

# How Does Some Corn Pop?



## Welcome to NSTA's Daily Do

Teachers and families across the country are facing a new reality of providing opportunities for students to **do** science through distance and home learning. The **Daily Do** is one of the ways NSTA is supporting teachers and families with this endeavor. Each weekday, NSTA will share a sensemaking task teachers and families can use to engage their students in authentic, relevant science learning. We encourage families to make time for family science learning (science is a social process!) and are dedicated to helping students and their families find balance between learning science and the day-to-day responsibilities they have to stay healthy and safe.

## What is Sensemaking?

Sensemaking is actively trying to figure out how the world works (science) or how to design solutions to problems (engineering). Students **do** science and engineering through the science and engineering practices. Engaging in these practices necessitates students be part of a learning community to be able to share ideas, evaluate competing ideas, give and receive critique, and reach consensus. Whether this community of learners is made up of classmates or family members, students and adults build and refine science and engineering knowledge together.

## Introduction

In today's Daily Do, *How does some corn pop?*, families participate in a **Dinner Table Discussion** (see below) about the phenomenon of popping corn. This sensemaking discussion has four parts:

1. Families raise the question "**How does corn pop?**" by introducing the phenomenon of popping corn. Students and their families observe how popcorn pops making careful observations about what they are seeing both before and after the kernels pop.
2. Families ask students to explain what they currently understand about how and why they think the corn pops.
3. Families prompt students to generate questions about how and why some corn pops.
4. Families read an article and do an activity together to find some answers to their questions about how and why some corn pops and some does not.

## What are Dinner Table Discussions (DTD's)?

This activity is called a Dinner Table Discussion (DTD). Dinner Table Discussions do not have to physically happen at the dinner table. Rather, they are intended to facilitate connections for the family around a discussion about science ideas wherever you may congregate for a meal. Whether you cook dinner at home or order take-out, the Dinner Table Discussions are centered around relevant science phenomena and raise common questions children have about the world around them. The goals of DTD's are to:

1. foster connection among the family through discussion of relevant science ideas.
2. prompt students and their families to think about what they currently know.
3. help students and their families ask what they want to know more about.
4. discover something new that moves everyone along the learning continuum of a particular science idea.

Like Daily Do's, these types of activities are considered "micro-learning experiences". They are not intended to replace classroom science learning, and are not intended to be used as "home school" stand-alone science lessons. They are not intended to result in being able to generate robust, complete scientific explanations of phenomena. Conversely, they are intended to move student thinking along the continuum of learning.

These are intended to be family-style discussions, with provided parent talk-moves, that stimulate thinking among family members and move everyone along the continuum of learning. Each dinner table discussion has these components to them linked below. These components provide fertile ground for the discussion to be authentic, phenomena-driven, rooted in science, and focused on sensemaking.

## Dinner Table Discussion - Guidance for Families

**If this is your first Dinner Table Discussion in the Daily Do series, NSTA recommends reading the guidance before trying your first family discussion.**

Dinner Table Discussions have three main components. The following guidance will support you in facilitating your family discussion.

### Introducing the Phenomena & Raising the Question

Our goal is to raise a puzzling question for students that does three things: (1) prompts them to think about what they currently know, (2) makes them ask what they want to know more about, and (3) helps them discover something new that moves them along the learning continuum.

Tell me what you know....

We want to foster children explaining what they think they understand to be true. These previous understandings are critical to exposing what they know and the questions they have. As they work to explain their current understandings, they will realize they don't know as much as they think, which will spur the generation of further questions

What questions do you have?

In developing insufficient explanations for things, students generate authentic questions they have that are the pathway to discovering the answer. In other words, these are our explanatory questions. That, if we were able to investigate, we would understand more about what we currently don't understand. Our goal here is to generate lots of questions, but anticipate the common ones. The common questions are central to developing an explanatory idea, and we want to foster that environment by giving adult family members discussion prompts (talk moves) to facilitate the discussion for students as they work to articulate what they want to know more about.

