

# Simple Machines



# Lesson Objective:

Learn the 6 Simple Machines that can be combined to make compound and complex machines.

## Success Criteria:

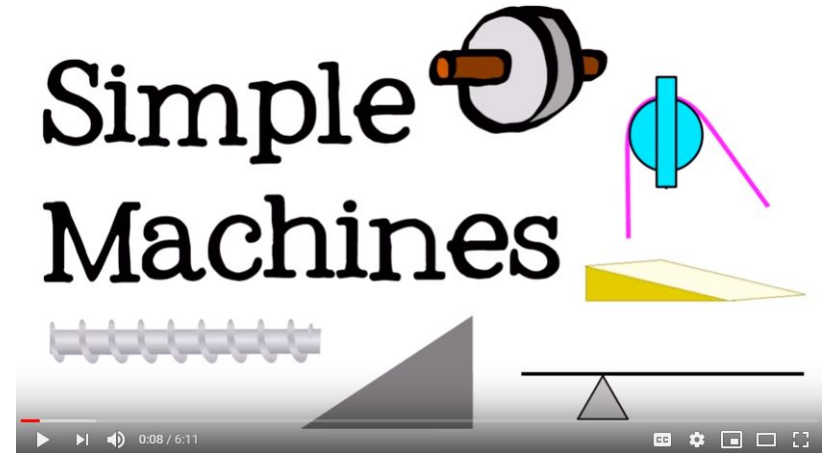
Third Grade Students can list and identify all 6 Simple Machines and can use those to draw imaginative inventions or places that use those machines - like playgrounds or amusement parks.

# First Let's Look at Simple Machine Interactive Websites

<http://www.beaconlearningcenter.com/WebLessons/SimpleMachines/machines004.htm>

<http://www.cosi.org/downloads/activities/simplemachines/sm1.html>

<https://www.youtube.com/watch?v=fvOmaf2GfCY>



# List of 6 Simple Machines

**Pulley**

**Wheel and Axle**

**Wedge**

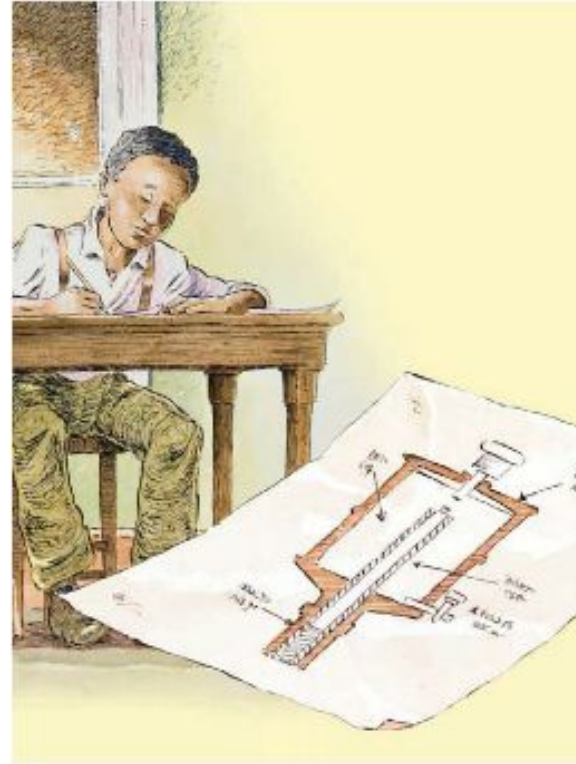
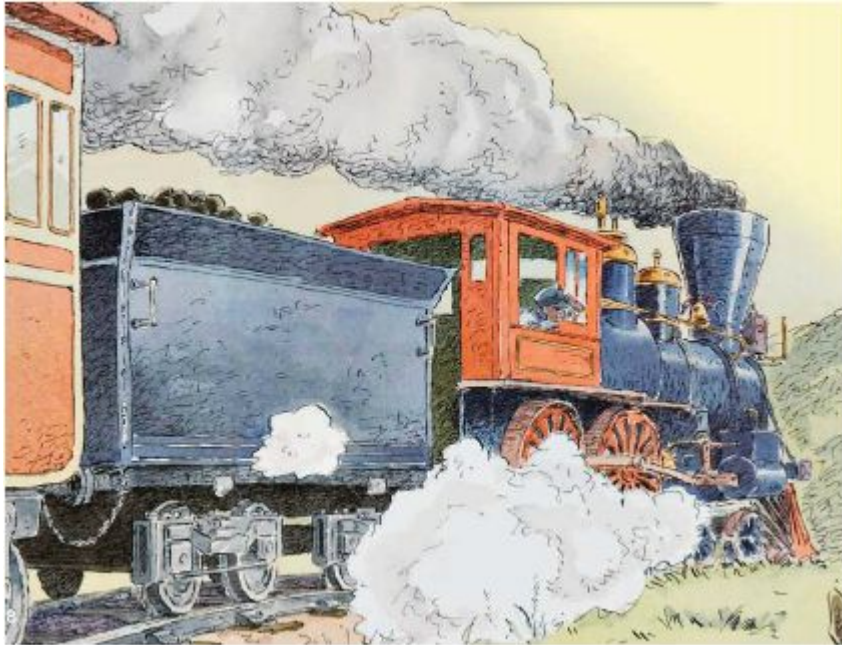
**Inclined Plane**

