Innovation Challenges: Mind Workouts for Teams

Sridhar Condoor and Gregory Keogh
Overview
Goal

The goal of the Weekly Innovation Challenges is to promote the entrepreneurial mindset through multiple exposures to innovation process in a competitive, multidisciplinary, team-based, creative environment. Just as everyone is encouraged to exercise everyday to keep the body fit, innovation challenges are designed to keep the mind fit. It’s a mind workout. The Weekly Innovation Challenges help participants to exercise their creative side, work in multidisciplinary teams, and experience the team dynamics. They learn to tackle a novel situation under intense competitive time pressure, while networking with others outside their disciplines, and most importantly, fine-tuning their entrepreneurial skills.

Market the Challenge

The challenge becomes a real challenge only when many teams seriously compete. Promoting the challenge is therefore a key to success. Advertise and incentivize the competition to encourage initial participation. Use flyers, banners, newspapers, student groups, and social media to promote the challenge. Positively push the challenge as an opportunity to not only win prizes, but also to network and develop their personal skill set. A sample pitch for the challenge is shown in the video above. Give T-shirts and other items to spread the information about the challenge. Once the competition begins, the word-of-mouth becomes the best marketing tool.
Time and Location

We recommend conducting the challenges regularly at the same location. For instance, it can be held each week or each month on a certain day from Noon to 1:00 pm. As it is held at the same location and time, the challenges can easily be integrated into the participants’ weekly or monthly routine. A typical challenge runs for one hour from start to finish. Promote the challenge time as a creative break from the busy daily routine work for the participants.

While selecting the location, look for the following features:

• **Central space** – a central location which can attract a number of participants and readily accessible.

• **Open space** – an open area that can accommodate the participants. Anticipate growth in the numbers as the challenges become popular.

• **Public space** – a place where a number of people will pass through. As people pass through the challenge location (while leaving or entering the building during lunchtime), it attracts attention. It attracts passers-by to participate in future challenges or watch the final stages. These students bring intense competitive spirit by cheering their peers. Further, the public recognition is an ultimate incentive for any team.
Team Formation

Open the challenge to the teams of exactly three members. To encourage multidisciplinary collaboration, require the team members to be from different disciplines. Enforce the multidisciplinary requirement for an effective team learning experience.

Depending on the culture of the institution, some participants form their teams ahead of the challenge time and come to the challenge. Several participants come to the challenge without forming their teams. The organizer’s role is help them to form teams. The team member may get to know each other briefly before the challenge.

Improving the Impact of the Challenge

The innovation challenges provide a great opportunity for experiential learning. Faculty can use the challenges in their courses. Also, challenges can be held at the college/university-level and faculty can provide credit to encourage student participation.

The learning can be greatly improved by helping students to reflect on their experience. The reflections can take the form of in-class discussion, written blogs, and video pitches.

Three Main Concepts

Each Challenge is aimed at nurturing creativity, innovation, or entrepreneurial mindset. Creativity for the purpose of the challenges is defined as the ability to transcend traditional thought patterns and break through hidden assumptions. Theodore Levitt’s quote “Creativity is thinking up new things. Innovation is doing new things.” best summarizes our view of innovation. Innovation is bringing the idea to life. Entrepreneurial mindset takes innovation to the next step by adding value perspective. The list of innovation challenges are summarized in the table (in the next page). In the table, letters C, I, and E denote creativity, innovation, and entrepreneurship respectively.
# Table of Challenges

<table>
<thead>
<tr>
<th>Challenge</th>
<th>Description</th>
<th>C</th>
<th>I</th>
<th>E</th>
</tr>
</thead>
<tbody>
<tr>
<td>Greatest Hits Challenge</td>
<td>Four of the greatest challenges from Innovation Challenges, Volume 1</td>
<td>✔</td>
<td></td>
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</tr>
<tr>
<td>A Spoonful of Sugar Challenge</td>
<td>Make an everyday activity more fun</td>
<td>✔</td>
<td>✔</td>
<td></td>
</tr>
<tr>
<td>Logos and Taglines Challenge</td>
<td>Correctly identify logos and tag lines</td>
<td>✔</td>
<td>✔</td>
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</tr>
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<td>War Games Challenge</td>
<td>Defend your towers while attacking your opponents’ towers</td>
<td>✔</td>
<td>✔</td>
<td></td>
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<tr>
<td>The other 90% Challenge</td>
<td>Identify a problem and create a solution for a developing country</td>
<td>✔</td>
<td>✔</td>
<td></td>
</tr>
<tr>
<td>Relive Halloween Challenge</td>
<td>Design and create a funny costume</td>
<td>✔</td>
<td></td>
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<tr>
<td>The Chindogu Challenge</td>
<td>Create a Chindogu design</td>
<td>✔</td>
<td></td>
<td></td>
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<tr>
<td>Opposites Attract Challenge</td>
<td>Synergistically combine hobbies into a product</td>
<td>✔</td>
<td>✔</td>
<td></td>
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<tr>
<td>Pasta Wagon Challenge</td>
<td>Build a pasta wagon that can support the most weight</td>
<td>✔</td>
<td>✔</td>
<td></td>
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<tr>
<td>Imponderables</td>
<td>Answer the “why” question</td>
<td></td>
<td></td>
<td>✔</td>
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<tr>
<td>Traits to Success Challenge</td>
<td>Identify what makes you successful</td>
<td></td>
<td></td>
<td>✔</td>
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<tr>
<td>Vegetable Arch Challenge</td>
<td>Build a two foot arch out of vegetables</td>
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<td></td>
<td>✔</td>
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<tr>
<td>Brochure Challenge</td>
<td>Design an eye-catching brochure</td>
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<td>✔</td>
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<tr>
<td>Close Ups Challenge</td>
<td>Build an aesthetic bird feeder from trash materials.</td>
<td></td>
<td></td>
<td>✔</td>
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<tr>
<td>Unlimited Garden Challenge</td>
<td>Complete a given set of puzzles. The fastest team wins.</td>
<td></td>
<td></td>
<td>✔</td>
</tr>
<tr>
<td>Implosions Challenge</td>
<td>Develop a code that can securely relay a message across a 20 ft. gap.</td>
<td></td>
<td></td>
<td>✔</td>
</tr>
<tr>
<td>Emerging Technology Challenge</td>
<td>Build a car powered by a rubber band to travel the farthest distance.</td>
<td></td>
<td></td>
<td>✔</td>
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<tr>
<td>Listen Up Challenge</td>
<td>Create a boat to float the most quarters.</td>
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<td></td>
<td>✔</td>
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<tr>
<td>Minute to Win it Challenge</td>
<td>Complete each challenge under a minute</td>
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<td></td>
<td>✔</td>
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<tr>
<td>Floating Platform Challenge</td>
<td>Balance three marbles while traveling ten feet</td>
<td></td>
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<td>✔</td>
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<tr>
<td>Winners Only Challenge</td>
<td>Compete in a mock Red-Bull Flugtag challenge</td>
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<td>✔</td>
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</tbody>
</table>
Branding the Challenge

