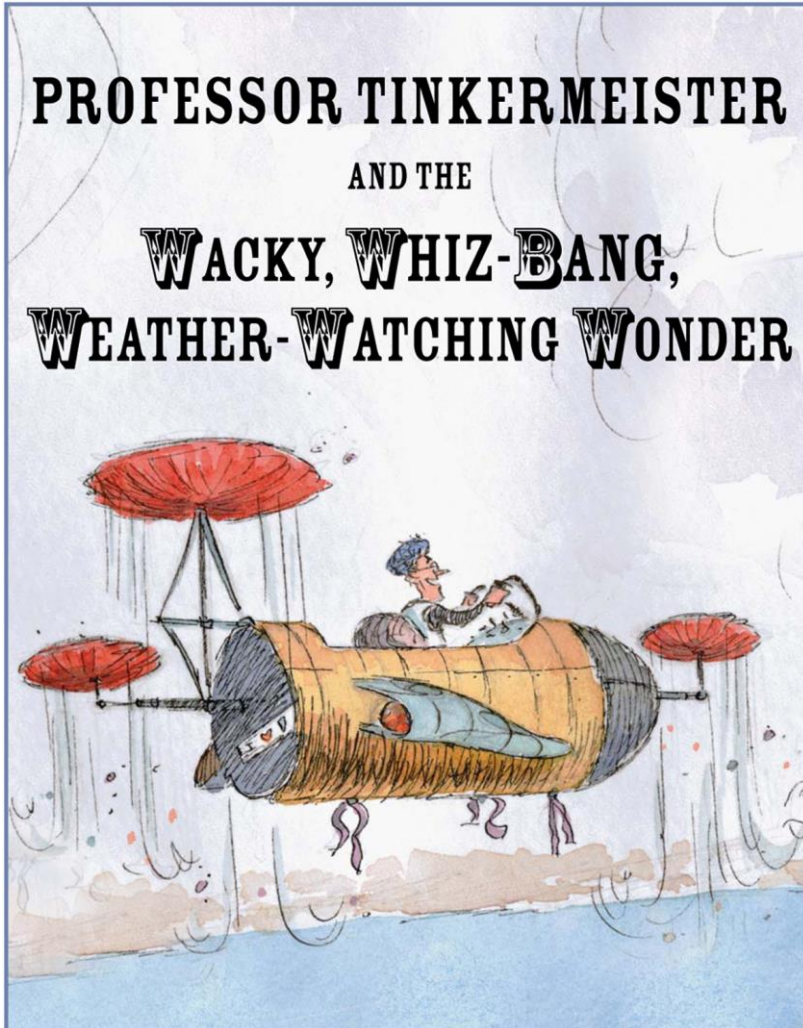


**A Guide for Teachers and Parents  
for**



**Presented by the Florida Division of Emergency Management**



**The Florida Division of Emergency Management**

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Dear Educators and Parents,

The mission of the Florida Division of Emergency Management is “*Working together to ensure that Florida is prepared to respond to emergencies, recover from them, and mitigate against their impacts.*” We work with local governments to respond to all types of disasters. Many of these disasters are due to severe weather events such as lightning, tornadoes, and hurricanes, which in Florida, are common occurrences.

While we cannot prevent severe weather, there is much each of us can do to prevent injury to ourselves and damage to our property. Awareness begins with each individual, no matter how young. To that end, the Florida Division of Emergency Management has commissioned IDEAS, [www.ideasorlando.com](http://www.ideasorlando.com), to create; three storybooks, an interactive website [www.KidsGetAPlan.com](http://www.KidsGetAPlan.com), mobile apps on Apple, Google Play and Amazon app stores, and museum exhibits that are intended to be utilized by first, second, and third grade students as well as older students.

The storybook for first graders, The Adventures of Rabbit, Possum, and Squirrel in The 30/30 Rule, teaches young children how they can protect themselves from lightning strikes. Professor Tinkermeister and the Wacky, Whiz-Bang, Weather-Watching Wonder, allows the second grade reader a chance to learn about and protect themselves from the powerful nature of thunderstorms while traveling on a fantastic journey in a magical machine. In The Oak Tree Club, third graders will learn about how they can create a Disaster Supply Kit for their families to prepare for a hurricane. Mega Track HTW, fourth graders will learn about wild fire safety and what to experience in an emergency shelter. Each of these books was created at the appropriate reading level for each grade. The science is presented in a matter-of-fact and non-threatening manner so as not to create undue fears in our children.

