# Newton's Second and Third Law: The Class Story

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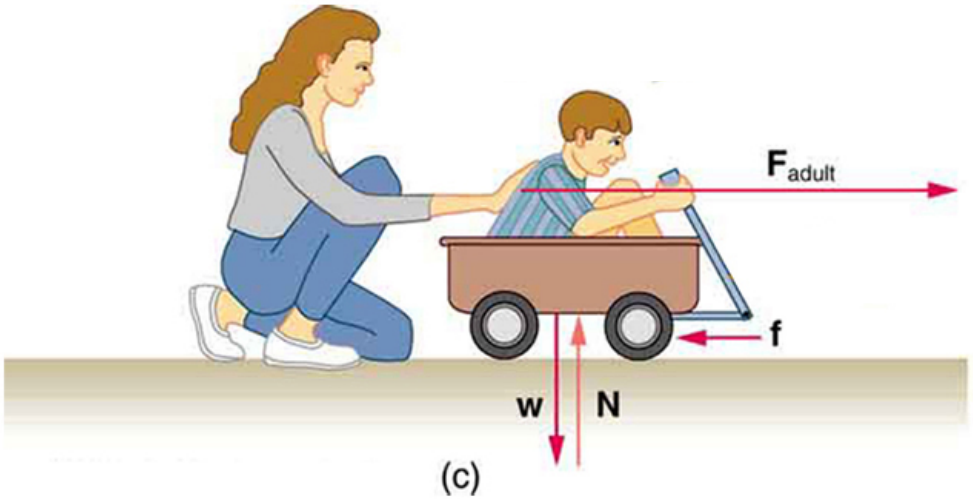
**The Class Story**: Your class develops a fun story together. Each person shares one thing that happens in the story or a reaction from one of the characters.

# Inspiration for the Class Story

- Free Body Diagramming after Newton's Third Law
- Distinguishing between interactions two entities versus net forces acting on one object

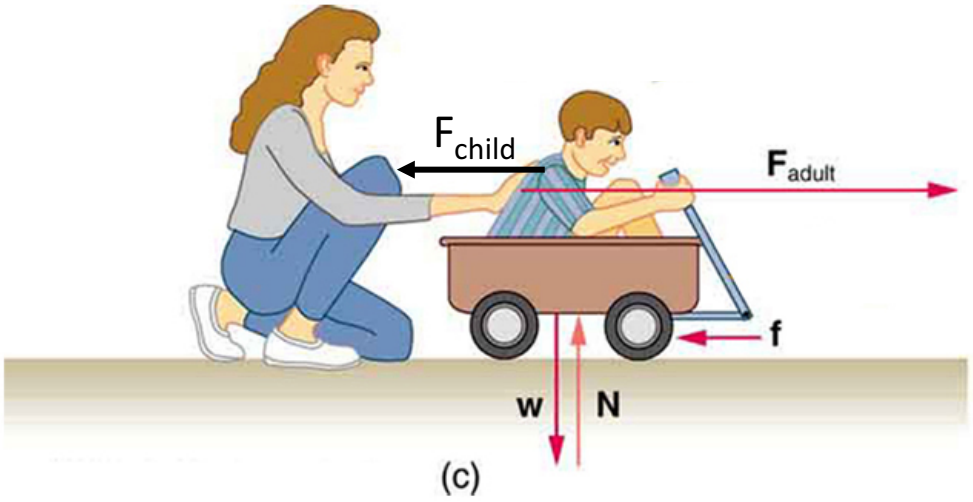
# Free Body Diagram

- Identifying forces exerted **ON** the object



# Free Body Diagram after the Third Law

- Action Reaction Pairs erroneously get identified as forces acting on the object