The logos for the innovation challenge, weekly innovation challenge, and monthly innovation challenge are available for use by others upon request. Additional resources include templates for blade banners, banners, flyers, table clothes, T-shirt designs, the team check-in forms, winner certificate, and problem statements. Email Dr. Sridhar Condoor (condoor@slu.edu) for permissions or additional resources.
Challenge Resources

Challenges can be made fun, competitive, and interesting by introducing fake money or iNotes. Participants learn value proposition and management of financial resources through these money based challenges. A template of iNotes is provided as a resource for you at:

http://parks.slu.edu/current-students/entrepreneurship-and-innovation/weekly-innovation-challenge/

Monopoly money or other fake money can be substituted for any of these challenges.
The Greatest Hits Challenge

Four of the greatest challenges from Innovation Challenges, Volume 1.
The Greatest Hits Challenge

The Challenge

Four of the greatest challenges from Weekly Innovation Challenges, Volume 1.

Earn points by competing in the challenges. The team with the most points wins.

Time limit: 50 minutes

1. Marshmallow Challenge

Build the tallest freestanding structure. The height is measured from the base of the structure to the top of the marshmallow. The structure cannot be suspended or supported by another structure. The structure must be made from the materials supplied. The whole marshmallow must be on the top of the structure. Use as much or as little of the materials. The spaghetti, string, and tape may be broken and cut as desired.

Points = \( \frac{(Height \ in \ inches)}{30} \times 100 \)

The Challenge continued...

2. Queen Bee Challenge

Build the tallest freestanding tower. The height is measured from the base of the tower to the top. Up to two team members can act as worker bees. Worker bees are blindfolded and are the ONLY ones who can touch, move, modify, and build the supplies. Any peeking results in disqualification.

Points = \( \frac{(Height \ in \ feet)}{8} \times 100 \)

3. Scavenger Hunt Challenge

Take the pictures with artifacts whose clues are provided on the sheet.

Points = \( \frac{(Number \ of \ Correct \ Pictures)}{15} \times 100 \)

4. Foil Boats

Fabricate a boat out of the foil sheet provided to float the quarters. Quarters should not get wet.

Points = \( \frac{(Number \ of \ quarters)}{8} \times 100 \)
# The Greatest Hits Challenge

## Team Supplies

<table>
<thead>
<tr>
<th>Challenge</th>
<th>Supplies</th>
</tr>
</thead>
<tbody>
<tr>
<td>Marshmallow Challenge</td>
<td>Spaghetti (20 sticks per team)</td>
</tr>
<tr>
<td></td>
<td>String (1 yard per team)</td>
</tr>
<tr>
<td></td>
<td>Scissors</td>
</tr>
<tr>
<td></td>
<td>Masking Tape (1 yard per team)</td>
</tr>
<tr>
<td></td>
<td>Marshmallow (1 per team, standard size)</td>
</tr>
<tr>
<td>Queen Bee Challenge</td>
<td>10 Plastic Cups (red solo)</td>
</tr>
<tr>
<td></td>
<td>10 Styrofoam Cups</td>
</tr>
<tr>
<td></td>
<td>10 Small Paper Cups (Dixie)</td>
</tr>
<tr>
<td></td>
<td>2 Blindfolds</td>
</tr>
<tr>
<td></td>
<td>1 Roll Scotch Tape</td>
</tr>
<tr>
<td>Scavenger Hunt Challenge</td>
<td>Facilitator Supplies (Queen Bee Challenge)</td>
</tr>
<tr>
<td></td>
<td>Tape Measure</td>
</tr>
<tr>
<td></td>
<td>Stopwatch</td>
</tr>
<tr>
<td>Foil Boat Challenge</td>
<td>15 Quarters</td>
</tr>
<tr>
<td></td>
<td>Stopwatch</td>
</tr>
<tr>
<td></td>
<td>Container full of water to float boats</td>
</tr>
</tbody>
</table>

