YMCA SAFE LESSON PLAN

Title of Lesson Plan: Tornado In A Bottle
All Ages: All Ages
Theme: Water Safety

Time Allotted, Resources & Materials Needed (websites used)
30mins

- Water
- A clear plastic bottle with a cap (that won't leak)
- Glitter
- Dish washing liquid
- Tornado Information

*__Recommended books for this activity:__ No

Set-Up/Environment (Location? Space needed?) :
Classroom/Portables

HIGHLIGHT MINIMUM OF 2 YMCA FRAMEWORK REQUIREMENTS:

1. Physical Activity (Daily)	4. Nutrition Education (2x/month)	7. Math & Literacy Integration (30 min. daily)
2. Arts Education (1x/week)	5. 21st Century Skill & STEM (2x/week)	8. Global Learning (1x/week)
3. Leadership, Assets, Character Development (1x/week)	6. College & Career Readiness (2x/month)	

Learning Objective (Skills Learned & Knowledge I want youth to learn)- *Focused* :

Students will learn the about tornados and where are the safe places to be in case of a tornado.

Introduction to the Lesson - *Sequence*:

Students will be hear about tornados and will be able to answer any questions they may have about them.

Learning Activities (What will I do to meet the above learning objectives)(how to)- *Sequence/Active*:

Students will create their own tornados. Students have the option to work with a partner or to create their own by themselves.

Check in questions "do they get it?" (Open ended questions) - *Active*:

"How did you come up with that design"? "Why did you decide to work with a partner"?

Debrief and Reflection (Review Learning Objective) (Open ended questions) – *Explicit Learning*:

At the end of this activity ask students; "would you add anything to your design"?

How Can I Expand & Extend!? (Event, Speaker, Field Trip, Math, Literacy, etc):

We can have students work with partners and have the partners each add something to the design and work together to create a name for their design.

Tornado Information

- A tornado is a rapidly spinning tube of air that touches both the ground and a cloud above.
- Tornadoes are sometimes called twisters.
- Not all tornadoes are visible but their high wind speeds and rapid rotation often form a visible funnel of condensed water.
- The Fujita Scale is a common way of measuring the strength of tornadoes. The scale ranges from F0 tornadoes that cause minimal damage through to F5 tornadoes which cause massive damage.
- Most tornadoes have wind speeds less than 100 miles per hour (161 kilometres per hour).
- Extreme tornadoes can reach wind speeds of over 300 miles per hour (483 kilometres per hour).
- Most tornadoes travel a few miles before exhausting themselves.
- Extreme tornadoes can travel much further, sometimes over 100 miles (161kilometres).
- The Tri-State Tornado that travelled through parts of Missouri, Illinois and Indiana in 1925 left a path of destruction over 219 miles (352 kilometres) long.
- The Tri-State Tornado was the deadliest tornado in US history, killing 695 people.
- The USA averages around 1200 tornadoes every year, more than any other country.
- The majority of these tornadoes occur in a geographically unique area nicknamed 'Tornado Alley'.
- US States most often hit by tornadoes include Texas, Kansas, Oklahoma and Florida.
- In 1989 the deadliest tornado ever recorded in the world killed around 1300 people in Bangladesh.
- In the southern hemisphere tornadoes usually rotate in a clockwise direction.
- In the northern hemisphere tornadoes usually rotate in a counterclockwise direction.
- A tornado that occurs over water is often called a waterspout.
- Weather radars are used to detect tornadoes and give advanced warning.

Basements and other underground areas are the safest places to seek refuge during a tornado. It is also a good idea to stay away from windows

Instructions:

1. Fill the plastic bottle with water until it reaches around three quarters full.
2. Add a few drops of dish washing liquid.
3. Sprinkle in a few pinches of glitter (this will make your tornado easier to see).
4. Put the cap on tightly.
5. Turn the bottle upside down and hold it by the neck. Quickly spin the bottle in a circular motion for a few seconds, stop and look inside to see if you can see a mini tornado forming in the water. You might need to try it a few times before you get it working properly.

What's happening?

Spinning the bottle in a circular motion creates a water vortex that looks like a mini tornado. The water is rapidly spinning around the center of the vortex due to centripetal force (an inward force directing an object or fluid such as water towards the center of its circular path). Vortexes found in nature include tornadoes, hurricanes and waterspouts (a tornado that forms over water).