



Grade Level: Grade 4

Title:

Action and Reaction & Effects of Our Actions

Denomination: Catholic

Lesson ID: PS-G4-02-CA

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PHYSICAL SCIENCE - GRADE 4 - CATHOLIC
LESSON 2 – Action and Reaction in the Physical and Spiritual Worlds

GENERAL CONCEPT: Action and Reaction

SCIENCE CONCEPT

Actions cause corresponding reactions.

GOAL OF SCIENCE LESSON

Student will learn that every action has a corresponding reaction.

OUTCOME EXPECTED

Student will use the science skills of prediction, experimentation, and observation.

RELIGION CONCEPT

Our actions cause corresponding reactions in the Church: the People of God

GOAL OF RELIGION LESSON

1. Student learns that each of us can affect the Church.
2. Student will learn some of the ministries done by members of the Church.

OUTCOME EXPECTED

Student will do some project to help other people.

MATERIALS NEEDED

- Pencil
- Balloon
- Slightly damp dirt or sand – don't tell the student that it is damp.
- Electric or battery powered fan
- Science Journal Page: ACTION AND REACTION

SCIENCE METHODOLOGY

- **SHOW** student the uninflated balloon.
- **ASK:** If I blow air into this balloon, how will the balloon react?
- **HAVE** the student write the prediction on the Science Journal Page by the Phrase:
PERSON – AIR- BALLOON = (Student writes prediction after the equal sign).

MATERIALS NEEDED

- Parish Directory of Ministries (See Links)
- Religion Notebook
- Pencil/pen
- Pictures of people in ministry – Most effective if they are pictures from your parish, but you can use computer images, magazine pictures. See Links suggestions.
- Ideas for short term service project for the class
- Positive feedback from pastor, principal and parishioners about the service project

RELIGION METHODOLOGY

- **ASK:** If you do something good, who does it affect? For example, you see a piece of paper on the floor. You pick it up and place it in the recycle bin. What effect does your action have? (Area is cleaner, paper is recycled, fewer trees are cut down, and good example is given.)
- **SAY:** The same thing is true for the bad (sinful) things we do. They always have an effect and cause a reaction in the Church – the People of God.

- **EXPERIMENT 1:** Have a student blow up the balloon. Point out all the steps.
 1. Person does the action – blowing.
 2. Balloon reacting by expanding.
 1. Balloon reacting by expanding
- **HAVE** the student continue to hold the balloon for the next experiment.
- **SAY:** Use the Science Journal Page to predict what will happen if this student lets go of the balloon. Write your prediction like this:

**Person – holding expanded balloon – lets it go =
(Write your prediction here).**

- **EXPERIMENT 2:** Have the student let the balloon go.
- **ASK:** Was your prediction correct? How were you able to correctly predict both reactions? (Experience)
- **SHOW** the student the sand or dirt.
- **ASK:** What happens when the wind blows over the sand or dirt. (It will blow away.)
- **PREDICT** what will happen if a student turns on the

- **SHOW** the pictures of people in ministry in the Church. Allow the student to identify what the person is doing. (Lector, Eucharistic Minister, bringing Communion to the sick, pushing a wheelchair, preparing food for a post-funeral meal, singing in the choir, serving Mass, playing a musical instrument, usher, coach, heading a committee, working at the picnic, driving someone to Church, Greeter, St. Vincent de Paul member, parish nurse, teacher, visitor to the sick, parish council meeting, Eucharistic Adoration, prayer, etc.)
- **SAY:** Each of these actions by people serving in the Church causes a reaction. What reaction could happen by each person?
- **DISCUSS** the possible positive reactions. Talk about the good that is brought to the Church by its members. Point out that because we are one Body of Christ, everything we do affects everyone else.
- **ASK:** What good happens when you help a classmate who is carrying a heavy box? (Energy is saved; good example is given, no one has to work too hard; no one has to work alone.)
- **ASK:** What happens if you don't share a treat or include a classmate in a party? (Person feels alone; community is not a whole group; one person feels sad so the Body of Christ is not happy; one person feels

fan and points the air movement toward the sand or dirt. On your Science Journal Page write your prediction in this way:

Person – fan – air to dirt/sand = (Write your prediction here.)

- **EXPERIMENT 3:** Have a student turn on the fan and direct the air to the damp sand or dirt.
- **ASK:** Was your prediction correct? (No. The sand/dirt didn't move or hardly moved.)
- **ASK:** Why was your theory incorrect? (You didn't observe all the conditions. The wetness of the sand affected its weight and the air wasn't moving fast enough to move it at the same rate as when the sand was dry.)
- **ASK:** So what did you learn? (Observation of the conditions is important.)
- **ASK:** What do we mean when we say that every action has a corresponding reaction?
- **LIST** the following:
 1. The amount of air put in a balloon allowed it to expand that much and no further.
 2. The amount of air in the balloon allowed it

better than another person so the Body of Christ suffers from that person's pride.)

- **ASK:** What action could we do as a class to have a positive reaction in the Church? Plan a short-term service project for your class.
- **ASK** the pastor, the principal, and several parishioners to write positive feedback notes once the project is finished.
- **POSIT:** In our parish, we do good actions which bring about good reactions in the Church.

to fly through the air that much and no more.

3. The fan's movement of air allowed the air to move the sand/dirt only that much and no more.

- **HAVE** each student think of an experiment that they could do at home which would demonstrate action and reaction. (Suggestions; playing baseball, basketball, soccer, roller skating, sidewalk chalk, etc.)
- **HAVE** each student write their experiment choice on the Science Journal Page, do the experiment at home, and write the results on the Science Journal Page.
- **HAVE** the student report on the experiment either orally or through some illustration.
- **POSIT:** Every action has a corresponding reaction.

RESOURCES AND LINKS

Science Links

(Teacher) Newton's Three Laws of Motion

<http://csep10.phys.utk.edu/astr161/lect/history/newton3laws.html>

(Teacher and Student) Good graphics chart to print and copy for students.

<http://www.grc.nasa.gov/WWW/K-12/airplace/newton3.html>

Religious Links

(Teacher) Pictures of Catholic people doing ministry

<http://www.stedithstein.org/ministries.htm>

(Teacher) Free Pictures of a variety of Catholic ministries in a parish

<http://home.catholicweb.com/stcanera/index.cfm>

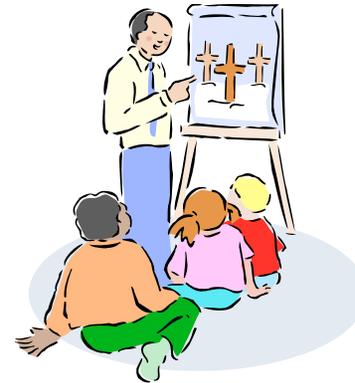
(Teacher) Web link to any Catholic Diocese and many parishes in the USA.

<http://www.parishesonline.com/scripts/default.asp>

**KEY WORDS –PHYSICAL SCIENCE – GRADE 4
LESSON 2 – CATHOLIC**



**ACTION
REACTION
CAUSE
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THEORY**



**GOOD
EVIL
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