## Facilitator Supplies

<table>
<thead>
<tr>
<th>Challenge</th>
<th>Supplies</th>
</tr>
</thead>
<tbody>
<tr>
<td>Marshmallow Challenge</td>
<td>Tape Measure</td>
</tr>
<tr>
<td></td>
<td>Stop watch, preferably one that can project the time remaining</td>
</tr>
<tr>
<td>Scavenger Hunt Challenge</td>
<td>Stopwatch</td>
</tr>
<tr>
<td>Foil Boat Challenge</td>
<td>15 Quarters</td>
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<td></td>
<td>Stopwatch</td>
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</table>

## Facilitator Tips

**Multiple facilitators needed.** Having one facilitator in charge of each challenge will make judging easier.

**Limit team supplies.** Do not let teams get new supplies, teams must balance their resources and their time in this challenge.

**Recommend teams share contact information.** Many teams will split up the challenges, it is important that all members return within the time limit.
The Greatest Hits Challenge

Learning Outcomes
The greatest hits challenge highlights four challenges. The challenge forces the participants to make quick decisions and execute efficiently. Tackling four challenges in fifty minutes allows teams only one chance to attempt them; if participants work together they can complete all four challenges successfully.

Lessons
1. Plan under tight time constraints
2. Prototype quickly
3. Emphasizes the importance of communication among team members

Variations
1. Highlight any four challenges. Combine past challenges to create new difficulties.
2. Vary point values. Make some challenges worth more points than others.
A Spoonful of Sugar Challenge

Make an everyday activity more fun.
A Spoonful of Sugar Challenge

The Challenge

Make an everyday activity more fun.

“In every job that must be done
There is an element of fun
You find the fun and snap!
The job’s a game” – Mary Poppins

Making a job fun is the easiest way to positively influence people’s behavior. Be it for profit, people, or the planet. Just like the [Volkswagen Fun-theory] videos shown, come up with your own fun theory idea on how to incorporate fun into everyday jobs. Pitch your idea with any props or prototypes or your own video to the judges for the two minutes at the end of the challenge. Use any of the materials provided for your presentation to the judges and remember prototypes of the user experience almost always speaks louder than words.

Time limit: 45 minutes

<table>
<thead>
<tr>
<th>Team Supplies</th>
</tr>
</thead>
<tbody>
<tr>
<td>String</td>
</tr>
<tr>
<td>Elastic</td>
</tr>
<tr>
<td>Cardboard</td>
</tr>
<tr>
<td>Glue</td>
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<tr>
<td>Tape</td>
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<tr>
<td>Scissors</td>
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</tbody>
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<table>
<thead>
<tr>
<th>Facilitator Supplies</th>
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<tbody>
<tr>
<td>Judges (2)</td>
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</table>

Facilitator Tips

Play the Volkswagen Fun Theory video. [The video can be found here.]

Vary the supplies offered.
Learning Outcomes
The Spoonful of Sugar Challenge focuses on morphing existing jobs into something fun. In the process, the challenge helps participants creatively view the jobs they perform everyday so that they are more fun and intellectually more stimulating.

Lessons:
1. Convey an idea in one glance
2. Clearly identify one behavior to promote
3. Improve a behavior you typically overlook

Variations
1. Give all teams the same task. See what fun ideas turn up.
2. Ask the teams to pitch their ideas.
Logos and Taglines Challenge

Correctly identify logos and tag lines.
Logos and Taglines Challenge

The Challenge

**Identify logos and tag lines.**

Select the correctly pictured company and product logos, match the correct logo to the company and match the tagline with the company. Scratch off the coating of the rectangle corresponding with your first-choice answer. If the answer is correct, a star or other symbol appears somewhere within the rectangle – you get four points. If incorrect, you can guess again and again. Correct second guesses receive two points and third guesses receive one point. We will check how many boxes are scratched. Partial scratches will also be counted.

**Time limit: 50 minutes**

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**Facilitator Tips**

Do not allow teams to use smart phones or computers.

Be sure to leave time at the end of the challenge. The IF AT forms will need to be graded at the end of the challenge.

Keep track of the order the teams turn in their sheets. In case of a tie, the team that turned theirs in with the most correct first will win.

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**Team Supplies**

- Packet of questions
- Immediate Feedback Assessment Technique (IF AT)
- Pens

**Facilitator Supplies**

- Answer keys
Learning Outcomes

Logos can be seen everywhere, yet we often do not pay attention or “see” the logo. The challenge fine-tunes the observation skills, as they are the key to being able to better create and conceptualize new ideas.

Lessons:

1. Communicate among team members to identify solutions
2. Demonstrates the importance of observing your surroundings
3. Importance of brand recognition and marketing
4. Highlights the many ways you are introduced to products (tag lines, logos etc.)

Variations

1. Vary company logos. Change up which logos are highlighted in this challenge.
2. Leave blanks in the company tag lines. Ask the students to fill in the missing words from the featured tag lines.
Helping Hands Challenge

Build a contraption to carry and place different objects.
The Challenge

Build a contraption to carry and place objects.

Earn the most points using a contraption to pick and place different objects in the target areas in 90 seconds.

Use any of the materials provided to build the contraption.

