

The Scientific Method

AN INTRODUCTION TO PHYSICS AND THE SCIENTIFIC METHOD

In partnership with Sky Zone Chesterfield, Newspapers in Education is exploring Newton's Law of Motion and the Scientific Method. Use these materials to introduce physics to your students or get ready for a visit to Sky Zone Chesterfield. Students will be engaged in real-world examples of force, motion and Newton's Three Laws.



By combining trampolines and learning, students will have a learning experience they will never forget!

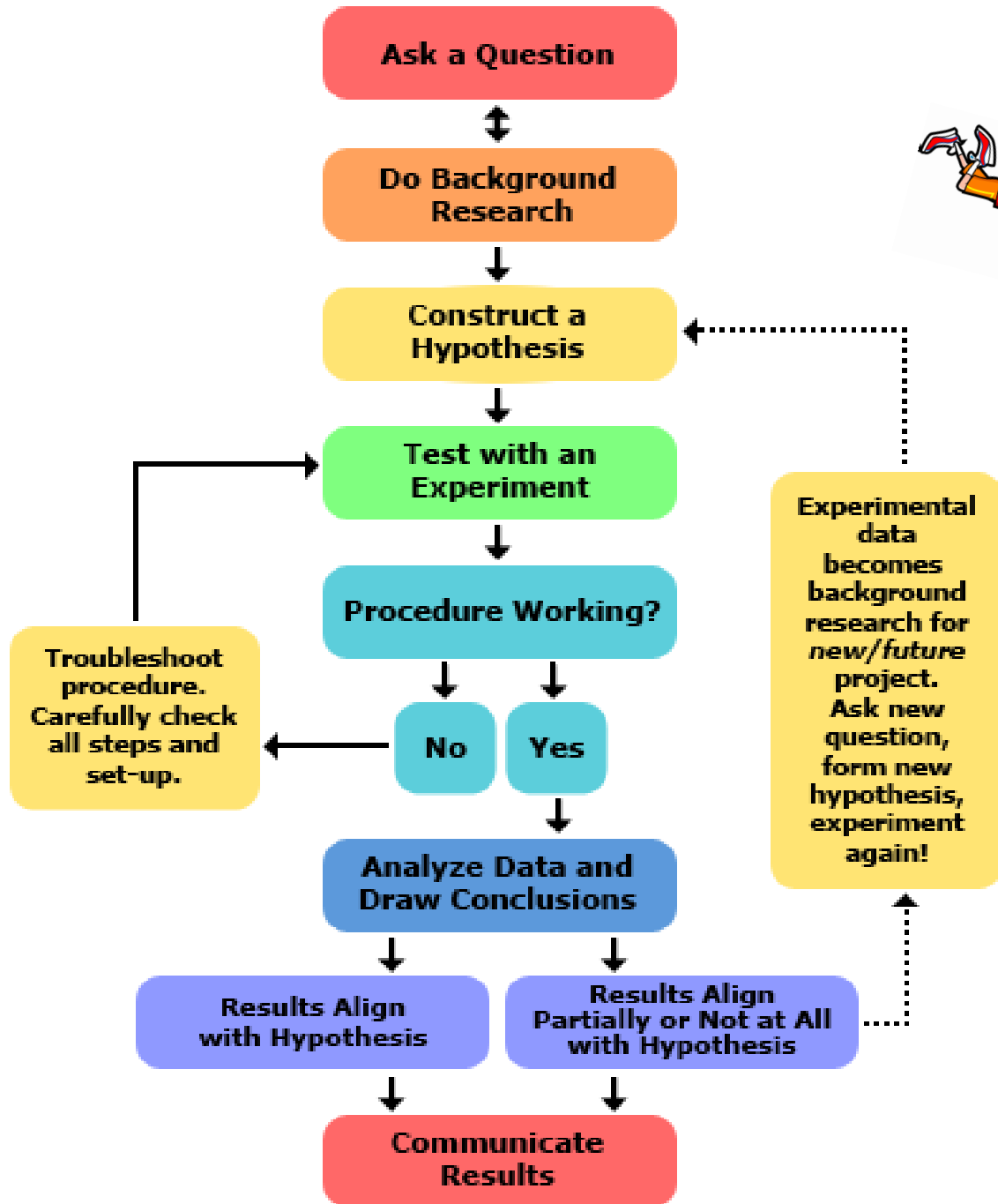
Steps of the Scientific Method	Details on Each Step
Ask a Question	The scientific method starts when you ask a question about something that you observe and ask how, what, when, who, which why or where?
Do Background Research	You don't have to start from scratch! Explore print and digital resources to conduct research and to ensure you don't repeat mistakes from the past.
Construct a Hypothesis	A hypothesis is an educated guess about how things work. It is an attempt to answer your question with an explanation that can be tested. A good hypothesis allows you to make a prediction: If ____ happens, then ____ will happen.
Complete an Experiment	Your experiment tests whether your prediction is accurate and if your hypothesis is supported or not. It is important for your experiment to be a fair test. You conduct a fair test by making sure that you change only one factor at a time while keeping all other conditions the same.
Analyze Data and Draw Conclusions	Once your experience is complete, you collect your measurements and analyze them to see if they support your hypothesis or not.
Communicate Your Results	Communicate your results. Professional scientists publish findings in a scientific journal or by presenting their results on a poster or during a talk at a scientific meeting.



