PAINSTORMING IN-CLASS ACTIVITY #1

Extending the Video: From Mr. Coffee to Keurig

Instructor Notes on Lesson

Expected Time: 25 minutes

When to Implement: Painstorming, being an opportunity recognition methodology, should be introduced earliest in the semester as a way to identify problems worth solving. The Painstorming video should be shown first and this would be an appropriate short in-class activity to immediately follow. If multiple in-class activities that have been provided will be used, this is recommended as the first one since it is most directly related to the Painstorming video.

Class Set-Up: Teams of approximately 4 where individuals will be able to work individually and as a team throughout the activity.

Materials Needed:

- Minimally, the instructor will need a computer connected to a classroom projector, however it may be beneficial for all students to have their own laptop for working with the materials at their own pace.
- A student handout has been created and can be distributed to help structure the activity worktime, though scrap paper can also be used.

Learning Outcomes:

At the completion of this activity, students will be able to:

- Establish a list of pains observed while watching a user interact with a product
- Consider a newer technology and identify which pains have been reduced/eliminated by this technology and evaluate/prioritize the remaining pains that still need to be solved

Instructor Guide:

After watching the Painstorming video, put the class in teams of 4, and hand out copies of the student worksheet (located at the end of this packet) or ask students to get out their own note sheet.

INTRODUCTORY DIALOGUE:

Explain to the class that as mentioned in the video, during painstorming the person you are observing interacting with the product, service, or environment is not normally talking to you. In this video, though the person was talking through the process of making coffee using a Mr. Coffee maker, he does not explicitly list all of the pains, annoyances, and frustrations he is experiencing while he does it. In order for painstorming to be a valuable and useful tool for an engineer, it is important to be able to observe and list as many pains as possible that you notice. Some pains will be very obvious, but you also want to look for those less noticeable pains or even extrapolate to pains that someone else with different characteristics might have.

Part 1. Listing Explicit Pains of the Mr. Coffee [10 minutes, could be shortened]

Return to the video and advance to 0:52 in the video where the person begins to talk about how he loves coffee and begins to walk through the process of making his coffee in the Mr. Coffee maker. Before playing the video, turn off the volume, and instruct the class to watch carefully and individually list as many pains, annoyances, frustrations, and workarounds as they can based on what they observe. A student handout is provided to help structure their responses. The instructor should then play the video until the Mr. Coffee process is complete (2:19) and students should individually record all of their identified pains during this time and in a quiet time that follows. It may be helpful to play this a second time or to let students watch on their personal computers.

Let students then discuss as a team and/or lead a class discussion to share what pains they have written down. It may be worthwhile to recognize/incentivize in some small way (e.g. extra participation points) the least obvious/most interesting pains that were noticed and shared by students to reward and encourage those who did not just have the obvious and most explicit pains listed.

Students should then compile all of the pains from all members of the team (combining repeats and redundancies) onto the team handout so that they have one master list to work from for the rest of the activity.

Part 2. Pains Eliminated by New Technology [10 minutes]

Return to the video and now show 2:19 – 3:01 where the person talks about the development of the Keurig and demonstrates the process of making one cup of coffee using it. It may be helpful to have students then watch this as a team on an individual laptop where they can discuss as they watch.

On the team handout, they should now identify and record which pains have been solved by the Keurig and how (what features of the device) have enabled that pain to be reduced/eliminated. This may take watching the video multiple times and team discussion.

A follow-up included on the team handout that the team should take several minutes to discuss and document is if there are any new pains, annoyances, or frustrations that the new device introduces (that were not an issue with the previous technology).

As an instructor, you may want to share responses and discuss as a class for several minutes.

Part 3. Advancing Technology into the Future [5 minutes]

Now through a class discussion or by continuing to have students work as a team using the team handout, pose the challenge: **"The Keurig has been incredibly successful as a more user-friendly and versatile product than the Mr. Coffee – developed in large part by systematically eliminating many of the pains and annoyances that Mr. Coffee posed. Your engineering team is part of a new start-up company that has identified the home coffee-making business as one that you want to and believe you can now transform. If you want the Keurig to become as irrelevant as the Mr. Coffee coffee maker now is, making your new product the transformative way to make coffee…..what one or two pains should you focus your efforts on eliminating in a new design/technology and Why?"** Instructors may need to remind the class that they should not be coming up with new designs, only concentrating on the pains to be solved.

This can conclude with a class discussion and any desired wrap-up by the instructor.

Part 4. (Optional) Reflection [5 minutes + follow-up]

A wrap-up student handout has been prepared and is attached in this packet for students to help reflect on what they have learned and for instructors to receive feedback on student learning and questions. It is recommended that if this is used the instructor should follow-up by clarifying any misconceptions and answering any questions raised.

Name: _____

PAINSTORMING IN-CLASS ACTIVITY #1

Extending the Video: From Mr. Coffee to Keurig

INDIVIDUAL NOTESHEET TO ACCOMPANY IN-CLASS ACTIVITIES

Part 1. Listing Explicit Pains of the Mr. Coffee

During Part 1, you will be asked to individually list all of the pains you observed while watching the Mr. Coffee coffee making process. List as many pains as you can, below. Be sure to try to include some that are less noticeable/obvious. Bullets are provided to help you but should not limit your number of responses, begin a second column if necessary.

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Names: _____

PAINSTORMING IN-CLASS ACTIVITY #1

Extending the Video: From Mr. Coffee to Keurig

TEAM WORKSHEET TO ACCOMPANY IN-CLASS ACTIVITIES

In this column, list each pain/annoyance associated with the Mr. Coffee process that your team came up with	In this column, checkmark those pains that Keurig eliminated/reduced	In this column, list how (e.g. what features or improvements) the Keurig eliminated/reduced these pains

As a team, list any new pains that the Keurig has introduced that were not associated with the Mr. Coffee coffee making process.