Objects to pick up – water bottles, glue bottles, flashlights, whiffle balls, and paper towel tube. Each object correctly placed in the target area earns one point.

The contraption must have at least two feet between the grabbing portions from the controlling portion.

Time Limit: 45 minutes

Facilitator Tips

Strictly adhere to the 90 second time limit.

Allow teams to practice. Teams may want to practice ahead of time, be sure to limit their time with the items.

Team Supplies

Cardboard
Rubber bands
Straws
Plastic forks
Tape
Glue

Facilitator Supplies

Stopwatch
Water bottles
Glue bottles
Flashlights
Whiffle balls
Paper towel tubes
Helping Hands Challenge

Learning Outcomes
The helping hands challenge asks teams to work through multiple design phases. Teams must not only conceptualize the design but build the device and compete with it. Teams must work quickly to conceptualize the device and build it. Once the device is built they must practice using the device and finally compete using it. This challenge focuses on the design process in a fun and innovative way. Incorporating the competition allows teams to see the devices the other teams created.

Lessons:

1. Conceptualize and create a prototype
2. Practice using the constructed prototype

Variations
1. Make items worth different points. Teams must then identify which items they will pursue.
2. Allow two teams to compete against each other. The team with more objects will move to the next round.
Smart Packaging Challenge

Create smart packaging appealing to senior citizens.
Smart Packaging Challenge

The Challenge

Create smart phone packaging appealing to senior citizens.

Create a smart phone or phone app for senior citizens and design a winning package.

Judges will decide on the winning phone based on usability.

Highlight the needs addressed in your solution on the package.

Feel free to talk to the customer, identify their needs, and discuss your ideas.

Time Limit: 45 minutes

Facilitator Tips

Limit each teams time with the judges.

Invite judges with and without smart phones.

Team Supplies
- Cardboard
- Saran wrap
- Tin foil
- Markers
- Glue (various types)
- Construction paper

Facilitator Supplies
- Senior citizen judges
- Judging rubric
Learning Outcomes

Perceived problems are not always the correct or underlying problem. Connect with the customer to create the best possible product to solve a problem they are having. Just because you think something may be a problem for someone else does not mean they perceive it as a problem. Reversely, some people may not be able to identify the problems they are having, observing is key to creating a successful product.

Lessons:

1. Importance of customer based design
2. Communication methods with customers varies

Variations

1. Create a social media site for senior citizens.
2. Allow teams to pitch their devices to the judges. Allowing teams to present to the judges will add an additional time constraint and a new dimension to the teams products.
Set Goals Like JFK

Create and deliver an inspirational speech.
Set Goals Like JFK

The Challenge

Create and deliver an inspirational speech.

“I believe that this nation should commit itself to achieving the goal, before this decade is out, of landing a man on the moon and returning him safely to the earth.”

“We choose to go to the moon in this decade and do the other things, not because they are easy, but because they are hard, because that goal will serve to organize and measure the best of our energies and skills, because that challenge is one that we are willing to accept, one we are unwilling to postpone, and one which we intend to win, and the others, too.”

Facilitator Tips

As teams finish ask them to deliver their speech to the judges. This will relieve any time pressure at the end.

Do not limit teams creativity. Allow teams to present far reaching ideas.

Team Supplies
No supplies needed

Facilitator Supplies
JFK speech video
Judges
Set Goals Like JFK

Learning Outcomes
Teams learn the importance of motivating others to achieve a common goal through public speaking. By following the keys to a measurable goal, teams are better able to deliver a successful speech. Communication is vital to achieving goals, this challenge shows the importance of good communication and goal setting.

Lessons:
1. Creating measurable goals
2. Illustrates the importance of a powerful voice
3. Clearly convey a message

Variations
1. As teams come in to present, randomly select a team member to give the speech. This added challenge will require all team members to prepare for the speech.
2. Allow teams to use props.
3. Ask teams to highlight personal goals.
War Games Challenge

Defend your towers while attacking your opponents’ towers.
War Games Challenge

The Challenge

Defend your towers and attack opponents’ towers.
To advance in the competition, knock down opposing team’s towers FIRST in a two-minute war. In case of a tie, the teams go into overtime (one extra minute).
You can use the materials provided for defense or offense. Participants cannot support their tower/material or interfere with other team’s offense. Projectiles must be launched using a device (participants can’t throw stuff).
Trading supplies is prohibited. After each battle, you will have four minutes to rebuild for the next round using the original material supplies.
The towers must be freestanding. They cannot be supported or tied down in any way. Leaning towers are not considered standing.

Time limit: 30 minutes

Facilitator Tips

Require any offensive devices to be fixed to the table.
Offensive devices can be dangerous, restrict any devices that could cause injuries to anyone.

Team Supplies

Forks (2)
String
Balloon
Elastic
Whiffle ball

Facilitator Supplies

Stopwatch
**Learning Outcomes**

The war games challenge requires teams to approach a problem from multiple angles. Teams must attack their opponents towers while defending their own towers. Teams must quickly adapt based on their opponents' strategies. This challenge mimics the real-life struggles that occur during war. Trade-offs must be made quickly to prevent loss of life.

**Lessons:**

1. Conceptualize and prototype quickly
2. Use limited resources wisely
3. Perform trade-offs quickly

**Variations**

1. Provide the team with a different set of supplies
2. Allow more than two teams to compete at once.
3. Have teams pick opponents at random.
The Other 90% Challenge

Identify a problem and create a solution for a developing country.
The Other 90% Challenge

The Challenge

Identify a problem and create a solution for a developing country.