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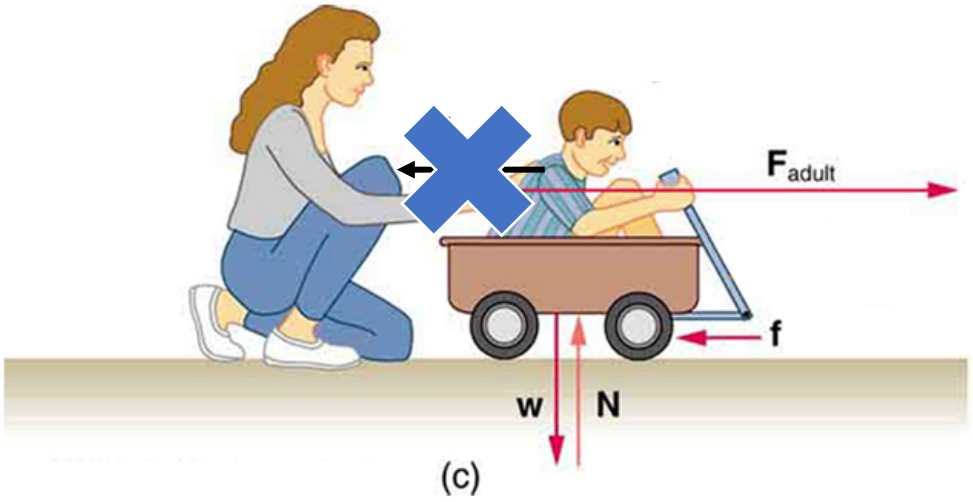


# The Class Story

- Prompt the class to come up with a class story
- Have the class come up with a main character as a group– Fun!
- Rules:

1) Something that happened to the main character
2) How the main character reacted

# Class Story: Charlie at the Beach

- What Happens to Charlie?

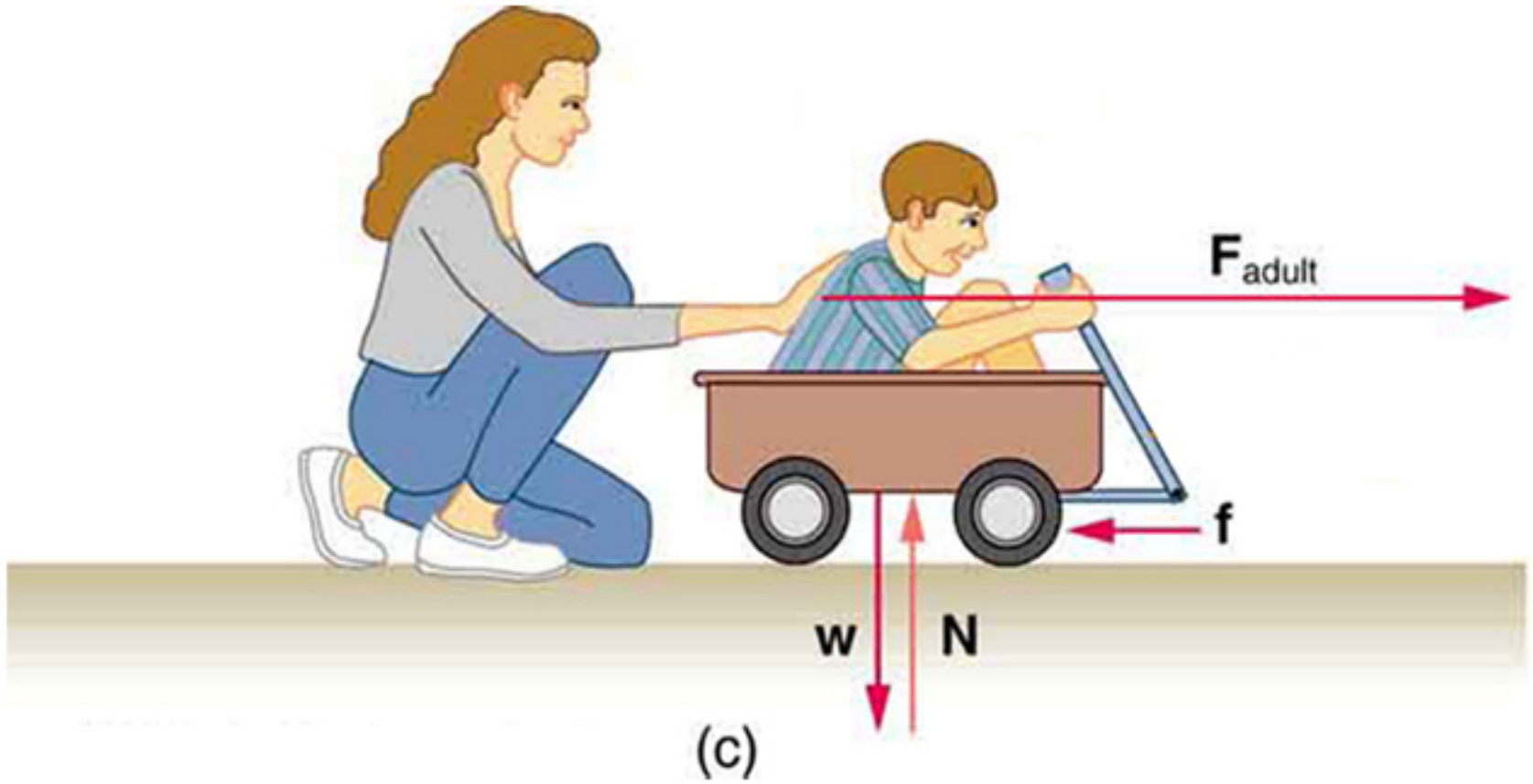
- Hit by a ball
- Gets sand in his eye
- Splashed by the water

