Water Movement & Flooding

A cloud rolled along the sky and it started raining because water vapors rises and cools, then changes into tiny water droplets. When water hits the ground, it gets absorb by trees and soils depending on it porosity and permeability. But when it rains too much like it did in Madison, WI last year, then it can cause flooding which can to be a problem to our community. Flooding can flood streets and homes, disrupt agriculture site while also carry chemical that are used for agriculture into low level of water reservoir affecting the live of species and people depending on it. So, when it rains too much then it can be a problem depending on soil permeability and porosity.

Video link: https://www.youtube.com/watch?v=g_4FD7eMt_A&feature=youtu.be

Science Topic	*We are going to teach about infiltration and runoffs. Infiltration is a movement of water from top of the soil to bottom of the soil and as long as the rate of the water addition to soil is slower than the rate of infiltration, there will be no runoff.*
Ideal Age	*This activity is designed for kids that are between 8 years old to 15 years old.*
Driving Question	*What causes flooding in Madison?*
Materials Needed	*List of materials needed for this activity:* 1. *Container* 2. *Napkins or sponge* 3. *Glass of water*
Activity Instructions	*First, you need to gather the listed materials needed for this activity.* *Second, you fold the napkins and put it inside the container* *Third, put a little bit of water on napkin and see what it does* *Fourth, put all the water on container and see what happens.* *Explanation: when you put a little bit of water on napkins then the napkins can hold the water because it is not that much water that the napkin has to absorb. But when you put too much water on the napkins then they won't be able to hold all the water, which means some water will flow outside the napkins. The napkins are like the soil when they absorb water. When napkins can't hold all the water, then it will run outside of napkin which is called a runoff.*
Questions	*What will happen if there is too much water then it goes into soil?* *When will water runoff?* *What was the effect of last year heavy rain in Madison?* *How can we prepare from this kind of heavy rains so that it does not cause flood?* *What will happen when water runoff?* *Where will runoff water go?*
Science Content	*Infiltration is a process by which water on the ground surface enters the soil. While surface runoff is the flow of water that occurs when there is a huge storm water, meltwater, or other sources flow over the earth's surface.*

	This can happen when the soil is holding it most capacity and rains arrives more quickly than soil can absorb. So, the relationship between infiltration and runoff is that surface runoff happen when soil cannot hold water which are infiltrating from ground in to soils. There are different types of soil like clay which has a ability to hold more water than sand which has a larger particles and does not hold much water. *The runoff can erode soil, affect many species homes, and it can carry bad chemical like phosphorous, nitrogen, metals, salt, and pesticide on the ground from one place to another place. The bad chemical will most likely end up in low level of water area where species are living like in Lake Wingra. For example, when runoff is carrying surface chemicals in lower level of water reservoirs then the fish and other animal living in that water can be affected.*
Process of Science	*Kids are engaging in the process of science by practicing important things like asking question, developing and using models, studying and explaining data, using mathematics thinking, engaging in argument from evidence, and obtaining, evaluating, and communicating information. Engaging in practice helps student understand how scientific knowledge are developed. It makes student knowledge more meaningful and puts it more deeply towards their worldviews. Student capabilities to use each of the practice will grow as they grow and engage in science learning.*
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