According to Cynthia E. Smith of the National Design Museum, “Professional designers have traditionally focused on the 10 percent of the world’s population that can afford their goods and services… A new wave of designers, architects, engineers, non governmental organizations (NGOs) and philanthropists is working directly with people with limited resources, collaborating across sectors to find solutions and using emerging technology that ‘leapfrogs’ poorer communities into the 21st century.” Scroll...

Facilitator Tips

Ask teams to turn in their posters as they finish.

Encourage teams to think creatively.

Limit to one judge. Avoid discrepancies by only having one judge.

Team Supplies

Poster board
Markers
Highlighters

Facilitator Supplies

Judge
The Other 90% Challenge

Learning Outcomes
The other 90% focuses on the needs of different populations. Teams must create solutions to problems they have not experienced first hand. Teams must research, plan and execute. Without enough time to research the country throughly, teams must pursue initial ideas and develop them into plausible solutions.

Lessons:
1. Creating solutions to problems never experienced first hand
2. Looking at facts and statistics to generate solutions

Variations
1. Look at under developed parts of the US.
2. Consider focusing on a specific problem category.
3. Allow teams to present their ideas.
Relive Halloween Challenge

Design and create a funny costume.
Relive Halloween Challenge

The Challenge

Design and create a funny costume.

Once the costume has been created teams must put on a quick skit to a judge through an iPad.

Time limit: 45 minutes

Facilitator Tips

Wait to announce that the judge will be called in. The added challenge forces teams to make quick decisions at the last minute.

Provide second hand clothes that can be modified into costumes.

Team Supplies

- Fabrics
- Cardboard
- Duct tape
- Balloons
- Google eyes

Facilitator Supplies

- iPad
- Judge
Learning Outcomes
Teams are pushed outside their comfort zones to create a universally funny costume and skit. Teams must distinguish themselves from one another to grab the judges attention by being unique and creative. As an added challenge the judge of this contest was called in on an iPad. The teams must speak clearly, and ensure that their humor is easily picked up by the virtual judge.

Lessons:
1. Determining an appropriate level of humor.
2. Clearly performing the skit.
3. Having fun while competing.

Variations
1. Require the costumes to follow a theme.
2. Provide teams a generic costume and ask them to make it better.
3. Using another holiday ask teams to come up with a humorous costume and skit.
The Chindogu Challenge

Create a Chindogu design.
The Challenge

Create a Chindogu design.

Chindogu is the Japanese art of inventing ideal solutions to particular problems, however the use of all Chindogu solutions bring significant social embarrassment.

Time limit: 45 minutes

Facilitator Tips

Examples of Chindogu designs can be found here.

Require teams to build working prototypes.

Ask teams to present in front of one and other.

Team Supplies
Cardboard
Popsicle sticks
Glue (assorted)
Paper towel tubes
String

Facilitator Supplies
Judge
The Chindogu Challenge

Learning Outcomes
The Chindogu challenge asks students to create outrageous solutions to everyday problems. Students typically look for the most elegant solution to a problem, therefore this challenge requires students to no only think creatively but question the ways they typically approach a problem. The Chindogu challenge allows students to be creative and have fun while solving a problem.

Lessons:

1. Approaching a problem with a new outlook.
2. Thinking outside the realm of realistic solutions.

Variations

1. Ask students to focus on a specific task.
2. Allow the judges to use the teams prototypes.
Opposites Attract Challenge

Synergistically combine hobbies into a product.
Opposites Attract Challenge

The Challenge

Synergistically combine hobbies into a product.

Create a product that synergistically combines hobbies/interests/passions of your individual team members.

Products may be a poster, prop, or display. Teams will have 90 seconds to present to a judge.

Time limit: 45 minutes

Facilitator Tips

This challenge is particularly good for a diverse group of students.

If using this challenge in a classroom setting, encourage students to expand their highlighted interests to ones outside the classroom.

Team Supplies

Poster board
String
Paper
Cardboard
Markers

Facilitator Supplies

Judge

Scroll...
Learning Outcomes

Each team member was asked to include their hobby when signing in. Once the challenge was announced the students were forced to use what they had previously written in the teams final product. This challenge focuses on combining three hobbies or interests that are very different and looking for commonalities to link them. Bisociation is a similar concept that looks at two fields that are typically not considered related to one another to generate new ideas.

*Lessons:*

1. *Combining seemingly unalike activities into one.*
2. *Effectively communicating the new design in 90 seconds.*

Variation

1. Ask teams to pull three items out of a hat and combine those into a product.
2. As an alternative to hobbies, ask participants to list their most disliked activities.
Market Prediction Challenge

Predict the market success of 10 products.
Market Prediction Challenge

The Challenge

<table>
<thead>
<tr>
<th>Team Supplies</th>
<th>Facilitator Supplies</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fabrics</td>
<td>iPad</td>
</tr>
<tr>
<td>Cardboard</td>
<td>Judge</td>
</tr>
<tr>
<td>Pipe cleaners</td>
<td></td>
</tr>
<tr>
<td>Pom poms</td>
<td></td>
</tr>
</tbody>
</table>
Market Prediction

Learning Outcomes

Lessons:

1.

