

Analysis Tool – System Schema

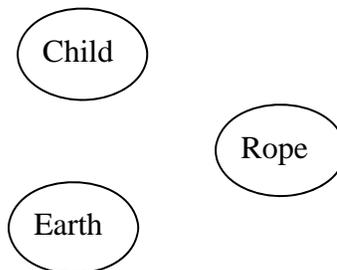
For the following description, it is useful to have an example to draw upon. The situation described below will provide a context for the description of drawing a force diagram or creating a set of energy pie charts.

A child pulls herself up a rope using only her hands.

Following is a method that can be used to draw system schema.

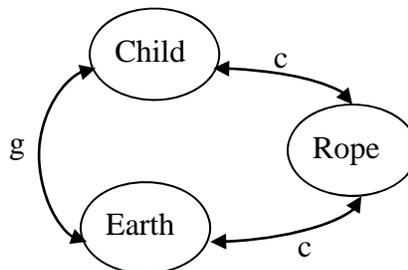
1. Identify and all objects that influence the situation you are describing, represent each object with a circle and a label.

In our example, there could be many objects that seem relevant, but your job is to identify only those that influence the situation. For example would it matter whether the child is wearing red shoes, blue shoes or no shoes? No, so we can simplify and only identify the simple but critical objects. In our example, there are at least three important objects. The child, the rope and the earth.



2. Identify all interactions between the objects. Represent each interaction with a two headed arrow, and label the interaction.

In our example, the child is touching the rope, so there is a contact interaction between the child and the rope. The rope is somehow hanging (notice we don't really care if the rope is hanging from a tree or a bridge we only care that it is hanging) so we can say it is in contact with whatever it is hanging from so there is a contact interaction between the earth and the rope. Finally the earth and the child are interacting, we know that there is gravity and to have a force there has to be an interaction, so we identify a gravitational interaction between the child and the earth.



3. Identify the system, this is primarily important for the use of energy, and we will discuss this later in the semester. You can identify the system with a dotted line around the object of interest.

For this example we will simply put a dotted line around all the objects.

