a time when....</td>
</tr>
<tr>
<td>Need Finding: Campers are</td>
<td>Campers have identified the clear gaps (e.g. Susan has a need to get home quickly) but leapt to answers (Susan needs a car) rather than digging into needs more deeply (Susan needs to feel she has choices) This could be due to fatigue or because they are not sure how to dig deeper</td>
<td>Remind them that the more interesting the need, the more interesting the solution. Say: What you are suggesting sounds like a solution. What do you think is the need behind it?</td>
</tr>
<tr>
<td>focusing on solutions rather than needs</td>
<td></td>
<td>Try to recall a story or an observation and use it to push the campers to a need: “You’re right, getting home quickly is important to her. But remember when she said she would take her time to wander into neighbourhood stores. What do you think that was about? Why do you think that is important to Susan?”</td>
</tr>
<tr>
<td>Storytelling: Campers are</td>
<td>Groups are sharing too much about what the innovation is, rather than why it matters</td>
<td>Remind them that the presentation is a story for the audience – it should have all the elements of a great narrative, including creativity and fun.</td>
</tr>
<tr>
<td>struggling to explain their</td>
<td></td>
<td>Remind them to explain why, explain how and explain what!</td>
</tr>
<tr>
<td>business idea in a compelling way</td>
<td></td>
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</tbody>
</table>
“If you’re not confused, you’re not paying attention.” – Tom Peters

As a camp instructor, you have a short time to prepare for your role and to build your confidence in Business Design. To gain confidence, you can work on your own personal mastery of the subject. Personal mastery, as defined by Peter Senge, is “the discipline of personal growth and learning.”

Self-Assessment
What is your level of personal mastery, right now? Consider the following questions:

<table>
<thead>
<tr>
<th>Characteristics</th>
<th>Strongly Disagree</th>
<th>Disagree</th>
<th>Agree</th>
<th>Strongly Agree</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Self-awareness</strong></td>
<td></td>
<td></td>
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<tr>
<td>I am capable of seeing and</td>
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<tr>
<td>understanding myself clearly</td>
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<tr>
<td><strong>Emotional Intelligence</strong></td>
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<tr>
<td>I understand and manage my own</td>
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<tr>
<td>emotions</td>
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<tr>
<td><strong>Openness</strong></td>
<td></td>
<td></td>
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<tr>
<td>I challenge my own thinking to</td>
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<tr>
<td>absorb new ideas and experiences</td>
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<tr>
<td><strong>Adaptability</strong></td>
<td></td>
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<td></td>
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<tr>
<td>I adapt and change to new</td>
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<tr>
<td>situations</td>
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<tr>
<td><strong>Autonomy</strong></td>
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<tr>
<td>I am in control of my decisions</td>
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<tr>
<td>and actions</td>
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<tr>
<td><strong>Empathy</strong></td>
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<tr>
<td>I recognize emotions in others</td>
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<tr>
<td><strong>Ideation</strong></td>
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<tr>
<td>I am creative and always find</td>
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<tr>
<td>new ways of doing things</td>
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<tr>
<td><strong>Prototyping</strong></td>
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<tr>
<td>I build to learn; I can visualize</td>
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<tr>
<td>my ideas through sketching and</td>
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<tr>
<td>modeling</td>
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<tr>
<td><strong>Feedback</strong></td>
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<tr>
<td>I actively seek feedback and use</td>
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<tr>
<td>it to improve my ideas</td>
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<tr>
<td><strong>Strategy</strong></td>
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<tr>
<td>I take the time to weigh choices</td>
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<tr>
<td>carefully and consider them in</td>
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<tr>
<td>context of other choices</td>
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<tr>
<td><strong>Business Strategy</strong></td>
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<tr>
<td>I understand the choices related</td>
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<td>to business strategy and can</td>
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<tr>
<td>explain them to others</td>
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</tbody>
</table>
Reflecting on your Self-Assessment

What are your areas of strength?

What are current areas of weakness for you?

In what areas would you like to develop your capabilities and mastery?

How could you develop in these areas?

The design-driven innovation process and the tools associated with it can take time to learn. But you can begin to prepare for your role and build your confidence by trying the exercises on the following pages. As you do, you should expect to get stuck and experience some frustration. But don’t worry, few things worth doing will be easy at first. Remember, you can always turn to Adam and Justin for help and advice.
**Heightened Senses Exercise**
In this exercise, you will use your empathy and communication skills to help someone navigate a space.
1. Ask a friend to join you for a short exercise.
2. Pick roles: one person is blindfolded and the other is the navigator.
3. The navigator guides the blindfolded person down a hallway or another unfamiliar space. Make sure no-one gets hurt!
4. After 5 minutes, switch roles.
5. Navigate back to the starting point.

**Questions to Ask Yourself**
- What was your experience like being blindfolded? Being the navigator?
- What instructions helped or didn’t help when you were blindfolded?
- How did your communication style change after you switched roles?
- What advice would you give to someone else trying this exercise?