Variations

1.
Pasta Wagon Challenge

Build a pasta wagon that can support the most weight.
The Challenge

Build a wagon out of pasta that can support the most weight.

Build a wagon that can transport the maximum weight for four feet using the materials provided. For the wagon to count as a wagon, the wheels must roll. You can only pull the wagon with the string provided. You cannot touch the wagon. The weight added will increase each run. Only the pasta supplied can be used.

Time Limit: 40 minutes

Facilitator Tips

Start with higher weights to eliminate teams quickly.

Allow teams to place the weights themselves.

Place a time limit on how long teams have to cover the four feet.

<table>
<thead>
<tr>
<th>Team Supplies</th>
<th>Facilitator Supplies</th>
</tr>
</thead>
<tbody>
<tr>
<td>2 lasagna noodles</td>
<td>Weights (1kg x 4)</td>
</tr>
<tr>
<td>6 rotini noodles</td>
<td>Tape measure</td>
</tr>
<tr>
<td>6 rigatoni noodles</td>
<td></td>
</tr>
<tr>
<td>2 cannelloni noodles</td>
<td></td>
</tr>
<tr>
<td>2 large shells</td>
<td></td>
</tr>
</tbody>
</table>

Scroll...
Learning Outcomes

The Pasta Wagon Challenge asks teams to use their limited resources creatively to carry as much weight as possible. Teams must come up with unique designs but are limited by their resources. This challenge mimics many real life situations when resources are limited and trade-offs must be made.

Lessons:

1. Create a unique design using generic resources.

2. Perform trade-offs quickly.

3. Test designs cautiously.

Variations

1. Change the pasta sets given to each team.

2. Ask teams to make pasta cars. See if changing the wording changes how teams interpret the challenge.

3. Label a set four foot race track and have teams go against one another.
Imponderables

Answer the “why” question.
The Challenge

Below is a list of imponderable questions, questions that have answers but are not always obvious. Your challenge is to answer these questions within reason. When you complete each sheet you will receive a sheet with harder questions. The team with the most correct answers (as determined by our judges) wins. In case of a tie, the fastest team wins.

Time limit: 50 minutes

Facilitator Tips

Do not allow students to use cell phones or computers.

Grading the finished answers can take longer than anticipated. Be sure to set aside extra time.

Team Supplies
- Set of 3 imponderable questions
- Pens

Facilitator Supplies
- Answer Key
- Timer
Learning Outcomes

The imponderable questions require the teams to look not at how something works but why things are the way they are. Often times we overlook why things happen and just accept them as a given. This challenge focuses on looking deeper at things we encounter everyday.

Lessons:

1. Question surroundings
2. Time management

Variations

1. Use different question sets.
2. Ask for teams of two. This challenge can be completed in teams of two.
3. Make teams go head to head for each questions. Eliminate teams that answer three in a row incorrect.
Traits to Success Challenge

Identify what makes you successful.
The Challenge

Identify what makes your team successful.

Pitch traits shared by your group members that will lead each of you to become successful future entrepreneurs.

Prepare a two-minute presentation using Haiku Deck™ on the provided iPads™. Use the app to choose images for your slides.

Your presentation will be judged based on: traits identified, connecting traits to success, impact of the presentation slides, and your delivery.

Time limit: 35 minutes

Facilitator Tips

Ask faculty, staff, and students to allow you to borrow their iPads ahead of time. There is a feature on IOS 6 that allows only certain applications to be accessed, utilize that to limit the students access.

Team Supplies

iPad (with Haiku Deck™ application)

Facilitator Supplies

Judge
Stopwatch
**Traits to Success Challenge**

**Learning Outcomes**

Many times you are only given a short amount of time to convey your message. The Traits to Success Challenge asks that the team members pitch themselves, highlighting their skills. Teams must work together to create a simple yet effective presentation.

*Lessons:*

1. Communication with team members.
2. Identify and highlight personal skill sets.
3. Effectively present using new materials.

**Variations**

1. Have teams present on another teams skill sets. Require teams to interact and manage their time between their own project and the team that must present on their strengths.
Vegetable Arch Challenge

Build a two foot arch out of vegetables.
Vegetable Arch Challenge

The Challenge

Build a two foot arch out of vegetables.

Build the most aesthetic arch out of vegetables that is at least two feet tall and freestanding.

Your starter kit contains:

• 8 carrots
• 6 celery stalks
• 4 potatoes
• 2 tomatoes

Team Supplies

8 carrots
6 celery stalks
4 potatoes
2 tomatoes
Toothpicks

Facilitator Supplies

Tape measure
Judge

Facilitator Tips

Provide cleaning supplies for teams to clean up after themselves.

Give teams newspaper to put down before cutting the vegetables.

Limit teams “extra” vegetables.
Vegetable Arch Challenge

Learning Outcomes
Most challenges use typical building materials but this challenge uses an unexpected medium to create an aesthetically pleasing arch. Teams must quickly create an arch out of vegetables. Some of the best solutions to problems require the use of unexpected materials, this challenge highlights the importance of pushing boundaries.

Lessons:
1. Use unexpected resources creatively.
2. Focus on a balance between aesthetics and functionality.

