**Flint Regional Science & Engineering Fair**
**Inspiration, Invention, Innovation**

# TOPIC 3:
# IDENTIFYING A PROBLEM

# Identify a Problem – We will…

- **Identify the Need**
  - What are the problems that exist?

- **Research the Problem**
  - Does a solution already exist? Research current solutions.
  - Talk to people from many different backgrounds and specialties to find possible solutions and ideas that might be adaptable to your needs.
  - Search the Internet (and other resources) for how others have tried to solve this problem.
  - Who is most affected by the problem? Talk with them.

- **By the end of this step, you will have:**
  - Chosen a project to solve and have a clear idea of what the problem entails.

# Where to Find a Problem to Solve?

Edited from: Invention Convention Curriculum – Inventing https://youtu.be/5iLxce4bZ0Q

# Where to Find a Problem to Solve?

- That was one packed video!

- What did you take away from the video?

# Where to Find a Problem to Solve?

- That was on packed video!!

- What did you take away from the video?

- That is what we are going to do in this class!

## *LET'S GET STARTED*

Observe & Define Problems

Do Background Research

# Identifying a Problem

- The biggest problem with _____

  is that _____.


This is the place to complain about something that
isn't working as you would like or is annoying!

# Identifying a Problem

- Example:
  - The biggest problem with **my smoke detectors** is that when it is beeping because the battery is low, it is **hard to figure out which one has the low battery**.
  - The biggest problem with my **automatic cat feeder** is that **the cat bangs on it to get extra food (and is rewarded with extra food).** In addition to being annoying and giving the cat extra food, this banging is marring my walls and China cabinet.

- You may find these problem:

  At home                          At school                          In your community

  On the news                      Anyplace

# Identifying a Problem – Wishful Thinking

- **I wish _____ like_____.**

EXAMPLE

- Inspiration:
  - You notice that a woodpecker pecks on hard a surface – there are lots of impacts on the head, yet there is no brain damage/concussion.

- Statement:
  - **I wish** I could design safety gear to protect football players from concussion **like** the woodpecker's head is protected when he pecks.

  **NOTE:** This is an example of looking to nature for an example (Biomimicry).

# Identifying a Problem – Everyday Objects

**Object**

**Problem**

| |
|---|
| • Tissue Box (Oblong) |
| • |
| • |
| • |

| |
|---|
| • |
| • |
| • |
| • |

# Identify Problems

https://www.youtube.com/watch?v=4ZrmFrLkooE&t=58s

# Identify Problems

- What problem was the inventor trying to solve?

- Where did the inventor get his ideas?

- What research do you think the inventor had to do?

- Who might the inventor have talked with before designing and building his invention?

- What might have happened if the invention was built before doing research?

# Empathy/insight –
# feel what the other feels



https://www.youtube.com/watch?v=Q3XcoF4ij1A

# Empathy/insight – feel what the other feels

- Inventions need to meet needs.
    - Needs/wants are determined by what others think feel, see, do, say, and hear.
    - Understand the problem – only then can you find a good solution.

- From the perspective of the parent & child:
    - Quotes & defining words (might have deeper meaning)
    - Actions & behaviors
    - Thoughts & beliefs
    - Feelings & emotions

# Understanding Problem/Insight –
# 5 W's & 2H's

## 5 W's

- **What** is the problem?
- **Who** does it affect?
- **Where** does it happen?
- **When** does it happen?
- **Why** does it happen?

## 2 H's

- **How**:
  - does it happen?
  - does it affect the people involved?
  - does it affect the environment/surrounding?
- **Have** others tried to solve it?*
  - What were their solutions?
  - Why didn't their solution work?

*While looking how others have tried to solve the problem, you should notice if your solution has been tried. If it has, you need to do something different or justify trying it again.

# To Do:

- Record everything in your log-book - *especially these next four bullet points*!

  - Observe surroundings to identify problems. Record as many as possible. (Minimum Goal: Elementary – 10 problems, Junior – 20 problems, Senior – 30 problems.)

  - Choose 3 potential problems you may want to solve. (*Please*, include your parents in this decision).

  - Research your 3 potential problems – answer 5W's & 2H's

  - Have at least three information sources (ex. websites, books, magazines…) for each problem.

Observe & Define Problems

Do Background Research