Data Integration in STEM activity for Pre-school age children

Project name: Disappearing of the ice block
Data source: https://svs.gsfc.nasa.gov/cgi-bin/details.cgi?aid=4435

I work with a group of children age between 4-5 years old. My purpose of having data integrated in this activity is to introduce the concept about how children can start using data to support their claim, hence to build the connection between data and facts in their future learning.

With a good amount of resources provided by this course, it elicits an idea for me to start having children to make and collect data on their own during the process of experiment, instead of showing them the data collected by scientist at the beginning of activity. The reason is that the understanding of numbers for children at this age is limited; it could be challenging for majority of them to connect the fact and data together, hence for them to make their own claim or conclusion just by seeing the data or graphs. Having children to collect and record the data during the experiment gives me a good opportunity to introduce different concept of numbers and math to children. It is also a good introduction for children to learn and apply the use of numbers.

In this activity that I am planning to do with children, two or three blocks of ice cubes will be put in a small size of glass container under the room temperature. A group of children will measure the depth of water in the container in every 10 minutes interval, while another group of children will be in charge of recording the number for the depth of water in each measurement and also drawing the change on the size of ice cubes that they observe. After all the ice cubes completely disappears in the container, we will start reviewing the number that we recorded and having children to start drawing conclusion about this observation on their own. By having this list of data recorded by children, it will not only help them to understand the usage of numbers, but also introduce the concept of using number as evidence to back up their claim or conclusion.

After further explanation about the scientific facts about the temperature and ice to children, the experiment can be extended to the concept of global warming. Without giving children the introduction of Global Warming, a visualization of change of ice-covered area in Arctic will be presented to children from NASA scientific visualization studio website. In this graph, NASA input the data of sea ice minimum between 1979-2015 in visualization graph. It could help children understand the variation of the ice-covered area. After showing the graph, I will give an opportunity to children to draw their conclusion on

what happened through time to the ice-covered area. How are we able to relate the change of ice-covered area to the concept of Global Warming?

I would like to implement data integration in my science activities for the following reasons. One is to introduce the concept of numbers and connect them to real life events to children at this age. Children tend to disconnect math with real life when they are firstly introduced counting or doing addition or subtraction. By using data in the science activities, it not only enhances children' number senses and interest in math, but also introduces them how to apply numbers in real life. Another reason of having data integration in the classroom is to start introducing the concept of finding evidence to support their claims or conclusion, which will be crucial for their future learning on science projects.