Variations
1. Ask teams to build other structures out of vegetables.
2. Increase the arch height requirement. Fewer teams will be considered in the final judging if the height requirement is raised.
Brochure Challenge

Design an eye-catching brochure.
The Challenge

**Design an eye-catching brochure.**

Create a one-page (8.5” x 11”) brochure for one of the two Saint Louis attractions:

City Museum
Zoo

The brochure should promise a unique, memorable, fun experience for children. The only software programs that you are allowed to use are Word and Internet Browser. Once done, email the brochure for printing. Note that you can modify (cut/color/etc.) the brochure after printing.

The judges will pick the winner based on:

a. The promise (must be realistic)
b. Aesthetics
c. WOW factor

**Time limit: 50 minutes**

---

**Facilitator Tips**

**Plan for printing ahead of time.** Multiple teams may need pages printed at the same time.

**Provide alternatives for teams without computers.**

---

**Team Supplies**
- Computer
- Construction Paper

**Facilitator Supplies**
- Printer
- Judge
Learning Outcomes

The brochure challenge focuses on the importance of first impressions. When consumers are looking at a brochure there are many important factors, this challenge highlights, the promises, aesthetics, and the wow factor of the brochure. Teams have to creatively and effectively combine these three factors to be successful.

Lessons:

1. Emphasizes the importance of first impressions.
2. Clearly conveying a message.

Variations

1. Vary what destinations are being highlighted. Make the destinations local, students are more likely to have actually visited those destinations.
2. Reduce the time limit. Teams will feel the added pressure, and hopefully will break-up the roles of the brochure design.
Close Ups Challenge

Correctly identify magnified objects.
## Close Ups Challenge

### The Challenge

**Correctly identify magnified objects.**
Win the challenge by correctly identifying the artifacts shown in the pictures. In case of a tie, the fastest time wins.

Note: The answers should be as specific as possible.

Example: if something is a coin say what kind of coin.

**Time Limit:** 50 minutes

### Facilitator Tips

**Make each teams time.** As teams submit their answer sheets write the time they submitted at the top.

**Do not allow teams to use the internet.**

### Team Supplies

- Pen
- Packet of close up photos

### Facilitator Supplies

- Answer key
Close Ups Challenge

Learning Outcomes
The Close Ups Challenge asks teams to pull from their previous knowledge to correctly identify images. This challenge promotes astute observation in a group setting. All of the objects photographed are common items that each student has come in contact with. The saying, “It’s all in the details” takes on a new meaning and is truly tested in this challenge.

Lessons:
1. Encourages students to look at the details.
2. Illustrates the importance of observation
3. Challenges students to pull from previous knowledge.

Variations
1. Create your own close up photos. Use unique items to your school, that students can hopefully identify.
2. Ask teams to identify the location of the photo. If photos are taken of objects around campus ask students to identify where those objects are based off of their close ups.
Unlimited Garden Challenge

Design and prototype an urban garden.
Unlimited Garden Challenge

The Challenge

Design and prototype an urban garden.

Create a prototype of a home, urban garden for a high-end user. The garden is designed for downtown high-rise apartments that receive limited light. The garden should fit the space constraint of 4 ft. X 3 ft. (max).

Build a scaled-prototype using paper and straws. Color pencils and markers are available for decoration. Judges pick the winner based on its functionality, fit in the high-end apartment, and attention to detail.

Time limit: 45 minutes

Facilitator Tips

Do not allow teams to show their designs to the judges ahead of time. The designs should speak for themselves as to how they work.

Give out resources on a first come, first serve basis.

Team Supplies

- Construction Paper
- Straws
- Markers
- Colored pencils
- Plastic utensils

Facilitator Supplies

- Judge
Learning Outcomes

The Unlimited Garden Challenge asks participants to target a very specific end user. All of the students must imagine what a high-end urban user is looking for in a garden. Once the teams have identified what the end user wants, they will have to creatively address the problem to maximize the space used. This challenge tests students' ability to come up with solutions to problems they have not experienced first hand.

Lessons:


2. Effectively communicating the design without a verbal explanation.

Variations

1. Look at other hobbies that might be limited by space.
Implosions Challenge

Design a tower with the smallest implosion area.
Implosions Challenge

The Challenge

Design a tower with the smallest implosion area.

Build a two-foot tall freestanding tower out of the materials provided. Use the string provided to demolish the tower. There can be no standing pieces remaining. The tower that implodes in the smallest area will win.

Time Limit: 45 minutes

Facilitator Tips

Be sure to have a large enough crash pad (3’ x 3’).

Team Supplies

Toothpicks
Popsicle sticks
Rubber bands
Elastic strips
Scotch tape

Facilitator Supplies

Crash pad (3’ x 3’)

Scroll...
Learning Outcomes

Typically as an engineer you are asked to build things, the Implosions Challenge asks teams to construct a building to be destroyed. Teams struggle to determine a way for their structure to collapse in the smallest area. To effectively achieve this goal, teams must perform trade-offs. Their structures must be at least two feet tall but any extra material will only add to the area of their debris and ultimately count against them.

**Lessons:**

1. Make trade-offs quickly.
2. Approach a common task with a different end goal.

Variation

1. **Give points to the crash pad.** Make the crash pad similar to a bulls-eye and the center area worth more points.

2. **Limit the supplies each team uses.** Divide the supplies out ahead of time and only allow teams to use what is given.
Emerging Technologies Challenge

Identify and pitch the next big technology.
The Challenge

Identify and pitch the next big technology.

Vision and opportunity recognition are important ingredients for innovation. Today we will practice these skills by foreseeing the next big technological development.

