

### Teacher Overview

**E**ach Extraordinaire represents a character from fairy tales, books, or movies, and is an amplification of human needs. The Pirate has a hook hand – this is like someone with a physical disability or prosthesis. The Vampire Teen has to spend daylight hours indoors – this is like someone living with a medical condition. The Wizard needs a walking stick and glasses, just like many elderly people. The technique used in developing the characters is called ‘Personas’. Personas are used by design and engineering professionals to empathize with the users of the products they are designing and to help solve design questions in the development cycle. By recognizing the needs of The Extraordinaire’s characters and inventing products for them, students will empathize with consumers when they are problem solving in the real world, and have the design thinking skills necessary to succeed in the 21st Century.

The Extraordinaire’s Design Project is set-up in a way that guides students through the practices of sharing knowledge, showing incomplete work, accepting feedback, and focusing on the user.

The Extraordinaire’s Design Studio is used by David Kelly (IDEO) in his graduate courses at Stanford, in training at Fortune 500 companies, and is adaptable for students K thru 12.

For more on the “why” see “The Design Thinking Process” sheet.

### When to Use This Lesson

The Extraordinaires Design Project can be used at anytime throughout your YE program. Students do not require any prior knowledge to be successful at design thinking. You can repeat this project as many time as you like throughout your program.

**Time** | The time required is flexible and will depend on the size of your class as well as your schedule. It is recommended you plan to use the first two hours to work on the project. The last hour will be used to pitch the design.



### MATERIALS

- > The Extraordinaires Cards; Extraordinaire Persona Cards, Project Cards and Think Cards.
- > The Extraordinaires can be purchased on The Extraordinaires Design Studio Website as well as other online retailers.
- > Graphic Organizers; “Getting to Know Your Extraordinaire”, “Brainstorming a Design Challenge”, “Evaluating an Invention/Innovation”.
- > (“Anticipation Guide” is optional activity.)
- > Idea Pad Paper.
- > Blank Copy Paper.
- > Colored Pencils, Pencils and Erasers.
- > YE Bonds and YE Dollars.

### KEY TERMS

Empathy, Prototype, Iterate

### LEARNING OBJECTIVES

PE LO 1.a, 3.a, 3.e

Innovation LO 1.a, 1.c

### BEFORE CLASS PREPARATION

- > Review the entire activity guide.
- > Acquire all required materials. This may include ordering The Extraordinaires so plan accordingly.
- > Arrange room to accommodate group of 4 students.

### FOUNDATIONAL VALUES

- > Be Principled: Students will create value for themselves and others by applying the entrepreneurial mindset to their life and work.
- > Knowledge: Students will seek out the best information, driving beneficial change by sharing knowledge, and cultivating humility.
- > Opportunity: Students will create their opportunities in life by being opportunity obsessed.
- > Innovation: Students will practice innovation as a continuous, creative, and positive process that can be learned and applied by anyone to create value in all aspects of life.

## ACTIVITY INTRODUCTION

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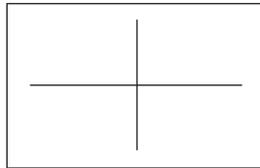
- > Divide students into groups of 3 or 4.

### WARM-UP 1:

- > Have students pair up with another member of their group. (If group of 4 pair off in twos. If groups of 3 either odds from different groups can pair up, or they can each complete the next step with the person to their right or left.)
- > Each student needs a piece of blank copy paper and a pencil.
- > Have students divide their sheet on one side into four sections.
- > Tell students you will say a word, then give them 30 seconds to quickly draw a picture representing the word (the best they can).

This will repeat four times, once for each word.

- 1st Word = "baby" (give them 30 seconds).
  - 2nd Word = "door" (share drawing)
  - 3rd Word = "house" (share drawing)
  - 4th Word = "innovation"
- > Have fun with it! Allow students to share out.
  - > Ask "anyone draw a baby with that 1 curly hair on top of its head?"
  - > "Has anyone ever seen a baby with one curly hair?"
  - > "Did anyone draw a house with the door right in the middle with a window on each side?"
  - > "Anyone draw a light bulb for innovation?"
    - This is a form of visual shorthand. In design it isn't important how good the drawing is, it is just important to put representations of ideas on the paper that others can relate to.



### WARM-UP 2:

- > While remaining with partner, student's flip the paper over to the blank side.
- > Ask students "how many of you are creative?"
- > Tell students they have 1 minute to draw this time. Then tell them to "draw a portrait of your partner". "One minute, ready go!"
- > Allow students to trade portraits with their partner. This usually leads to some good laughs!
- > Ask students "how did that activity feel?" Get some feedback.
  - Typically when you ask that question, most students will not think they are creative. This is because they have been told somewhere along the way that they couldn't draw or that their art work wasn't good. Most students associate their artistic ability with creativity. The important thing in design thinking is the ability to show unfinished work, the ability to participate in something you might not be good at, and the ability to take on problems that might not have a clear answer or answer that is right there.
- > Tell them "your ability to take on new things and share ideas, is much more important than your ability to draw". This mindset and process helps us build "creative confidence".
- > So, let's dive into Design Thinking and The Extraordinaires.

## ACTIVITY DIRECTIONS

Students will remain in their groups of 3 or 4.

- > Have each group draw three Extraordinaire cards (clients) and place them face up on the table.