Each of the books also comes with an accompanying guide for teachers and parents. Each guide explains some of the science presented in the books and answers questions that children are likely to have while reading the stories. The guides also explain how the books can be used to help our children to become better readers.

We hope you find the books, interactive website, and accompanying guides for teachers and parents helpful. Thank you for your continued support in helping Florida’s children protect themselves from the hazards of severe weather.

Florida Division of Emergency Management

**Be Smart! Be Safe! Be A Survivor!**

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## Before you read together...

Professor Tinkermeister and the Wacky, Whiz-Bang, Weather-Watching Wonder is a book about the hazards caused by severe thunderstorms. Although technically written at a grade two *reading* level, a child of this age will benefit from discussion of some of the *science* concepts and vocabulary before reading the book. Using the “big book” and reading together as a class will allow you to guide the children in their approach to reading this story before they read their own book alone. The pre-reading suggestions below will help the readers to comprehend the story better.

### **Introduce New Concepts and New Vocabulary**

Beginning readers benefit by the introduction of new concepts and new vocabulary words before starting to read a book. In order to understand the story, and grasp the meaning of the science concepts introduced in it, it is important that the readers know and understand the following words and concepts that will be found in this book. Most children are familiar with many of the hazards of thunderstorms. But few will understand the science that makes them happen or how to protect themselves in the event of severe weather.

Read the information below, and then use it to have a discussion with your students before you read the big book together.

- **Thunderstorms** – Florida’s tropical atmosphere and sea breezes provide the perfect recipe for the making of thunderstorms. Three ingredients are needed—moisture, an unstable atmosphere, and lift. Since our state is surrounded by the Atlantic Ocean, Gulf of Mexico, and Caribbean Sea there is certainly plenty of moisture available. When the sun shines, the moist air near the ground gets hot. When air about three miles above the ground is colder than the air near the surface, it causes an unstable atmosphere. As sea breezes blow, they can lift that moist air upward. When that happens, the water vapor condenses and makes clouds. As cloud droplets move up and down inside the cloud they collide and begin to grow into larger drops of water. When this drop of water gets too heavy, it begins to fall to the earth as *rain*.
  - Talk with your students about their experiences with storms. Allow them to share before they read. Make a list of the different kinds of weather events they may have experienced with storms such as the ones listed below. Then use that list to help explain the science to them.
  
- **Lightning** – Lightning is a flash of light that is produced by the discharge of electricity between a cloud and the ground or between two clouds in the sky.
  - Help the readers relate by asking if they have ever been shocked on a dry, cool day when walking across a carpet and then touching a doorknob. Why does this happen? Your body, and everything else around it, is actually made of atoms. Those atoms are made of electrical particles called protons and electrons. Protons carry a positive charge, and electrons carry a negative charge. They are usually in equal balance, but when two surfaces touch each

other, opposite charges can become separated from one another. This bit of rubbing of two surfaces together can cause some of the electrons and protons to become dislodged and they transfer to the other surface. When one surface carries an imbalance of these particles, it causes static electricity to build up on that surface. This is what happens when the soles of your feet rub across that rug. You actually carry a “net electric charge” in your body. That little shock that zaps your hand when you touch the doorknob is from static electricity being discharged which restores the electrical balance. Lightning is the same phenomenon; only the static electricity released in lightning is much, much stronger. When the columns of air inside a cloud move up and down, they “rub together,” too. This causes that same kind of static electricity to build up inside a cloud. When the buildup releases, it causes the lightning flash. Lightning can be very dangerous, especially if you are outside and lightning is nearby.

- On a cool, dry day, you can create static electricity at home or in your classroom. Using a latex balloon, rub it on the head of a student for about 15 seconds. Be sure to rub around the whole balloon. (Generally, a student with chin-length, fine hair without oils or hair spray works best.) Rub the balloon in just one direction, for instance, stroke the balloon “down” the hair. Then, hold the balloon a small distance away from the ends of the child’s hair. The balloon will attract the hair showing the presence of static electricity. Then let the child touch another child. It will be a shocking experience!
- **Thunder** – Thunder is the sound that is produced by lightning. When the lightning travels through the air releasing static electricity, it heats up the air around it very quickly. When heated this rapidly, the air expands and then contracts very fast. This expansion and contraction causes the loud sound called *thunder*. Lightning and thunder really happen at about the same time. But, since light travels much faster than sound, you usually don’t hear the thunder until *after* you see the lightning flash. Sometimes, especially at night, you may see lightning, but not hear the thunder because it is too far away.
  - Help the readers relate by reminding them of the little snapping sound they hear when they are shocked by the static electricity in the carpet example above. Thunder is the same principle; only, because the charge is much stronger, the sound is much louder!
- **Super Cells** – Most thunderstorms are only about 15 miles wide and last only about 30 minutes. Damage from these storms is usually very light, but sometimes thunderstorms grow into large and powerful *super cells*. Super cells can move over land 30-50 mph! These severe storms often produce floods, hail, dangerous winds called downdrafts, and tornadoes.
- **Floods** – More people move to Florida everyday. With every new home or street, there are fewer places for the rainwater to go. Sometimes all of the rainwater cannot absorb into the ground, and so it floods. With nowhere else to go, the water runs off into rivers and streets. When the ground is *saturated*, or full of