Once instructed by your professor write your team's response to the following challenge: *"The Keurig has been incredibly successful as a more user-friendly and versatile product than the Mr. Coffee – developed in large part by systematically eliminating many of the pains and annoyances that Mr. Coffee posed. Your engineering team is part of a new start-up company that has identified the home coffee-making business as one that you want to and believe you can now transform. If you want the Keurig to become as irrelevant as the Mr. Coffee coffee maker now is, making your new product the transformative way to make coffee…..what one or two pains should you focus your efforts on eliminating in a new design/technology (choose from the table above) and Why?"*

Name: _____

PAINSTORMING IN-CLASS ACTIVITY #1

Extending the Video: Pains of Kitchen Gadgets

INDIVIDUAL WRAP-UP

1. Describe, in your own words, what painstorming is and how it is used.

2. List at least one question you have about painstorming that you would like answered by the instructor. If you have more than one questions, list all of those here.

3. If in our next class you were told that you were tasked with coming up with a new product, service, or process that would make family car travel more enjoyable:

a. How likely would you be to (without receiving any additional instruction or practice) use painstorming?

1. Extremely unlikely
2. Unlikely
3. Neutral
4. Likely
5. Extremely likely

b. If you were told you had to use painstorming, how confident would you be that you could do so effectively (without receiving any additional instruction or practice) use painstorming?

1. Not at all confident
2. Not very confident
3. Somewhat confident
4. Confident

5. Extremely confident

PAINSTORMING IN-CLASS ACTIVITY #2

Thinking Backwards: What Pains Led to This?

Instructor Notes on Lesson

Expected Time: 15-20 minutes

When to Implement: Painstorming, being an opportunity recognition methodology, should be introduced earliest in the semester as a way to identify problems worth solving. The Painstorming video should be shown first and this would be an appropriate short in-class activity to immediately follow. If multiple in-class activities that have been provided will be used, this is recommended to follow the "Extending the Video" in class activity (Painstorming In-Class Activity #1).

Class Set-Up: Teams of approximately 4 where individuals will be able to work individually and as a team throughout the activity.

Materials Needed:

- The Powerpoint slides "New Technologies.ppt" either projected for the entire class, or color printouts, one page (featuring one new technology) given per team
- A student handout has been created and can be distributed to help structure the activity worktime, though scrap paper can also be used.

Learning Outcomes:

At the completion of this activity, students will be able to:

- Provide examples of products that likely stemmed from the painstorming process.
- Demonstrate curiousity about our changing world

Instructor Guide:

After watching the Painstorming video, put the class in teams of 4, and hand out copies of the student worksheet (located at the end of this packet) or ask students to get out their own note sheet.

INTRODUCTORY DIALOGUE:

Explain to the class that as they watched the video they first saw how the pains associated with Mr. Coffee coffee making led to the more user-friendly Keurig. However, if they only knew the Keurig, would they have realized what an advancement it really was? It may be helpful to pose the question of why it would ever be helpful to know? (Lots of possible answers). The instructor may also want to at this point, before the activity, briefly discuss the importance of curiosity as skill for an entrepreneurially minded engineer, and that one of KEEN's goals is not only to promote curiousity but specifically to develop students that demonstrate curiosity about our changing world. (At the University of Dayton, this may also be a place to briefly discuss a somewhat similar perspective of Blessed Father Chaminade and the Marianist focus of being able to read the signs of the times and adapt.)

Part 1. Assign each group a new technology [10 minutes]

This can be done by showing the New Technologies.ppt slides to the class (with the instructor adapting the slides prior to class to fit the number of groups) and assigning each class group one of the technologies shown, or by handing out one different printed page of the Powerpoint to each team. It is important that the students can actually "see" an image of the technology. A video of the product in use would be even better, but is outside of the scope of the current assignment.

Ask individuals to individually list all of the pains, annoyances, and frustrations that they can think of that would have led to the development of this product. Remind them that there were likely many iterations of designs that led to this, in which case they should first think back as far as they can to the oldest version of this technology that they are aware of (or optionally familiar with, if students seem to be struggling). If class time permits, it may be interesting to do the same activity but advance by each decade or major design iteration (or perhaps only using one technology as a whole class, with teams each taking one of the different iterations).

Teams should then discuss and create one master document (handout provided) listing all of the pains that they had mutually agreed upon.

Part 2. Class Discussion [5 – 10 minutes]

Lead a class discussion to have the groups share some of the pains that they listed. Were there any pains that multiple groups (having had different technologies) had listed (e.g. lack of portability, limited user interface)? This could also be an opportunity to ask and talk about what technology developments enabled us to move from the original product to the new technology? Again, this was likely a systematic process through time so it may be necessary to limit what is being discussed. Instructors may need to chime in to share their own experiences with the older technology.

Part 3. Optional Wrap-Up [5 minutes]

Instructors may want to wrap-up on a “light note” by playing a video clip of kids reacting to old technology (search Youtube: “Kids React to Old Technology”…… https://www.youtube.com/watch?v=kesMOzzNBiQ shows kids reacting to a VCR/VHS). Instructors can remind the students that despite the annoyances their favorite products might cause, they are likely a long way from the technology their parents and grandparents used.

This can conclude with a class discussion and any desired wrap-up by the instructor.

Part 4. (Optional) Reflection [5 minutes + follow-up]

A wrap-up student handout has been prepared and is attached in this packet for students to help reflect on what students have learned and for instructors to receive feedback. It is recommended that if this is used the instructor should follow-up by clarifying any misconceptions and answering any questions raised.