**Things in My Bag Exercise**
In this exercise you will seek to understand the actions and behaviours of another person by observing and asking questions about the contents in their bag.
1. Ask a friend to join you for a short exercise. Tell them to bring their school bag.
2. Ask them to lay out 5 - 10 items from their bag on a table.
3. Without talking to your friend, write down what you see on the table.
4. Describe the person (what they like, what they do, etc.) based on what you see.
5. Ask your friend to tell you a story about one of the items on the table. Learn more by asking:
   - “Why is that important?”
   - “How did you do that?”
Remember to ask more ‘why’s’ than ‘how’s’.

**Questions to Ask Yourself**
- What was new to you that you didn’t know before about your friend?
- How did your assumptions (what you saw) compare to what you heard?
- What does this tell you about how you make assumptions?
- What advice would you give to someone else trying this exercise?
Observation & Interpretation Exercise
In this exercise, you will take the time to observe and interpret explicitly in a space you already know.

1. Start by heading to your local coffee shop with a pen and paper. Take a seat and take a look at your surroundings. Observe what you notice is different to you about the space, the people around you (e.g., baristas, cashier, customers) and what they are doing that you didn’t expect. Do this for at least 15 minutes.
2. As you observe, take notes of the things you notice – these could be about things you see, what people are doing, conversations you hear or a sketch of the space.
3. Review your notes and reflect on what you learned that you didn’t know before.
4. Creating meaning from what you observed by asking yourself:
   • What do you think is going on behind the behaviours you are observing?
   • Based on their facial expressions, what people are doing and saying, what might they be struggling with? What they might be feeling? What situation do you think the people you see might be in?

Questions to Ask Yourself
- What did you learn about the situation and the people in it that was new to you?
- How comfortable were you making interpretations about what you saw and heard?
- What advice would you give to someone else trying this exercise?

Interviewing Exercise
In this exercise, you will contrast the experience of using closed questions and open-ended questions.

The next time you talk to a friend or a colleague, practice asking only close-ended questions.
Here are a few questions to get you started:
- Did you do something fun this weekend?
- Was it boring or exciting?
- How many people did you go out with?
- What restaurant did you eat at?
- Was the restaurant good?

With a different a friend or a colleague, practice asking only open-ended questions.
Here are a few questions to get you started:
- How was your weekend?
- What did you do this weekend?
- That sounds like fun - can you tell me more about that?
After they answer an open-ended question, try to probe deeper into their answers by asking ‘why?’ or ‘tell me more.’
Try asking a fellow instructor about their camp preparation:
• How is your camp coming along?
• What are you finding easy about the camp? Why?
• What are you finding hard about the camp? Why?
• That sounds interesting – can you tell me more about that?

Questions to Ask Yourself
• What did you learn from the closed questions?
• What did you learn from the open questions?
• How did your friends/colleagues react to you in each situation?
• How do you think they felt about the conversation?
• What was most challenging about asking open-ended questions?
• How might you gain more practice crafting open-ended questions?
• What advice would you give to someone else trying this exercise?

“What Need?” Exercise
In this exercise, you will think about the needs met by the things we use every day.

For one full day, challenge yourself to interact more mindfully with all the things you encounter. Every time you encounter a business, product or service (from your morning cereal, to Facebook, to public transit, to watching Game of Thrones at night), ask yourself:

• What needs does this meet?
• How well does it meet those needs?
• How else might those needs be met?

Push hard to get past the obvious need (cereal provides nutrition) to get to deeper needs (certainty, familiarity, efficiency).

Questions to Ask Yourself
• What about need finding was most challenging?
• What kinds of needs (social, physical, emotional) were most difficult to identify?
• What advice would you give to someone else tackling this exercise?
Creativity Exercises
In these exercise, you will practice generating lots of ideas and making connections.

Rock Brainstorm
Try to think of at least 25 different uses for a rock in 5 minutes or less. Push yourself to think of unusual or crazy ideas.

Batteries Included
Think of an everyday object and come up with ideas on how it could be improved using batteries. (e.g. start with a chair, a book, a fork).

Company Metaphor
Think of a list of your some of your favourite companies or brands. Consider if one of these brands was an object, what kind of object would it be and why?

Questions to Ask Yourself
• How did you come up with your ideas?
• Was it difficult to come up with original ideas?
• What helped/what hindered when coming up with ideas?
• What advice would you give to someone else trying this exercise?

Clustering Exercise
In this exercise, you will practice organizing your ideas around different themes and reflect on the experience of doing so.

Take all the ideas you generated in the Rock Brainstorm exercise. Write each idea on a different sticky note and put all the stickies on the wall. Group together stickies that have a theme in common. Label each category (e.g. consumer goods, industrial goods, services). One you’ve done so, start again and see if there are different ways to group the stickies (i.e. by consumer, by cost, by the company you’d sell the idea to).