water already, water may flow across fields, yards, and streets. Water can pool in low-lying areas for days or weeks. This water can be contaminated with bacteria or chemicals that can cause people to become sick. For this reason, you should warn children that they must *never* play in floodwaters.

- **Hail** – Hail is a pellet or ball of ice formed inside thunderstorm clouds. As the warm air updrafts push the hail upward, it will collect more moisture on its surface. The higher in the cloud it goes, the more it cools and the ice pellet begins to grow. When the ice gets heavier than the cloud can hold, it falls to the earth as hail. Large hailstones can damage cars and windows. It can strip trees of their leaves and small branches. Penny-sized hail or larger can cause significant bodily injuries such as broken bones or even blindness if the wind is blowing hard enough. People should always seek shelter from hail.
- **Downdrafts** – Downdrafts are winds inside the thunderstorm that travel down toward the surface of the earth. When downdrafts hit the ground, they spread out in a straight line. Strong downdrafts, also known as downbursts, produce straight-line winds that can cause significant damage even to well-constructed homes, topple or snap large trees, knock down power lines, blow down road and commercial signs, and even remove roofs from structures. They can also be very dangerous to airplanes, which is why airports close when severe weather threatens.
- **Tornado** – A tornado is a violently rotating column of air that either is under a cumulonimbus (thunderstorm) cloud or seems to be “attached” to it. Because they look like a funnel, tornadoes are sometimes called “funnel clouds.” Often, the sky takes on a greenish-black tint when tornadoes are likely to form. Tornadoes may have winds greater than 300 miles per hour. People who have experienced tornadoes often say they sound like a roaring train is approaching.
- **Tornado Watch** – A *tornado watch* means that the conditions are right for a tornado to form. The National Weather Service issues tornado watches when severe storms are developing and strengthening. A watch may last for about six hours. More watches may be issued if the threat of tornadoes continues. You can receive information about severe weather watches through a NOAA or all hazards weather radio.
- **Tornado Warning** – A *tornado warning* means that a tornado has been detected in your area. When a tornado warning is issued by the National Weather Service, you should take cover immediately in a small room on the lowest floor of a strong building. You should stay away from doors and windows.

### **Introduce the Characters**

Professor Nimbus Tinkermeister is quite a character indeed! The word “nimbus” means thundercloud, and “tinkermeister” insinuates that he is a master at tinkering. Certainly, his magical machines seem to bear this out. Take a look at the book cover and you will see just how “wacky” he and his machine both seem to be. Point out to the students the “I love tornadoes” sticker on the back of his machine. Ask them what they think the book might be about.

Mary Laura is the character that links the professor back to the real world. Although the professor is seen broadcasting warnings to others throughout the book, Mary Laura is the only one who has direct contact with him. Her character was developed to allow the child to “see themselves” in the story. Because small children are often frightened by thunderstorms, it is important to point out that Mary Laura doesn’t seem afraid at all. This is because she has learned to follow the safety rules they will learn as they read the book. Pointing out the “lessons” as you read together will be important to help the children incorporate those points.

## As you read together...

As you read with the children, pause every so often to ask probing questions about the story. (If you are using the interactive online books, you can click on the question mark at the top of each screen and the narrator will ask the questions for you!) Before reading a page, take a look at the picture. Ask the students about the things they see in each picture. Talk about what they see. Help them to begin to think about the story *before* they start to actually read the words on each page. If you model this kind of questioning with your students, you will help them build mental models of the story and increase their reading comprehension. Because children are great mimics, eventually, they will begin to create their own questions as they read on their own. There is no “exact right way” to do it. Use the suggestions below as a guide.