Name: _____

PAINSTORMING IN-CLASS ACTIVITY #2

Thinking Backwards: What Pains Led to This?

INDIVIDUAL NOTESHEET TO ACCOMPANY IN-CLASS ACTIVITIES

Part 1. Listing the Likely Pains that Led to This:

You will be asked to individually list all of the pains you can think of that may have led to the new technology you are looking at. There were likely many similar technologies (maybe even no-tech/low-tech products) that came before the product you are looking at. Think back as far as you can and use that as your starting point. Bullets are provided to help you but should not limit your number of responses, begin a second column if necessary.

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Names: _____

PAINSTORMING IN-CLASS ACTIVITY #2

Thinking Backwards: What Pains Led to This?

TEAM NOTESHEET TO ACCOMPANY IN-CLASS ACTIVITIES

Part 2. Team Compilation

You will be asked to discuss your individual lists as a team. Here you will list the "master team list" of all of those pains that you mutually agree upon. Bullets are provided to help you but should not limit your number of responses, begin a second column if necessary.

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Name: _____

PAINSTORMING IN-CLASS ACTIVITY #2

Thinking Backwards: What Pains Led to This?

INDIVIDUAL WRAP-UP

1. How easy or difficult was it to complete this activity?

1 – Very difficult

2 – Difficult

3 – Neither difficult nor easy

4 – Easy

5 – Very easy

2. What made it easy or difficult to complete this activity?

3. What would have made this activity easier for you to come up with more pains than you did?

4. How do you think the pains and inconveniences you deal with today for the products you use compare to the pains and inconveniences your parents or grandparents experienced using the older versions of these same products? Explain.

Name: _____

PAINSTORMING IN-CLASS ACTIVITY #1

Extending the Video: Pains of Kitchen Gadgets

INDIVIDUAL WRAP-UP

1. Describe, in your own words, what painstorming is and how it is used.

2. List at least one question you have about painstorming that you would like answered by the instructor. If you have many questions or want clarification, list all of those here.

3. If in our next class you were told that you were tasked with coming up with a new product, service, or process that would make family car travel more enjoyable:

a. How likely would you be to (without receiving any additional instruction or practice) use painstorming?

1. Extremely unlikely
2. Unlikely
3. Neutral
4. Likely
5. Extremely likely

b. If you were told you had to use painstorming, how confident would you be that you could do so effectively (without receiving any additional instruction or practice) use painstorming?

1. Not at all confident
2. Not very confident
3. Somewhat confident
4. Confident

5. Extremely confident

PAINSTORMING IN-CLASS ACTIVITY #1

Extending the Video: Pains of Kitchen Gadgets

Created by: Kim Bigelow, PhD; University of Dayton for KEEN Topical Grant

What Pains Drove the SmartPhone?

Image From: http://www.aldine.k12.tx.us/cms/ImageUploads/cell-phone.jpg

What Pains Drove the DVR?

Image Fromhttps://videocitydfw.com/wp-content/uploads/2012/03/directvwholehomedvr.jpg

What Pains Drove the Kindle?

Image From: http://pickmyreader.com/wp-content/uploads/2013/12/kindle-paperwhite-with-special-offers.jpg

What Pains Drove the GPS/Google Maps?

Image From:http://newsingeneral.com/wp-content/uploads/2014/03/Google-Maps.jpg

What Pains Drove Motion Based Gaming Systems?

e From:http://ecx.images-amazon.com/images/I/81qqbviCibL._SL1500_.jpg

What Pains Drove Amazon's Alexa and Echo?

Image From: https://images-na.ssl-images-amazon.com/images/G/01/kindle/merch/2016/ALEXA/CP/TEST/alexa-cp-dot.jpg

PAINSTORMING IN-CLASS ACTIVITY #3

Identifying the Hidden Opportunities: The Value of Observation

Instructor Notes on Lesson

Expected Time: 50 minutes

When to Implement: Painstorming, being an opportunity recognition methodology, should be introduced earliest in the semester as a way to identify problems worth solving. The Painstorming video should be shown first and this would be an appropriate in-class activity to immediately follow. If the other provided in-class activities are to be used, this should be used last.

Class Set-Up: Teams of approximately 4 where individuals will be able to work individually, with a partner, and as a team throughout the activity.

Materials Needed:

- Minimally, the instructor will need a computer connected to a classroom projector, however it may be beneficial for all students to have their own laptop for working with the materials at their own pace.
- The prepared powerpoint “Camping Out” and the accompanying video “Camping Out” will also be utilized during this activity. Instructors may wish to review these prepared materials and modify these to better reflect a topic more in-line with their course.
- A student handout has been created and can be distributed to help structure the activity worktime, though scrap paper can also be used.

Learning Outcomes:

At the completion of this activity, students will be able to:

- Compare and contrast three different “levels” of painstorming approaches
- Discuss the added value of incorporating diverse perspectives into the painstorming process
- Select and apply the appropriate level of painstorming to design problems based on scope and time constraints

Instructor Guide:

After watching the Painstorming video, putting the class in teams of 4, and handing out the activity packet or asking students to get out their own note sheet:

INTRODUCTORY DIALOGUE:

Explain to the class that painstorming can be done at varying levels. As the Painstorming video states the most effective way to painstorm is by observing multiple times, and with a diverse team, a videotaped scene showing an environment, interaction, or product in use. This gives us the opportunity to look for the most hidden opportunities and gets the inputs of others who might see different things from their perspective.

Explain to the class that this though sometimes isn't practical, especially in the scope of a smaller project or one with a shorter timeline or smaller budget. There are other ways to still use the painstorming methodology in more simplistic ways

The activity that will be done today will be a chance to practice painstorming at these different levels and this will give the class to see how these different methods compare and contrast.