Questions to Ask Yourself
• How many different clusters did you find?
• What was hard about the process?
• What questions or insights helped along the way?
• What advice would you give to someone else trying this exercise?
Building to Think Exercise
In this exercise you will work to solve a problem by building out an idea and improving it based on testing.

1. Pick one of the following problems:
   • How to stop ear buds from tangling in your pocket.
   • How to keep a novel open to the right page.
2. Brainstorm a number of ideas to solve the problem. Push yourself to think of original ideas, things that have never been done before.
3. Pick one idea and sketch it out on paper.
4. Build your idea using cheap and readily available materials (i.e. tape, cardboard, pop bottles).
5. Put your idea to the test and see if it solves the problem.
6. Note what worked well and what didn’t work so well. Now make your idea better and adapt your prototype.

Questions to Ask Yourself
• How did you think about solving the problem?
• How did you use your test to improve your idea?
• What did you find helpful or challenging about this process?
• What advice would you give to someone else trying this exercise?

Feedback Exercise
Building on the prototyping exercise, you will seek feedback on your ideas and work to improve them based on what you hear.

1. Explain your prototype from the ‘Building to Think’ exercise to a friend.
2. Ask your friend to use the prototype for the intended task (either keeping ear buds untangled or holding a book open).
3. After they are done, get feedback by asking the following questions:
   • What did you like?
   • What questions do you have?
   • What would you change?
4. Consider everything you heard and adapt or rebuild your prototype based on the feedback.
5. Show your improved prototype to your friend and repeat steps 2 & 3.

Questions to Ask Yourself
• What did you learn through feedback?
• How did you use feedback to change your idea?
• What was your attitude when you heard feedback? Did you defend your ideas or were you open to suggestions?
• What advice would you give to someone else trying this exercise?
**Paper Prototyping**
This exercise will give you more experience with quickly building out an idea using paper and other simple materials (a paper prototype).

Your job is to design an interface for a small touch screen (e.g. iPhone) that controls the climate in a house. For simplicity, assume that there is some way to get the information from each room. Make sure the interface can do the following:
- Set the desired temperature for a room and for the whole house
- Show what the temperature and setting currently is
- Schedule temperature changes for days and nights

Make your paper prototype by following these steps:
1. Sketch out the different screens of your interface using cards, stickies, tape, etc.
2. Figure out how a person would navigate between each screen. (e.g. What button would they press? What would they see?)
3. Test your prototype out by asking a friend to try to use it. Ask them to try to do things like set the desired temperature for a specific room or check to see what the current temperature is. As they click buttons, you can move and shift around the different screens to simulate how the touch screen would work.
4. Make notes on the feedback you receive. What did they like? What would they change? What questions did they still have?
5. Revise the sections of the interface based on feedback and test it again.

**Questions to Ask Yourself**
- How did you think about solving the problem?
- What did you find easy?
- What was difficult?
- What would you do differently next time?
- What advice would you give to someone else trying this exercise?

---

**Concept Mapping Exercise**
In this exercise, you will seek to understand the issues and factors that influence a complex situation.

1. Pick one of the following complex situations:
   - Childhood obesity in North America.
   - Environmental pollution in the developing world.
2. Write down the situation in the middle of a piece of paper.
3. Begin brainstorming different factors and issues that affect the outcomes (e.g. childhood obesity is linked to fast foods, video games, parental apathy...)
4. Map these elements out on the page and draw lines between connected factors/issues. Ask, what causes what? Determine how one issue can affect other issues.

It is OK for the map to be messy and complex. You may want to do a second version, tidier version once you have all the ideas out on paper.

**Questions to Ask Yourself**
- What issue(s) heavily influence the situation?
- How would solving one issue affect the others?
- How has this map changed your perception of the situation?
- What advice would you give to someone else trying this exercise?
Reverse Engineering Exercise
In this exercise, you will seek to articulate a company’s strategy from what you observe in the world

1. Pick one of the following pairs of companies:
   • Lululemon and Wal-Mart
   • McDonald’s and Subway
   • Amazon and eBay
   • Apple and Blackberry

2. For each company, articulate:
   • Who is their primary customer?
   • What is their product or service?
   • How do they win? What is their competitive advantage?
   • What are their most important capabilities?
   • If you had $10,000 to invest, which company would you choose? Why?

Questions to Ask Yourself
• What questions were the easiest to answer? The hardest?
• How would you explain each strategy to a friend?
• What led you to prefer one strategy over another?
• How does each company’s set of choices reinforce one another?
• What advice would you give to someone else trying this exercise?
Illustrations by Rebecca R. Arnold
Design by Ruth Silver

Content developed at the Rotman School of Management, University of Toronto by Jennifer Riel, Josie Fung and Stefanie Schram, with Alpesh Mistry and Adam Main

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Institute for
COMPETITIVENESS & PROSPERITY

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Big Ideas
Creativity, Design and Innovation Camp