### **PAGE 1**

Before reading, look at the portrait of Professor Tinkermeister. Ask the students about what they think about him? Does he look scary? Does he look friendly? Why or why not?

### **PAGES 2 and 3**

Before reading, point out how they can get cues from the pictures to help them read. Where is the professor going? Why do you think he is going there? What does the sky look like? Is it a sunny day or a stormy day? After you read, ask the students what a “Tornado Watch” is, and help them understand it. (See information above.)

### **PAGES 4 and 5**

What is under the cloth at the top of the stairs? What will the professor do next?

### **PAGE 6**

What is different about the professor’s machine now? (The shield is up covering his head now.) How did he do that?

### **PAGE 7**

Where is the professor headed now? What do you think is he looking for? How does the sky look different than in the beginning of the story?

### **PAGES 8 and 9**

Where is the professor now? (Inside the dark cloud.) What are the blue arrows showing? (The downward movement of cooler air.) What do the pink arrows show? (The upward movement of warmer air.) Explain to them that this movement of air is what causes energy to build up in the cloud and causes lightning. As them, “What do you think will happen next?”

### **PAGE 10**

How does the professor’s face look? What happened to make him feel that way? Remember to point out that the lightning comes *before* the thunder.



**PAGE 11**

Where is the professor now? Why is he looking down?

**PAGES 12 and 13**

Where is the professor going? What does the sky look like where he is? What does the sky look like over the town?

**PAGE 14**

What are the people doing? Why are they doing that? Introduce the concept of floods here. What is the little girl pointing at? What does the sky look like?

**PAGE 15**

What are the people on the porch doing? (They are listening to the radio.) Where is the professor's machine?

**PAGE 16**

Before you read, ask the students who is talking to the professor and what might they be talking about?

**PAGE 17**

Before you turn the page ask the students what might happen next?

**PAGES 18 and 19**

Where is the professor headed now? What is happening inside that cloud? What do the arrows mean? (They show the direction of the flow of air inside the super cell.) Does it always rain underneath a cloud? How can you tell? Introduce the concept of a "super cell." Explain that a super cell is a very large and very powerful storm. Then ask what they think may happen next?

**PAGES 20 and 21**

Where are the professor and his machine now? What is the temperature like there? How can you tell?

**PAGE 22**

What is the professor doing? What does the sky look like? How has it changed? Where are the people going? Why?

**PAGE 23**

What is the name of the dog that lives in this doghouse? Where do you think the dog has gone? What has happened to the doghouse?

**PAGES 24 and 25**

Before you read, ask talk about the color of the sky. What is the weather like now? (The rain seems to have stopped, but it is very windy.) Which direction is the wind blowing? (Both!) How can you tell? (The palm trees are blowing in opposite directions. This

often happens before a tornado.) After you read, ask why are all the people inside? (Because there has been a tornado warning!)

**PAGES 26 and 27**

What does the sky look like now? Where is the professor going? Why? What does he see? What do you think will happen next?

**PAGE 28**

Why are the students sitting in the hallway? What is the teacher doing? Why? Talk to your students about tornado drills that you may have at school.

**PAGE 29**

Why is the family in the bathtub? What do you think the radio is saying? Talk to children about where they should take cover when they are home and there should be a tornado warning. (See information above.)

**PAGES 30 and 31**

Where is the professor? What is he doing? What things are flying through the air? Where is the tornado? Do you think it will hit the town?

**PAGE 32**

What is the weather like now? What is the little girl doing? Why is there such a mess?

**PAGE 33**

How does the little girl feel? What does the professor like to do? How can you tell? (The back of his vest says “Born to Study.”)

**PAGES 34 and 35**

What has happened to the professor’s machine? What new parts of it do you see now? What is the machine doing?

## After you read together...

After reading the story, talk about it with your students. Suggested questions to discuss are:

- Where do you think this story took place? How can you tell?
- What are the different kinds of weather hazards that severe thunderstorms bring?
  - Lightning
  - Floods
  - Hail
  - Tornadoes
- What should you do if there is a tornado watch?
- What should you do if there is a tornado warning?
- What other kinds of machines might the professor invent next?

Make a weather bulletin board in your classroom. Ask your students to think about a thunderstorm they have experienced. Allow them to draw a picture of the storm...and to make sure they put themselves in the picture. Then ask them to write a few sentences about what is happening in their picture.

For fun, ask them to draw a picture and write about what kind of machine the professor might think up next!