The topic for painstorming today will be a broad one that will be familiar to many people --- problems encountered when "camping out".

Part 1. THE BUG LIST – Low Level Painstorming [12 minutes]

- Briefly introduce the idea of the Bug List to the class: The Bug List is an easy, low-level way to painstorm. It can be done individually but is more effective when done with others. The process is simple: The topic is presented and then each person (or team) thinks about the topic and comes up with a list of things that "bug", "annoy", or "frustrate" them about experiences/interactions/uses relative to the topic. (Some people find the bug list to be too pessimistic; an "I wish…" list can also be used) [2 minutes]

- Ask the class for some initial thoughts on what the pro's and con's of using such a low level methodology are. These will be revisited later in the activity, but it is worth getting students thinking of this. Typical responses might include: Pro's – Simple, No video necessary, Quick, We have some good ideas; Con's – What if I've never experienced that problem; Only those most obvious things; Limited perspective [1 minute]

- Assign students to individually list all of the things that bug, annoy, or frustrate them about going camping. [3 minutes]

- Have students form pairs. Tell students to discuss and keep adding to their lists. [3 minutes]

- Have each pair pick the item on their list that they feel presents the best opportunity to pursue (solve). Remind them that there are different reasons something might be the best opportunity (e.g. a problem that affects numerous people; a problem that doesn't affect many people but is very significant; an opportunity that opens up new markets; something no one else will think of, etc.) [1 minute]

- Lead a short report out and document these on a white board or post-it note sheet. [2 minutes]

Part 2. GUIDED PHOTO PROCESS – Medium Level Painstorming [20 minutes]

- Briefly introduce the idea of this process to the class. This process is more structured and guided than the Bug List. Here the topic is broken down and photos are presented representing the various potential elements of the process. In this example it has already been done, but for students wishing to use this process in their own open-ended problems they would be the ones needing to take the time to think through the break down and collecting the photos that will help them do the activity. [2 minutes]

- Ask the class for some initial thoughts on what the pro's and con's of using such a low level methodology are. These will be revisited later in the activity, but it is worth getting students thinking of this. Typical responses might include: Pro's – Start thinking about the whole process; Able to observe from the photos; Can be prepared from internet photos; Con's – Takes a while to put together; Limited interactions shown; Requires inferences on what is happening [1 minute]

- Show the "Camping Out" Powerpoint on the classroom projector. Stop at each slide and allow students to individually write a few problems/opportunities that they notice on their handout or notesheet. Stop at the blank slide in the presentation. [6 minutes]

- Optional: Let students form teams of four and use their own computers to review the slides and discuss, writing down their new ideas on their handout or notesheet. [4 minutes].

- Briefly tell the class that the images you pick and the perspective you are coming into this activity with greatly influence the pains/opportunities that are identified. Tell them that they will purposefully have to seek out other perspectives --- both in the photos they include and in the individuals that they discuss with. Continue onto the remaining PowerPoint slides that seek to "mix things" up a little. Have students add to their lists. [4 minutes].

- Have each pair pick the item on their list that they feel presents the best opportunity to pursue (solve). [1 minute]

- Lead a short report out and document these on a white board or post-it note sheet. [2 minutes]

Part 3. VIDEO BASED OBSERVATION – High Level Painstorming [16 minutes]

- Briefly remind students that as the video described painstorming is most effective when watching, ideally multiple times, and ideally with multiple people, a videotaped scene showing environments/interactions/use. Sometimes the students will have to film this video (permission will likely need to be granted before doing so!), but other times the video will already be available. [1 minutes]

- Ask the class for some initial thoughts on what the pro's and con's of using such a low level methodology are. These will be revisited later in the activity, but it is worth getting students thinking of this. Typical responses might include: Pro's – See the entire process; best reveals hidden opportunities; can be specific to the environment/product Con's – Takes effort and permission to obtain video; Likely only one piece of the larger process (5 minute video not days of video); Depends on knowledge of who is watching [1 minute]

- Show the "Camping Out" video on the classroom projector. Have students make notes on their handouts or note sheets throughout the process. [5 minutes]

- Optional: Let students form teams of four and use their own computers to review the video and discuss together, writing down their new ideas on their handout or notesheet. [6 minutes].

- Have each team pick the item on their list that they feel presents the best opportunity to pursue (solve). [1 minute]

- Lead a short report out and document these on a white board or post-it note sheet. [2 minutes]

Part 4. Assignment and Discussion

To wrap up this activity, instructors may wish to do one of the following:

- Have students individually, in pairs, or in teams complete the short in-class wrap-up handout. [5 minutes] follow this up with brief discussion relating to the questions on the handout. From the instructor's perspective try to get the class to see the value of each approach and when (within the class context and in future engineering contexts) they might use each one. [5 minutes]

OR

- Have students individually complete the accompanying Painstorming Homework 3 assignment packet. After the assignment is complete, debrief the assignment with the class at the start of a future class session.