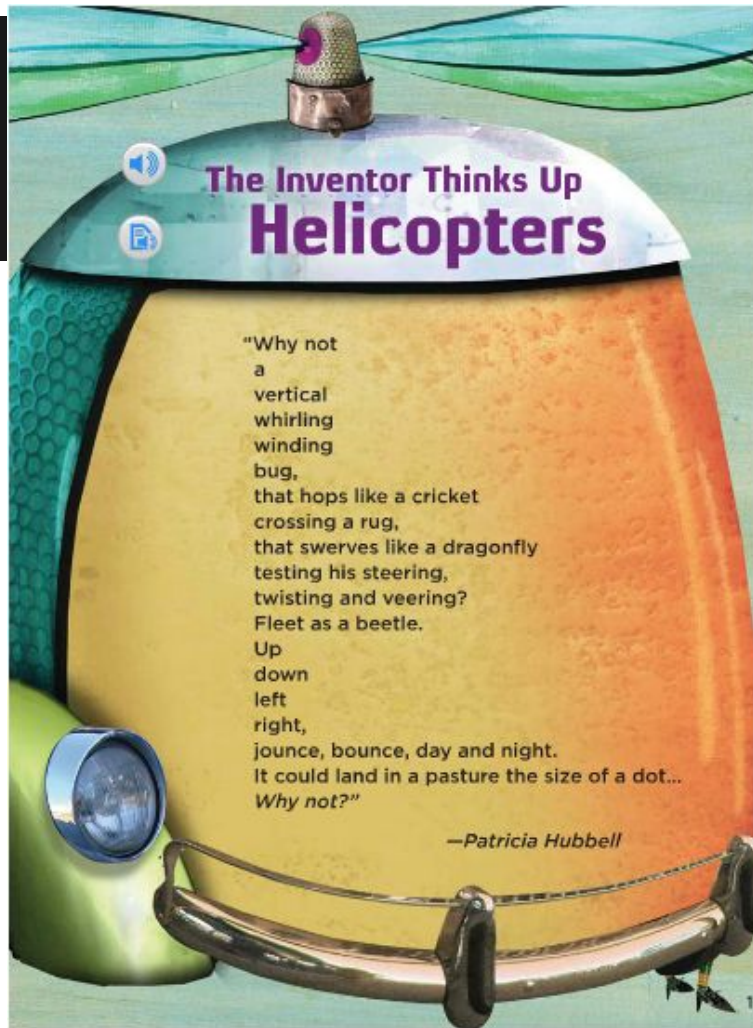
**Lever**

**Screw**

# Wonders Connection

## Elijah McCoy's Oil Cup

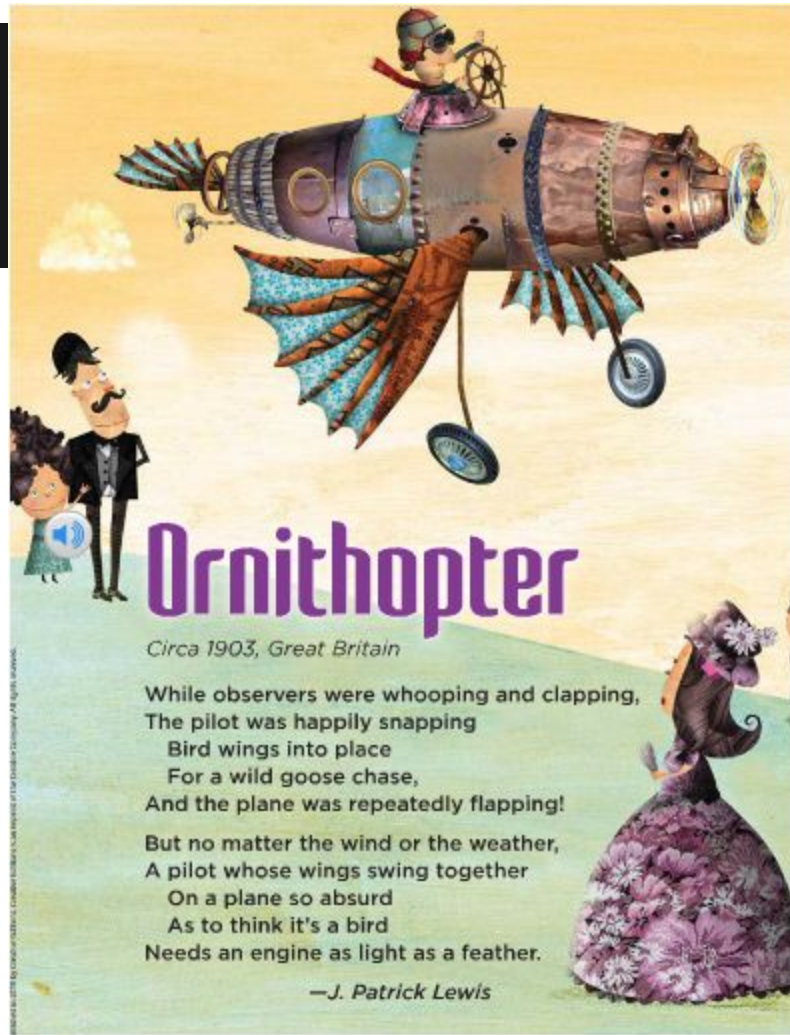




## The Inventor Thinks Up Helicopters

"Why not  
a  
vertical  
whirling  
winding  
bug,  
that hops like a cricket  
crossing a rug,  
that swerves like a dragonfly  
testing his steering,  
twisting and veering?  
Fleet as a beetle.  
Up  
down  
left  
right,  
jounce, bounce, day and night.  
It could land in a pasture the size of a dot...  
Why not?"