Pursuing Common Questions

Our goal here is not to develop a robust and complete scientific understanding of a particular phenomenon. However, our goal is to help students/children understand a puzzling phenomenon more deeply than they do. Learning is a continuum, and our goal with these discussions are to move students further along the continuum; not get them to the end. The objective is to stimulate thoughtful discussion that is rooted in a scientific phenomenon and a scientific explanation.

### **How does some corn pop?**

Have you ever eaten popcorn out of the bag and stopped to wonder how it pops? Have you ever watched popcorn pop in an air popper, a bag in the microwave, or a pan on the stove? If you have, did it make you wonder, "***How does some corn pop?***"

In today's Daily Do, we will figure out how popcorn pops!



### **Introducing the Phenomenon & Raising the Question**

Many students are familiar with popcorn, but many have never seen popcorn pop. Introduce the phenomena by playing the short video linked [here](#). You may want to play it a few times.

After the video, you may want to have some popcorn on hand (or pop some!) for your students to snack on as you engage them in a discussion. Prompt them with some leading questions, such as:

1. Do you think the popcorn you're eating started as a kernel too?
2. What do you notice about the appearance of the corn before and after popping?
3. Do you think any kind of corn can pop?

## **Tell us what you know...**

Encourage your students to explain to you what they know (or think they know) about why corn pops. Ask them to “*explain the science of why corn pops*”. Students will attempt many varieties of explanations, but our goal here is not to distinguish between right vs wrong answers or ideas. Rather, we want to foster discussion about the “*how*” and the “*why*” of certain kernels of corn popping into a white fluffy snack.

### **Accessing Prior Knowledge**

Students may also call on knowledge from previous grade levels during this part of the discussion.

- Early elementary (grades K-2) students may mention that they know when things 'cook' they can change. They might also talk about how the corn appearance changes from things that look like seeds to a white-yellow fluffy food.
- Elementary students (grades 3-5) may mention heating or cooling a substance can cause changes that can be observed. Sometimes these changes are reversible and sometimes they are not.
- Middle or high school students may talk about energy, and how when energy (heat) is added it changes the kernel somehow. Some may know that a kernel is a seed and seeds contain 'stuff' so maybe whatever is inside the seed is cooking.

All of these connections to ideas and learning opportunities at previous grade levels should be encouraged by asking follow up questions such as:

“Can you tell me more about that?”

“How do you know that?”

## **What questions do you have?**

You can say something like “*It sounds like we have more questions than answers. What questions do you have about how and why some corn pops?*” Encourage students to ask as many questions as possible that are relevant to the discussion.

### **Common questions could include:**

- Does all corn pop?
- What is inside the kernel?
- Why don't some kernels pop or only pop a little?
- How is all that white stuff inside that tiny kernel?
- How hot does popcorn need to get to pop, would it pop if we left it in the sun?
- Where does popcorn come from?

## Pursuing Common Questions

Read the Scientific American article [Explore the 'POP' in Popcorn](#) (as a family or individually) and consider completing the activity in part or in whole as a family. High school students could engage in this activity independently. Younger students will need more assistance. After reading the article and completing the activity, ask your students the following questions:

- What is one new thing you learned that you didn't know before?
- Which of our original questions did we answer in our discussion and by reading the article?
- What other questions do you have about how popcorn pops, where it comes from, or other general questions?

## How does some corn pop?

Now that we understand more about how and why corn pops, it makes us wonder other things about phase changes. If you and your students would like to pursue another activity connected to this Dinner Table Discussion, check out the [What happened to our ice?](#) Daily Do.

## NSTA Collection of Resources for Today's Daily Do

NSTA has created a [How does some corn pop? collection of resources](#) to support teachers and families using this task. If you're an NSTA member, you can add this collection to your library by clicking ADD TO MY LIBRARY located near the top of the page (at right in the blue box).

## Check Out Previous Daily Dos from NSTA

The NSTA Daily Do is an open educational resource (OER) and can be used by educators and families providing students distance and home science learning. Access the [entire collection of NSTA Daily Dos](#).