Name: _____

PAINSTORMING IN-CLASS ACTIVITY #3

Identifying the Hidden Opportunities: The Value of Observation

NOTESHEET TO ACCOMPANY IN-CLASS ACTIVITIES

Part 1. THE BUG LIST – Low Level Painstorming

Notes on what the Bug List is and how it is used:

Pros of the Bug List:

Cons of the Bug List:

Activity – When your instructor tells you, create your Bug List here:

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Part 2. GUIDED PHOTO PROCESS

Notes on what the Guided Photo Process is and how it is used:

Pros of the Guided Photo Process:

Cons of the Guided Photo Process:

<u>Activity – As your instructor goes through the PowerPoint, list the problems/opportunities you notice here:</u>

Logistics: Planning When and Where

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Packing for the Trip

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Setting Up Camp

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Preparing Meals & Eating

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“Living” at the Campsite

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Living out of a Tent

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Toileting and Bathing While Camping

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Nighttime at the Campground

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New ideas you had when your instructor introduced the slides that got you thinking in new perspectives:

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Part 3. VIDEO BASED OBSERVATION – High Level Painstorming [16 minutes]

Notes on what the Video Based Observation is and how it is used:

Pros of the Video Based Observation:

Cons of the Video Based Observation:

Activity – As your instructor plays the video, list the problems/opportunities you notice here:

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Name: _____

PAINSTORMING IN-CLASS ACTIVITY

Identifying the Hidden Opportunities: The Value of Observation

WRAP-UP

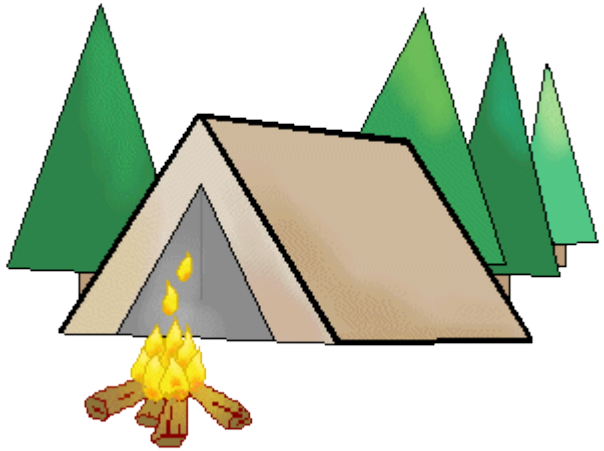
1. When is using painstorming an appropriate method in engineering design?

2. As an engineer you will encounter a number of different types of projects. What will you consider in deciding which level of painstorming you might use?

3. Throughout this activity you did some work individually and then were able to discuss in pairs or teams. Discuss what you noticed about the problems/opportunities you included in your list when you created the list by yourself versus with others. Which list did you feel gave you the most value ideas to pursue?

4. For each level of painstorming, you reported out the idea that you felt was most valuable to be solved. Which level resulted in the idea that you think was the most valuable of three? What do you think helped make this idea so valuable?

5. During the Guided Photo Process, your instructor showed you images that were meant to get you thinking from a different perspective. Did seeing the new images help you add valuable ideas to your list that weren't already there? Why do you think this was effective and what is something you could do in the future during similar activities to make sure your team thought this broadly?



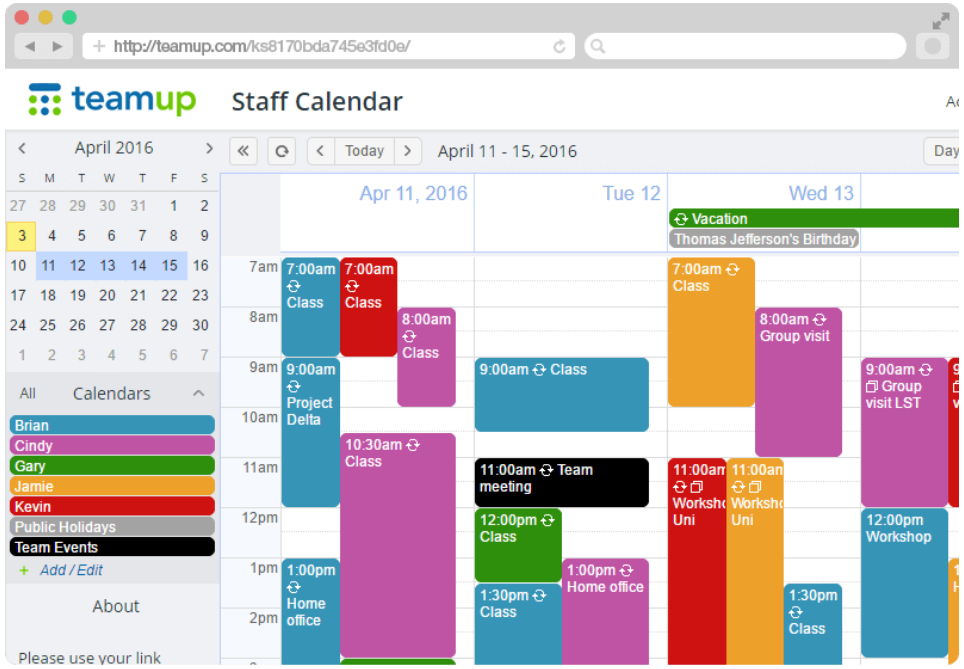
Camping Out

An In-Class Activity to Accompany the KEEN Painstorming Video

Prepared by Kim Bigelow, University of Dayton

Image From: http://images.clipartpanda.com/camp-clipart-jTxERGLTE.gif

Logistics: Planning When and Where



Images From: http://www.teamup.com/wp-content/themes/g5_teamup/images/carousel-slide-1.png; http://dnr.wi.gov/topic/parks/images/parksstatemap.jpg

Packing for the Trip

Images From: http://www.my7continents.com/wp-content/uploads/2011/10/car-pack/stuff-2.jpg

Setting Up Camp

Images From:http://www.johnharveyphoto.com/GraniteFalls/SettingUpTentsLg.jpg

Preparing Meals & Eating

Images From: http://thefamilydinnerbook.com/wp-content/uploads/snobrod.jpg

“Living” at the Campsite

Images From: http://bloximages.chicago2.vip.townnews.com/maysville-online.com/content/tncms/assets/v3/editorial/b/bc/bbc50e6d-d3c3-58e6-9c50-25b0b3ea1a04/5596c970c24d5.image.jpg?resize=1200%2C900

Living out of a Tent

Images From:http://danenberg.weebly.com/uploads/2/9/4/5/29451763/5188045.jpg

Toileting and Bathing While Camping

Images From: https://c1.staticflickr.com/1/68/164772536_4182b2373f.jpg; http://thewirecutter.com/wp-content/uploads/2016/06/solar-camp-shower-32-ivation-5-showering-630.jpg

Nighttime at the Campground

Images From: http://s.hswstatic.com/gif/solar-powered-tent-1.jpg

Images From: http://s.hswstatic.com/gif/solar-powered-tent-1.jpg

What Happens If We Change Up the Photos?