—Patricia Hubbell



## Ornithopter

*Circa 1903, Great Britain*

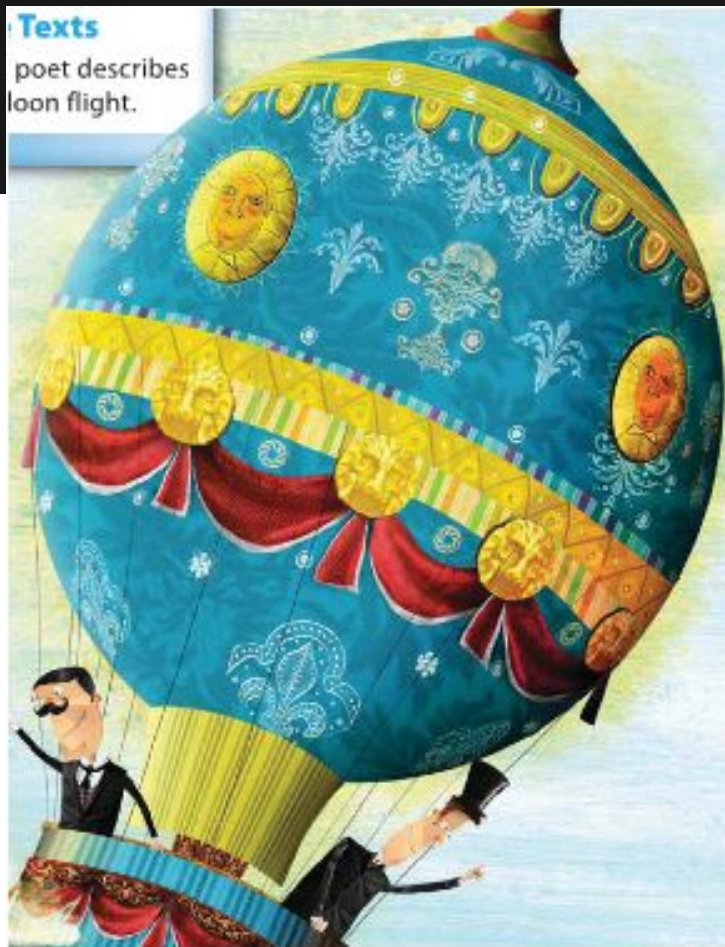
While observers were whooping and clapping,  
The pilot was happily snapping  
Bird wings into place  
For a wild goose chase,  
And the plane was repeatedly flapping!

But no matter the wind or the weather,  
A pilot whose wings swing together  
On a plane so absurd  
As to think it's a bird  
Needs an engine as light as a feather.

—J. Patrick Lewis

## Texts

poet describes  
loon flight.



## Montgolfier Brothers' Hot Air Balloon

*1783, France*

We stuffed the straw in the burner,  
We stoked it furiously,  
And ours was the first balloon to rise  
Merrily aerially!

We might have gone much farther,  
We flew superhumanly  
Till our smart little cart started falling apart,  
Sagging diagonally.

Our adventure over Paris  
Was a twenty-five-minute flight.  
And who was there but Benjamin Franklin,  
Waving (without his kite)!

—*J. Patrick Lewis*



Observing nature gives us ideas for new things. George de Mestral didn't set out on his walk thinking he would create a new fastener. But by being curious and observant, he did just that.

## Nature Did It First

Designers often start with a problem. They may look for solutions in the natural world. Nature has been making and testing designs for a long time! Nature often has the answers to questions people ask.

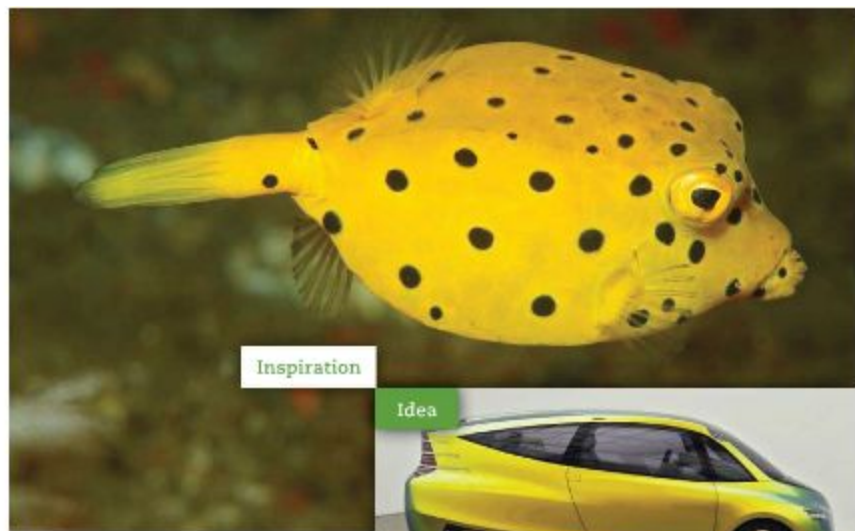
More than a hundred years ago, the Wright brothers, Orville and Wilbur, wondered how to fly. For an answer, they watched birds, the flying experts. Watching bird wings gave them ideas on how to design airplane wings. While bird wings are not **identical** to plane wings, they both can fly. The Wright Brothers built an airplane in 1903. It was the first to lift up, up, and away!