- > Have each group draw three Project cards and place them face up, each on one of the Extraordinaire cards. Each pair represents a design challenge.



- > Each team chooses one of the three design challenges that grabs their attention.
- > Each team's challenge is to use the Design Thinking Process described below to design the selected project to meet the needs of their Extraordinaire.

### STEP 1: EMPATHIZE AND RESEARCH

- > Have each student complete independently, the graphic organizer "Getting to know your Extraordinaire" (client or market). Students should look carefully at both sides of the Extraordinaire card and think empathetically as they complete graphic organizer #1.

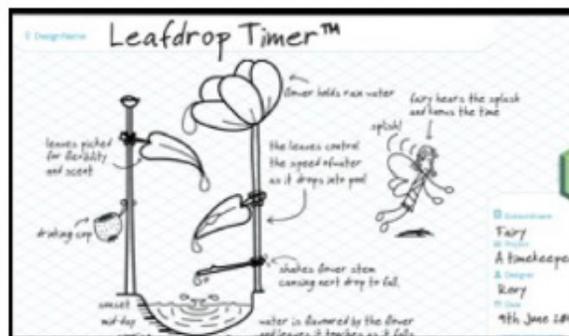


- > What are needs? Pains? Gains? Problems?
- > Job requirements? Find success? Lifestyle? Frustrations?
- > Use imagination.
- > Listen – what would they say?
- > Challenge **your** assumptions.



## STEP 4 - TEST & IMPROVE

- > When you think you are done, use the improve questions on the Think Cards to again iterate or reconsider your design and how it meets the needs of the customer/market.
  - (Optional) This is a good spot to allow students to read the excerpt on their Extraordinaire from the book that accompanies The Extraordinaires Design Studio Pro. Students love seeing deeper into the lives of their Extraordinaire and like to see if they correctly interpreted their world.
- > After completing Step 3, team members will gather together, and each member will pitch their idea to the team. Each team member fills out graphic organizer #3 - "Evaluating an Invention/Innovation" for each team members pitch/ideas.
- > Now team members will collaborate by either selecting one team member's ideas or melting the best ideas of the team together into one final invention/innovation.
- > Team members will design, draw, label and annotate their group's idea on a large sheet of paper. As they design their final prototype/drawing on paper the group should repeat the evaluation process.



Team collaborates to design a final iteration on poster size paper.

- > Have each group give their design a "catchy" name. (Don't forget to add the TM, to protect it!)
- > Each group will then pitch their idea to the class. Pitches might include the name, a summary of their research, why the Extraordinaire needs this design, and how it informed the overall concept. Highlight key features and benefits, and any improvements that make your idea great.
- > **Protip:** This is a great place to use "YE bonds" to allow students to invest in the ideas they like best. Give each student 2 or 3 YE bonds and have them write their names on them. Each student then uses their bonds to "vote" on other groups ideas (students may not vote on their own ideas). After votes/ bonds have been cast, each team can split them up amongst teammates or hold them as a group. Exchange bonds for YE dollars. You as teacher decide the exchange rate (bonds to YE dollars). You may then wish to hold a small auction, allowing students to purchase items using their YE dollars.

## ACTIVITY DEBRIEF

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- > Some of the core ideas you want to draw out of your debrief are:
  - Human-centered design – empathy for the person or people you are designing for, and feedback from users, is fundamental to good design.
  - Show don't tell – Creating experiences, using visual illustrations, communicating your vision or ideas in a way that is meaningful to the customer is valuable.
  - Experimenting and prototyping – this is not simply to validate your idea(s), but is integral to building, thinking and learning so we can for mutually long-term benefit.
  - The power of iteration – we went through this exercise at a fast pace so students can experience an entire design cycle quickly. By going through the challenge of interviewing twice, sketching twice, and getting feedback or testing with your partner twice, we reach better outcomes. Iterating solutions or having a growth-mindset, is key for business to sustain long-term success.
- > Ask students, "How did the empathy and research process inform your design?"
- > Ask the designers, "How did testing and getting feedback inform your design?"
- > Ask the group, "What was the most challenging part of the process?"
  - Some may say the time given or their inability to draw. Did the scarcity of time prevent them from generating quality ideas or just from making a better drawing? Did their inability to draw prevent them from generating quality ideas or just from making a better drawing?
- > How important is trial and error to the process, and ultimately to the quality of the finished product?
- > Ask the group, "Can we draw any correlations between the design thinking process and the foundational values?"
- > How does the practice of empathy correlate to the Foundational Values?
- > Did the shared knowledge of the group add value to the ideation process, and the finished product? How?
- > In what ways did the innovations created add value for their clients? for themselves? for society?
- > What were some of the opportunities your group saw in looking for ways to meet the needs of your client?
- > Did your group have discussions about the opportunities to meet the needs of your client?
  - How did your group make decisions about which opportunities to take action on and which opportunities you would not address with your final product? Explain your groups thought processes.
- > How did your group demonstrate an entrepreneurial mindset during the design thinking process?
  - What were some specific behaviors you saw in your groups that demonstrated an entrepreneurial mindset?
- > During the process did your group consider the resources needed to create value?
  - How important to the design thinking process is taking into consideration the best use of resources? Why?
- > Do you think the final product your group created, benefited from being true to the process? Explain.
- > Can a failed innovation add value? Why or Why not?