Images From: http://blogs.dnvgl.com/oilgas/wp-content/uploads/2017/01/change-management-process.jpg

Instead of a Tent…

Images From: https://s-media-cache-ak0.pinimg.com/originals/20/68/45/206845d0b8458a1b94d3690f738905d0.jpg; http://cdn0.wideopencountry.com/wp-content/uploads/2015/03/6.jpg

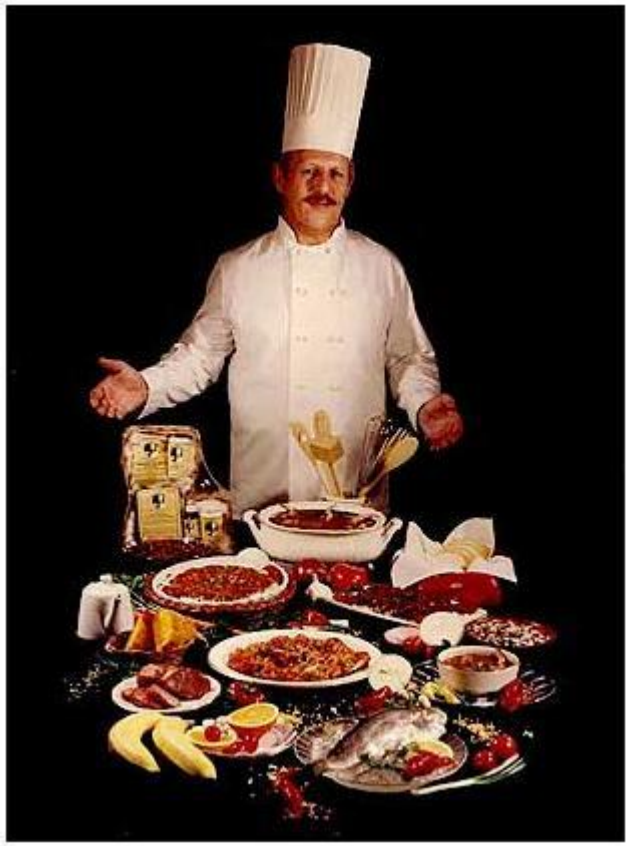
Camping with a Baby…

Images Fromhttps://genyoungmum.files.wordpress.com/2015/12/img_2268.jpeg

Camping with a Disability…

Images From: http://farm2.static.flickr.com/1343/891053444_cd603d6536.jpg

Having a Profession that Changes Your Perspective…



Images From: http://photos.capturekerncounty.com/photos/a87glSgJ5bv_57EpCVB6EA/showcase.jpg; http://www.chefhansgourmetfoods.com/images/hans.jpg

PAINSTORMING HOMEWORK ASSIGNMENT #1

An Introduction to Painstorming

A Chance to Practice

Task 1. Identify an everyday product that you commonly use, and have access to. Using your cell phone or other video camera, create a 2 – 5 minute video of someone that you know using that product in the way it is normally used. Make sure that you get permission from that individual to be filmed, letting them know that the film will be turned in for class but will not be watched by anyone other than you and the professor/teaching assistant. Note that it is less desirable, but acceptable, to have someone else tape you using the product if you cannot find someone who is comfortable being filmed.

Task 2. Watch the video at least two times, noting the pains that you observe. Complete column 1 on the attached table. In column 1, you want to write down each and every pain you observe associated with the product's use. Be sure to try to capture some non-obvious pains.

Task 3. Browse the internet to try to find one related or semi-related (likely newer) product that is available to eliminate at least one of the pains you noted for your process. Looking at "As Seen On TV" products, assistive technology for individuals with disabilities, and technology reviews may be especially helpful if you get stuck finding a related product. Complete columns 2 and 3 on the homework assignment, similar to what we did in class. Note: Depending on the product you find, it may not address nearly as many of the original problems as the Keurig did for the Mr. Coffee.

Task 4. Complete the final prompt on the homework assignment.

DELIVERABLES

Submit the video you took and the completed typed homework packet on Isidore

Grading for these deliverables is out of a total of 50 points and will be based on completion of the tasks, number and depth of pains identified, and overall quality and thoughtfulness of your deliverable. Individuals earning the highest grades on this assignment will have demonstrated an outstanding effort and thoughtfulness on this assignment, listing numerous pains (especially those non-obvious), thoroughly describing how the new device eliminates these pains, and demonstrating thoughtful and in-depth reflection. Highest scoring papers will look and read professionally, being nicely organized and well edited.