Leonardo da Vinci was an artist and inventor. He lived more than 400 years ago. He looked at birds' wings and then drew plans for many flying machines.



Idea

Inspiration



Inspiration

Idea



## Smart Shapes

Fish and cars share a problem. It takes energy to move a fish through water and a car through air. Fish get energy from food. Cars get it from fuel.

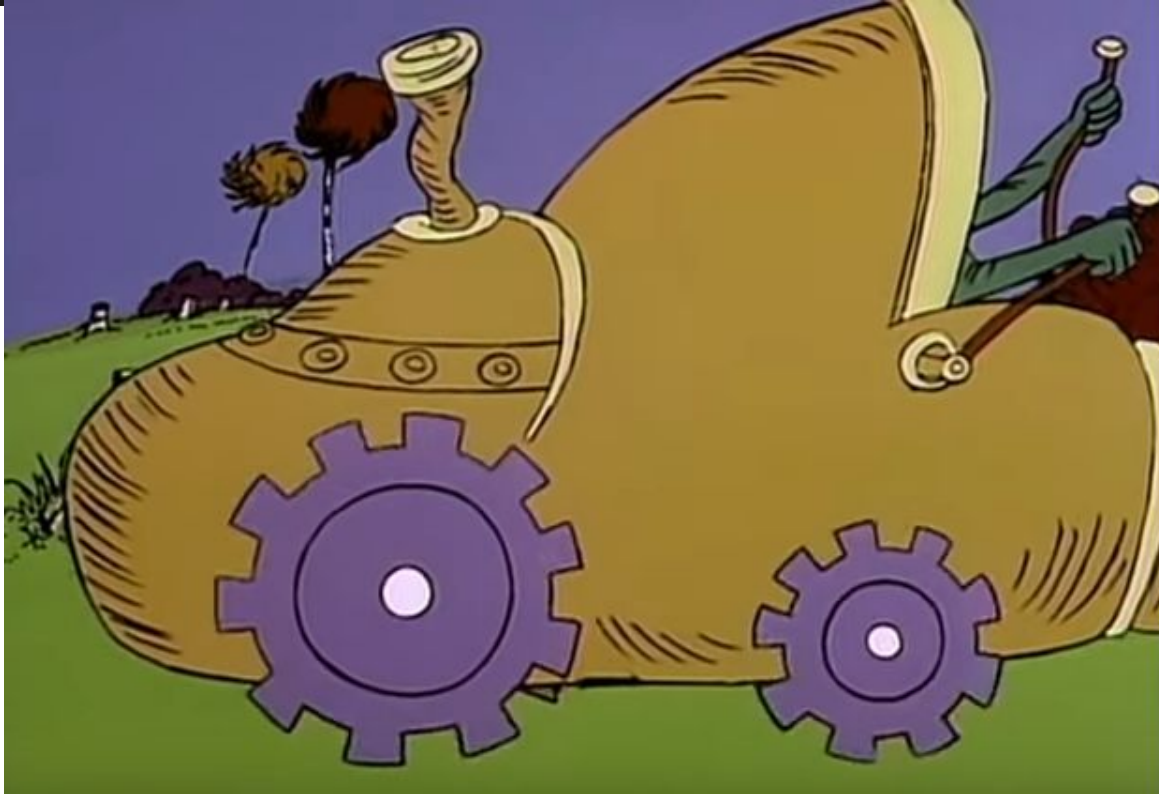
To create a new fuel-saving car, designers studied the shape of fish. They found that the boxfish's square shape was streamlined. This means that the fish slips through the water without wasting energy. By making the new car's shape **similar** to that of the boxfish, they created a car that saves gas.

The car's frame is also similar to the fish's skeleton. The metal frame is thick in some places and thinner in others, just like the fish's bones. This saves on materials and puts strength where it is needed most.