- How Does the Charlie React?

- Surprised
- In Pain
- Joy

# Let’s Try It!

# Free Body Diagramming: Interaction



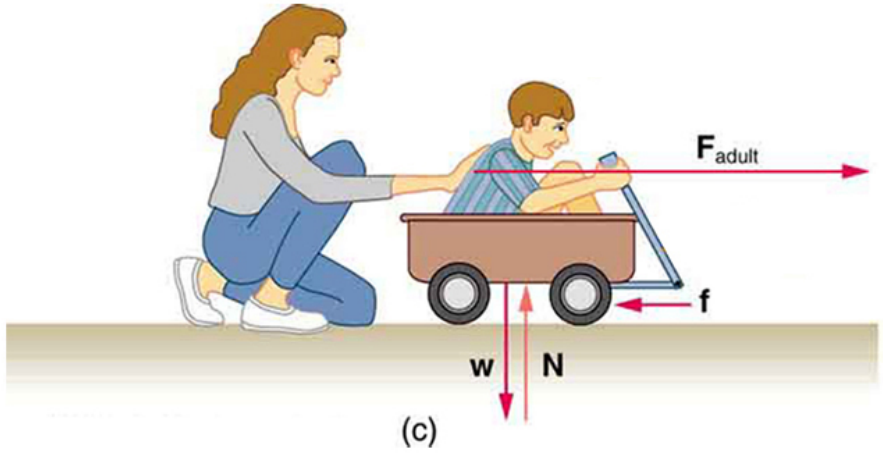
# Class Story: Child in the Wagon

- What Happens to the Child?

- Pushed forward by his mother
- Pushed up on by the ground
- Pulled down by the earth

- How Does the Child React?

- Pushes back on his mother
- Pushes down on the ground
- Pulls up on the earth



# Metonym

- Use a word or figure of speech to replace a concept
- Class Story creates a metonym for the Third Law
- Is there “surprise” here?

# Benefits

- Engages and Invites all majors to participate
- Creates a different relationship with the concept
- Promotes Teamwork

# Challenges

- Cause versus Effect
- 3rd law is action/reaction– only focusing on reaction to make the comparison
- Some students don’t want to be involved

# Summary

- Class story is a fun way to introduce Newton's Laws
- It can be quick and great for teambuilding/getting everyone involved
- Helps articulates what is happening versus an interaction/reaction of the system