Name: _____

PAINSTORMING HOMEWORK #1

An Introduction to Painstorming

A Chance to Practice: HOMEWORK SHEET TO BE COMPLETED (Please Type)

Task 1a. Product chosen for your video: _____

Task 1b. Brief explanation of what the product was used to do in your video: _____

_____

_____

Task 3. Product Name of the newer product you identified that solves some of the pains from Task 1 & 2, Brief Description of it, and Website/Catalog where it can be found: _____

_____

_____

_____

_____

TASK 2. In this column, list each pain/annoyance you identified while watching the video tape you created	TASK 3. In this column, checkmark those pains that the new product eliminated/reduced	TASK 3. In this column, list how (e.g. what features or improvements) the new product eliminated/reduced these pains

[Copy-paste more table rows as needed]

TASK 4. *You are part of an engineering firm that does consulting. An enthusiastic entrepreneur approaches your group. She says that she feels that there is a real need to develop a better [original product you used in your video]. She lists the pains that she has observed others have trying to use the product. Her list is very similar to the one you have just created. She admits that she has not done in-depth research about similar products that overcome these issues but from her knowledge, she doesn't believe there is much out there. She would like you to take on the project to help her ultimately design and bring a better [original product] to market.*

Write one or more paragraphs reflecting on this request and what you would likely decide. This written reflection should include a description of what you are thinking, considerations you will take into account, your initial likelihood to take on the project knowing what you know from the earlier parts of this assignment, and what you would like to know or do in order to learn more and make an ultimate decision. As you write, reflect on what you learned about the product and new products earlier in the homework, and do any additional research you would like.

PAINSTORMING HOMEWORK ASSIGNMENT #2

Identifying the Hidden Opportunities: The Value of Observation

Practicing the Guided Photo Process

First, review the following and circle the one that you find most interesting. This will be the scenario that you follow for the rest of the assignment.

- Your friend has approached you about partnering with her to open up a new family friendly restaurant in your hometown. The community already has a number of chain restaurants so it will be important that the new restaurant offers a unique experience.

- You are a design engineer for an international automotive company. The vehicles your company designs and manufactures continually win awards and top-rankings. This is in large part due to a company commitment to a comfortable, enjoyable, and safe driving experience. This focus has played out most in the cabin and storage areas of the vehicle.

- You have recently opened up a small, locally-owned grocery store. While customers and sales were up during your grand opening weekend, many potential customers are now back to shopping at the large, national grocery superstore chains. Coming up with new ideas that bring in – and keep – shoppers from the community will be important to keep the store open.

- You have recently became the Director of Parks and Recreation in your large, urban city. You oversee all aspects of the city's parks and recreation, but have particular passion for developing programming, services, and resources aimed at engaging either young adults (like your daughter) or older adults (like your retired parents). You would also like to make sure your offerings draw in people from all of the surrounding suburb communities who could be using their only their own community's parks and recreational activities.

Your task:

Innovation is very important to you in your role which you circled above. In your role, it is critical that you are able to come up with valuable new products, services, programs, and/or experiences that meet – or exceed – your customers, and potential customers, expectations. However, the directions you might go are endless….in fact currently you have no real direction!

In order to come up with something that isn't so obvious that all of your competitors already have it in mind, it is going to be very beneficial for you to identify ***the hidden opportunities and needs*** that you could capitalize on. As you learned, ***painstorming*** is a great way to do this. It allows you to identify those things about a product, service, or environment that annoy, frustrate, bother, and lead to work arounds for users and potential users. Often these users have become

accustomed to and just simply accepted that this is how things are - sometimes not even realizing how much difficulty it causes and how much easier/better it could be if solved.

DELIVERABLE 1: Complete Tasks 1 – 4
Submit only the Completed PowerPoint (not the individual task responses) on Isidore

Grading for this deliverable is out of 50 points and will be based on completion of the tasks, relevance of the responses to the role you identified above, and quality of your deliverable. Completing all of the tasks with relevant responses and good quality will earn you a maximum of a 92%. To earn a grade higher than this you must put in additional effort that shows you have gone above and beyond in some way. Examples of this include: doing more than the minimum, including especially unique perspectives, preparing the presentation in an exciting way that resonates with audiences, etc.

Task 1. You are going to use the Guided Photo Process to help with painstorming for this assignment. You practiced this process in-class when we did the example about camping out. Thinking again about your role that you circled above, list as many categories/activities/sub-tasks as you can think of that might relate to the product, service or experience that you offer. List at least 8 but no more than 14.

Example: When we did the Camping Out example in-class some of the categories were: Packing for the Trip; Preparing Meals and Eating; Living Out of a Tent; and Toileting and Bathing while Camping

Task 2. Prepare a Guided Photo Process Powerpoint that you will use during painstorming. You saw an example of this kind of Powerpoint when we did the camping out activity in class. At the top of each slide list one of the categories/activities/sub-tasks that you listed during Task 1. Then search Google Images and find one or more photographs that shows an example of this. Photographs that show people interacting in some way can be most valuable, but are not necessary. Avoid including photographs that are copyrighted and be sure to include in small, grayscale font at the bottom of the slide the web address from where the photo was taken from.

Example: See slides 1 – 9 on the Camping Out PowerPoint used in class and located on Isidore.

Task 3. Now list at least 4 (but no more than 7) alternative perspectives that could help you think about unique annoyances/needs of a very diverse population. These should all still relate to the products, services, programs, and/or experiences that you are focusing on based on who you are (role you circled at the very beginning).

Example: When we did the Camping Out example in class we included: Instead of a Tent….; Camping with a Baby….; Camping with a Disability…; and Having a Profession that Changes Your Perspective (Firefighter and Chef)….

Task 4. Go back to your PowerPoint. Leave one blank slide after the ones you prepared during Task 2. Then include a slide that says something like "What happens if we change the photos?". After that create one slide per item that you listed in Task 3, again, listing the topic heading at the top of the slide and finding a relevant photo to include.

Example: See slides 10 – 15 on the Camping Out PowerPoint used in class and located on Isidore.