You are to imagine how one of the emerging technologies given to you will be used in the future. You will have 90 seconds to pitch your idea to judges. The judges will be familiar with the three technologies.

Be sure to include the following in your pitch:
• Why your application of the technology is important.
• Who it will affect directly (what industries, consumer groups, etc. will use it? And why?)

Time limit: 45 minutes

Facilitator Tips

Look for technologies that currently have both limited and broad applications.

Team Supplies
List of emerging technologies

Facilitator Supplies
Judge
Emerging Technologies Challenge

Learning Outcomes

Teams are asked to pitch the next big technology that will revolutionize life as we know it, in the Emerging Technologies Challenge. Working together participants must first create a concept and then a 90 second pitch to sell their concept.

Lessons:

1. Communicate abstract ideas.
2. Illustrates the importance of a powerful voice.

Variations

1. Select varying technologies.
2. Ask teams to find ways to apply the highlighted technologies to a specific application.
3. Use very basic technologies all teams will be familiar with.
Listen Up Challenge

Correctly identify sounds.
Listen Up Challenge

The Challenge

Correctly identify sounds.

Win this challenge by correctly identifying the sounds being played. If a tie occurs we will have a second round and further instructions will be given.

Time limit: 50 minutes

Facilitator Tips

Check audio levels ahead of time.

Create a CD as an alternative. Noise levels can fluctuate, as an alternative provide teams with a personal CD.

Team Supplies

List of potential sounds
Pens

Facilitator Supplies

Audio clips
Speakers
Listen Up Challenge

Learning Outcomes

The Listen Up Challenge, while similar to the Close Up Challenge, relies on a different sense. Many times the sounds associated with everyday tasks are overlooked. As humans we tend to rely on our sight, but this challenge forces students to use sounds to recall memories.

Lessons:

1. Use sounds to recall memories.

2. Challenges typical ways of identification.

Variation

Create your own collection of sounds.
Minute to Win it Challenge

Complete each challenge under a minute.
The Challenge

Complete each challenge under a minute.

There are four stations with four challenges set up around the room.

Each team will be given six minutes to prepare for the one-minute challenge. At the end of the six minutes one person from your team must complete the challenge in one minute to earn a point for your team. Teams will compete one at a time. Your team will then move to the next station to repeat the process. The team with the most points will win. In the case of a tie your team will be given three minutes to prepare for a tiebreaker challenge.

*Some challenges have enough supplies for each team to practice on their own others do not, please share.

Time limit: 9 minutes/ station

Team Supplies
- Solo cups
- Deck of cards
- Bottle
- Dice (6)
- Popsicle stick

Facilitator Supplies
- Stopwatch

Facilitator Tips

The four challenges are as follows:

- Moving up
- Don’t blow off the joker
- Bit dicey
- Defying gravity

Show team the videos at each station.

Save one set of supplies strictly for competing.
Minute to Win it Challenge

Learning Outcomes
The popular game show, Minute to Win it, has contestants complete a given task in one minute or less. This challenge takes four of those tasks and ask teams to prepare quickly and compete in all four. All team members must represent their team in at least one task, forcing teams to make the decision on who should participate quickly to maximize practice time.

Lessons:
1. Identify leaders quickly.
2. Create strategies based off observation.

Variations
1. Select other minute to win it challenges for students to compete in.
2. Only highlight three challenges, one team member per challenge.
Floating Platform Challenge

Balance three marbles while traveling ten feet.
The Challenge

Balance three marbles while traveling ten feet.

Build a free-floating platform that holds three marbles on top and balances them when subjected to waves. Teams will place their platform in a container of water and carry it ten feet to induce waves.

You can use any materials on the front table, but the marbles must rest on the bottom of the plastic cup each team is given. The cup must be placed upside down so that the bottom is facing up. You can alter the cup but you cannot build a cage or any other device to trap the marbles.

Judging: The winners will be the team that retains the most marbles and moves the fastest in ten feet.

Time limit: 45 minutes

Facilitator Tips

Set-up the testing area outside. Avoid spilling water inside.

Teams should not alter the platform.

Allow teams to practice.

Team Supplies

Platform (plastic cup)
Solo cups
Popsicle sticks
Water bottles (used)
Hot glue
String

Facilitator Supplies

Bin of water
Tape measure
Stop watch
Learning Outcomes

The Floating Platform Challenge requires teams to first design and build a platform and then race against other teams without losing their marbles. Participants must physically rely on one and other to succeed in the race, the tub of water is too heavy to carry alone. Communication is key to swiftly moving from one end to the other.

Lessons:

1. Verbal communication between team members.
2. Prototype quickly.

Variations

Give teams different objects to balance.

Vary the supplies offered to the teams.
Winners Only Challenge

Compete in a mock Red-Bull Flugtag challenge.
Winners Only Challenge

The Challenge

Build your own Flugtag (homemade human powered flying machine)

The winner will be selected based on three criteria:
(1) Distance: this is a flying contest after all.
(2) Creativity of craft: we like to reward genius.
(3) Showmanship: standing ovations are always good.

Time limit: 1.5 hours

Facilitator Tips

Team Supplies
Fabrics
Cardboard
Pipe cleaners
Pom poms

Facilitator Supplies
iPad
Judge
Winners Only Challenge

Learning Outcomes

Lessons:

1.

Variation
We would like to thank the Kern Family Foundation - Kern Entrepreneurship Education Network and the Coleman Foundation for their support.