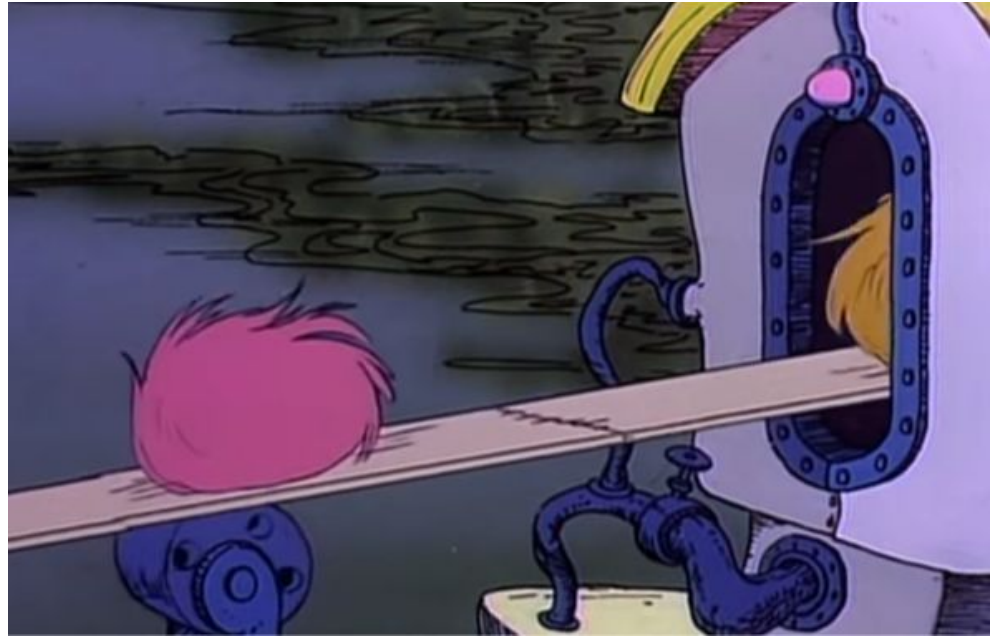
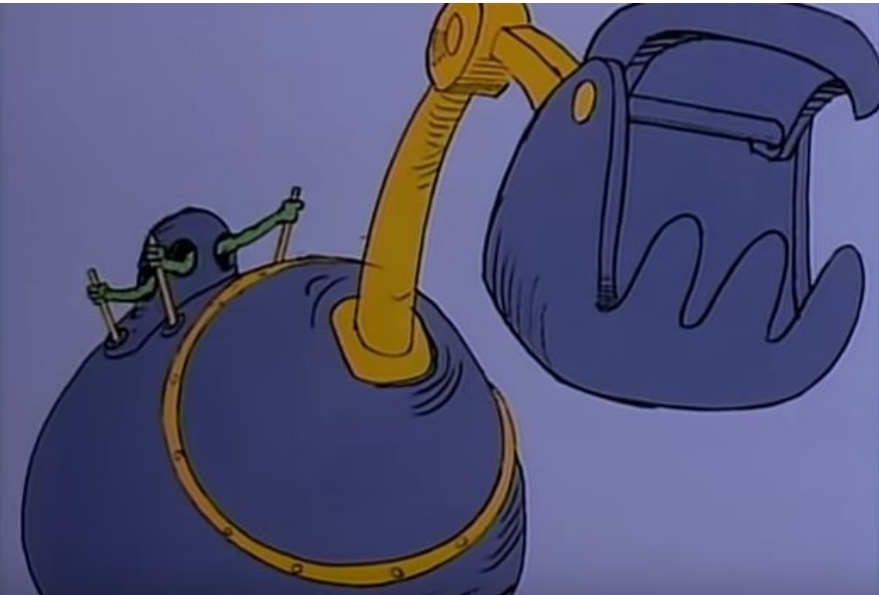
Watching fish gave car designers a new idea for a car's shape.



# Dr. Seuss Simple Machines



# Dr. Seuss Simple Machines



# Dr. Seuss Simple Machines