DELIVERABLE 2: Complete Tasks 5-8
Submit one Word Document that includes work for all tasks on Isidore

Grading for this deliverable is out of 40 points and will be based on completion of the tasks, relevance of the responses to the role you identified above, thoroughness and quality of your responses, and overall organization and format of the deliverable.

Task 5. In a Word Document write the heading "Task 5". Then list each topic/category that is on the top of your PowerPoint slides. Take 1-2 minutes (set a timer) per topic/sub-category and bullet point all of the problems, annoyances, frustrations, etc. that you can think of relating to that topic/sub-category. Aim for at least 5 bullets per topic/sub-category.

Example: In the Camping Out example if we were considering the topic/sub-category Preparing Meals and Eating, your bulleted list might include: 1. Cooler filled with water because the ice melted, 2. Needing to daily buy ice to keep cooler filler, 3. Not being able to bake anything because you don't have an over, 4. Paper plates blowing away off the picnic table, and 5. Ants and bugs around the food

Task 6. Now find at least one other person and have them repeat Task 5, so that you can get a diverse perspective. Keep track of their responses on the same Word Document under a heading marked "Task 6", doing it just like you did for your own Task 5. Be sure to also include who helped you and a little about their background.

Example: You could email your parents the Powerpoint or show your computer to a roommate. Explain to them what you are doing. Something like "For my class assignment, I need to have someone look through these photos. As you look through these photos, I would like you to come up with all of the things that might bug or annoy you – or other people – if you were in this situation. For example, my PowerPoint is themed around _____, but when we practiced using Camping Out and I looked at photos of "Preparing Meals and Eating" I said things like It always bugs me when my cooler fills with water from the melted ice or When camping it is very annoying that the garbage bag of food can't be left outside because animals might get into it."

Task 7. Now go through all of the problems, annoyances, and frustrations that have been listed during Task 5 and Task 6. If you had to choose only one that you are going to pursue addressing in your role, which would it be? In your Word Document type Task 7 as a heading and then write which you selected and write at least a paragraph as to why this is the most worthwhile one to address in your role. Be sure that you don't come up with solutions yet --- painstorming only identifies the problem we will seek to address, other methods are used to help generate solutions.

Task 8. Finally on the same Word document, write Task 8 and write a minimum of a one paragraph reflection on your experience using painstorming. Specifically address: 1. How helpful, or not helpful, was this process? 2. How do you think it would have been different if you had used the other level painstorming processes that you had learned about during the class activity (Bug List or Video Based Observation)? 3. What questions or suggestions do you have about using this process? and 4. Under what situations would you be likely to use this guided video process, if at all?

COURSE DESIGN PROMPTS THAT CENTER ON THE USE OF PAINSTORMING

The following prompts are those that an instructor wishing to have students utilize the painstorming method may wish to use for their course design projects. Since painstorming is only used to identify a problem to solve, these prompts are meant to frame a project that starts off with painstorming and will then lead nicely into the "normal" design process (ideation/build/test).

1. You work for a large automotive company. This year the company has decided they will focus their primary efforts on a complete redesign and rebranding of their minivan, to be unveiled in 3 years. Your company has decided that the marketing of the new vehicle will focus on how perfect the car is for long-distance family travel, ranging from cross-country vacation adventures to holiday trips to visit family out of state. Because of this focus you have been tasked with making sure the vehicle is a leader in innovative family friendly features. Use the painstorming process to first identify potential problems associated with family travel and/or current minivans that you may wish to solve. Once you have narrowed in on one or more pains that you will seek to solve (likely 1 – 2 weeks of the semester), you will move forward with the design process, ultimately designing a functional, tested prototype of your solution.

2. You work for a small sporting goods design company. The CEO of your company recently heard about a $500,000 grant that a national advocacy group for individuals with disabilities was willing to give to a company or non-profit that came up with the most valuable product to help individuals living with physical, cognitive, and/or developmental disabilities across America live more physically active lives. Your company currently manufactures a wide range of products but to date has never offered anything specialized for individuals with disabilities. Your company has also not yet included individuals with disabilities in their product user group feedback sessions. Your CEO is eager for this to change and decides to invite all employees at the company to participate in a design challenge to come up with an idea that will win the company the grant and more importantly, change the lives of individuals with disabilities in the process. Since the market for individuals with disabilities has not been a primary one of the company to date, the CEO believes that a solution that is universally designed, appealing to a wide range of individuals – with and without disability, might be most worthwhile for your company to concentrate on. You work specifically on the baseball product line; however, you are welcome to team up with your colleagues in the other departments. In your college engineering courses you had learned the painstorming process. You plan to use this by thinking about the pains all people, and especially those with disabilities, experience within the baseball (or other) sporting goods context. Once you have narrowed in on one or more pains that you will seek to solve (likely 1 – 2 weeks of the semester), you will move forward with the design process, ultimately designing a functional, tested prototype of your solution.

3. You recently became the lead student employee at your university's cafeteria. Your boss says that all day long all she hears are complaints from the students who eat in the cafeteria and that she is very fed

up by it. She suggests that if you can help her understand and solve some of the problems that are leading to these complaints that she will give you a significant raise. In order to do this, you must (actually) observe students in your (actual) campus cafeteria, watching what they do and what seems to be challenging or difficult. You can also ask (real) students for feedback on what frustrates them about the cafeteria. You should then compile all of the "pains" that you observe and hear, writing up a report for your boss. Your report should then also identify and prioritize which pains you plan to concentrate on solving, while also describing why these ones will be most worthwhile to solve. *Your instructor may ask you to stop there, or you may move on to actually design and test a solution based on their instructions.*