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: _____

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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: _____

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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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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