Scientific Investigation and Reasoning: What makes people litter?

Introduction:

A nonprofit group named Keep America Beautiful conducted a nationwide study on why Americans litter. *Littering Behavior in America,* new research from Keep America Beautiful, reports on three nationwide studies—behavior observations, intercept interviews, and a national telephone survey. These explore how frequently people litter, the individual and contextual variables that contribute to littering, and the effectiveness of various approaches to reduce littering. The survey documents the composition of litter across America, its quantity, and locations, and the direct and indirect costs of litter to communities and businesses and compares them to a 1969 study.

Researchers literally watched people litter in public places and then went and asked them survey questions! The study found some really interesting clues about why we don't dispose of our trash properly.

Why is litter a big deal? Besides being ugly, litter has environmental consequences:

1. Wind and weather, traffic, and animals move litter into gutters, lawns and landscaped areas, alleyways, and parking structures.
2. Litter near storm drains and beach debris are also likely to wash into local waterways, with potential for serious environmental contamination.
3. Animals can be seriously hurt or killed by eating or becoming entangled in litter. Litter (especially plastic) can hurt us as humans by contaminating our drinking water and food on a microscopic level.

Litter is primarily the result of individual behaviors.

- In the 2009 national survey, the first since 1969, 15% of individuals self-reported littering in the past month.
- In 1969, 50% admitted littering. While self-reported littering rates have declined in the past 40 years, individual littering—and litter—persists.
- About 85% of littering is the result of individual attitudes. Changing individual behavior is key to preventing litter.
- Nearly one in five, or 17%, of all disposals observed in public spaces were littering. The remainder (83%) was properly discarded in a trash or recycling receptacle.
- Most littering behavior—81%--occurred with notable intent. This included dropping (54%), flick/fling of the item (20%), and other littering with notable intent (7%).

The community environment also influences littering behavior.

- A strong contributor to littering is the prevalence of existing litter. About 15% of littering is affected by the environment, or existing litter.

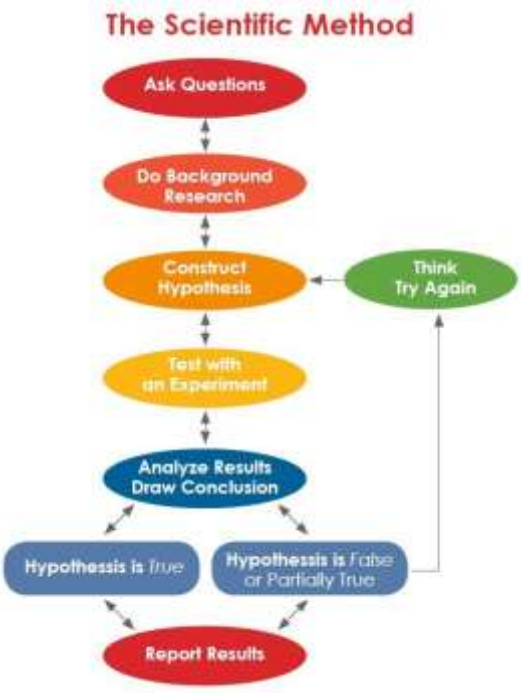
- Trash receptacles are widespread, while ash receptacles are less common. Of the sites observed, 91% had trash receptacles (including dumpsters), but only 47% had ash receptacles. And even fewer had recycling containers (12%).
- Most littering occurs at a considerable distance from a receptacle. At the time of improper disposal, the average estimated distance to the nearest receptacles was 29 feet. The observed littering rate when a receptacle was 10 feet or closer was 12%, and the likelihood of littering increased steadily for receptacles at a greater distance.
- Individuals under 30 are more likely to litter than those who are older. In fact, age, and not gender, is a significant predictor of littering behavior.

Preventing litter requires changing individual behavior—and the environment

- **Make proper disposal convenient and accessible.** Provide sufficient trash, ash, and recycling receptacles. There is a special need for more ash receptacles.
- **Ensure consistent and ongoing clean-up efforts.** Littered environments attract more litter. Decrease the amount of existing litter.
- **Use landscaping, improving the built infrastructure, and ongoing maintenance to set a community standard and promote a sense of personal responsibility not to litter.** Communities that make an effort to "beautify" result in lower rates of littering behavior.
- **Make the most of awareness and motivational campaigns.** Use messaging that highlights social disapproval for littering and a preference for clean, litter-free communities. Messages that show littering as common undermine littering prevention. And keep the focus on individual responsibility.

Methods:

Your class will conduct a litter study in an area on campus or near the school. You could use a playground, park, sports field, etc. Make sure that the site is easily accessible by your class and safe for students to roam around (avoid roads and busy parking lots).



Your class will then conduct the scientific method to determine what kind of study they want to pursue.

1. **Ask questions.**
    a. Why do you think we litter? Where is litter the worst in a place you've seen? What could help the problem?
2. **Do background research.**
    a. Have students read up on litter. Keep America Beautiful (https://www.kab.org) and the Texas Department of Transportation (http://www.dontmesswithtexas.org/) have excellent resources.

3. **Create a hypothesis.**
    a. Keep it simple with students! Try and guide them into a hypothesis that is easily answered by yes/ no. Examples could be:
        i. "Littering will be greater in an area with no trash cans."
        ii. "Putting up a sign saying not to litter will decrease the amount of trash on the ground."
        iii. "If half of the playground is kept free of litter by our class cleanups, we will observe fewer students littering there than a control area where we did not clean."
4. **Test your hypothesis.**
    a. Remember that students need to plan a control for the experiment. A control is an area with no "treatment", that you will compare to an area where they have actively done something they want to test.
    b. Talk about your variables.
        i. Independent variable: what we are changing. Examples could be adding trash cans, conducting cleanups, doing a school campaign.
        ii. Dependent variable: what you are watching to see what happens. You don't have control on the dependent variable, it's an unknown! Examples are number of students that litter, amount of litter on the ground, number of students that report having seen a sign, etc.
5. **Examine your results.**
    a. Use graphs, tables, etc. to visualize your data.
    b. This is a great time to bring in a math component- use averages, means and percentages to display data.
6. **Support or reject your hypothesis.**
    a. Have students discuss the data and draw conclusions.
    b. Does the data support or disprove your original hypothesis?
    c. What could you do in a future study to follow up and learn more?
    d. What was unexpected that could have altered your results?
    e. If you'd like (and have time), you can then design a new hypothesis and test!

Follow Up and Resources:

Make your school aware of your project results! Send a newsletter to parents, display posters in the hall, and engage your PTA or school board to discuss what students found.

We're here to help! The Don't Trash a Good Thing group has partners all over the Houston- Galveston area. Contact us to get in touch with a conservation education professional that can come speak to your class or give some guidance on experiment planning. Email the group at donttrashagoodthing@gmail.com .

Visit our website for links to the Keep America Beautiful study, local conservation groups, educator resources and more! http://www.donttrashagoodthing.org.

References:

The 2009 National Visible Litter Survey and Litter Cost Study, America Beautiful, Copyright 2010 Keep America Beautiful, Inc. – www.kab.org. January 2010