# Differences between two laws

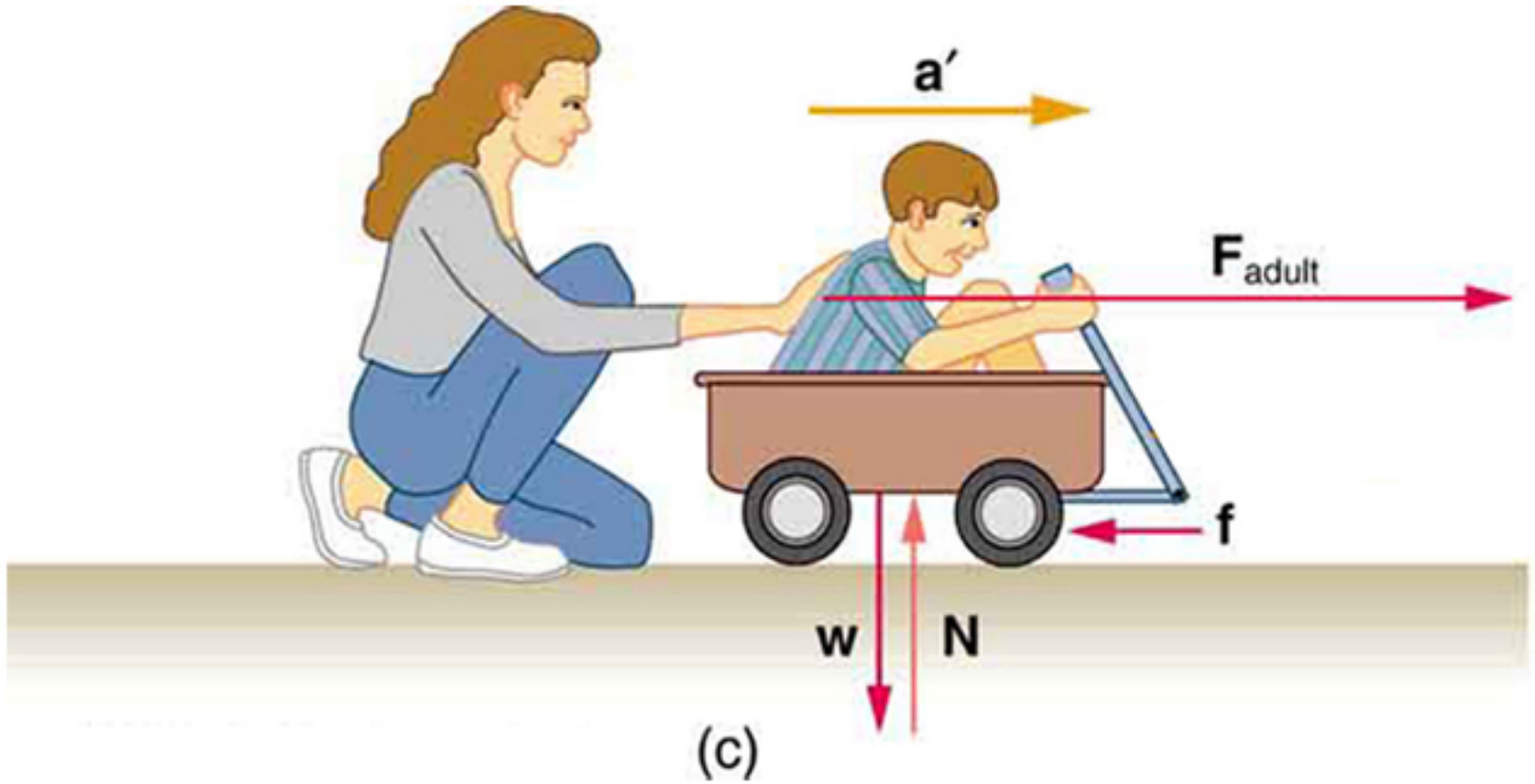
## Second Law

- Isolated Entity [System]
- System Acted Upon BY External Force
- One Object

## Third Law

- Action/Reaction Pair
- Environment AND system
- Interaction

# Free Body Diagramming: One Object



# Free Body Diagramming: Interaction