For the complete curriculum and to learn more about the Skyience Field Trip, please visit STLtoday.com/NIE.

The Scientific Method

AN INTRODUCTION TO PHYSICS AND THE SCIENTIFIC METHOD



For the complete curriculum and to learn more about the Skyience Field Trip, please visit STLtoday.com/NIE.

Key Terms

AN INTRODUCTION TO PHYSICS AND THE SCIENTIFIC METHOD

In partnership with Sky Zone Chesterfield, Newspapers in Education is exploring Newton's Law of Motion and the Scientific Method. Use these materials to introduce physics to your students or get ready for a visit to Sky Zone Chesterfield. Students will be engaged in real-world examples of force, motion and Newton's Three Laws.



By combining trampolines and learning, students will have a learning experience they will never forget!

Match the word on the left with the correct definition on the right.

1. Independent Variable	a. The variable that you have control over, what you can choose and manipulate. It is usually what you think will affect the dependent variable
2. Dependent Variable	b. An educated guess about how things work. It is an attempt to answer your question with an explanation that can be tested.
3. Testable Variable (controlled)	c. The possible outcome of the experiment; the effect.
4. Hypothesis	d. One that you keep the same for all the conditions of your experiment.

Answers: 1, c; 2,a; 3,d; 4, b



For the complete curriculum and to learn more about the Skyience Field Trip, please visit STLtoday.com/NIE.

Experiment

AN INTRODUCTION TO PHYSICS AND THE SCIENTIFIC METHOD



**Practice determining the variables in the simple experiment below.
Be sure to make a hypothesis before you start!**

MATERIALS:

- A glass of water, filled all the way to the top
- A small piece of cardboard (it must be larger than the mouth of your glass)

WHAT TO DO:

1. Place the piece of cardboard on the rim of the glass. Make sure there are no air bubbles between the cardboard and the water in the glass.
2. Hold the glass with one hand and hold the cardboard with your other hand. Slowly turn them upside down (over a sink is best).
3. Let go of the cardboard so you're only holding the glass. The cardboard should stay in place and the water will remain in the glass.

DON'T FORGET THE SCIENCE!

Since there's no air inside the glass, there's also no air pressure inside it. Because the air pressure outside the glass is greater than the air pressure inside the glass, the cardboard is held in place, which in turn holds the water inside the glass.



For the complete curriculum and to learn more about the Skyience Field Trip, please visit STLtoday.com/NIE.

Laws of Motion

AN INTRODUCTION TO PHYSICS AND THE SCIENTIFIC METHOD

In partnership with Sky Zone Chesterfield, Newspapers in Education is exploring Newton's Law of Motion and the Scientific Method. Use these materials to introduce physics to your students or get ready for a visit to Sky Zone Chesterfield. Students will be engaged in real-world examples of force, motion and Newton's Three Laws.



By combining trampolines and learning, students will have a learning experience they will never forget!

NEWTON'S 3 LAWS OF MOTION

NEWTON'S 3 LAWS OF MOTION	
First Law	An object at rest will remain at rest unless acted on by an unbalanced force. An object in motion continues in motion with the same speed and in the same direction unless acted upon by an unbalanced force. This law is often called "the law of inertia".
Second Law	Acceleration is produced when a force acts on a mass. The greater the mass (of the object being accelerated) the greater the amount of force needed (to accelerate the object). $F = ma$
Third Law	For every action there is an equal and opposite re-action.



For the complete curriculum and to learn more about the Skyience Field Trip, please visit STLtoday.com/NIE.