**THE DOT GAME- Warmup/Review/Practice/Reasoning**

**Materials**: Dots, overhead or pre-made powerpoint. This takes a bit of prep, but can be used for anything that involves numbers

**Instruction**: Tell students that you are going to put on the projector (overhead or powerpoint), a specific number of dots. They must count the dots and write down the number. Flash the dots on the screen for just 1 second and tell them to write down their number. This will obviously be too little time to actually count, but they need to make a reasonable guess. Tell students that you are going to show them a series of questions that will help them to discover the true number. They should modify their guess to ensure that it meets the requirements. I always have them write their new guesses under the old ones so that they can see how many tries it took (only because they enjoy the competitiveness of being the “best” at the initial guess). There are different ways of monitoring their numbers- write on whiteboards, hold up numbers, ect…

Show each question-one at a time. (it helps to have the previous questions left on the board so that when they modify their number they make sure that it meets ALL restraints).

**Rationale/Discussion**- This has proven to be a very engaging activity that allows students to practice and review specific concepts. It also requires that they keep track of quite a bit of information, think critically, and redevelop their “hypothesis” as to how many dots there were on the screen. It also can be used to introduce proof and reasoning if you have them explain their choice at each step.

**PASS THE OBJECT: Icebreaker Activity/Critical Thinking**

**Materials:** Wiffle ball works well, but anything will do

**Instructions:** Have students stand in a circle around the room. Tell them that they will be passing the ball to the person next to them, but there are a few rules. They are not allowed to touch the ball with their hands. They may “collect” the ball the same way it was passed to them, but they must pass it to the next person in a different way. No one may repeat a pass in the same way that it was passed before. Instructor should begin by passing to the first student (a simple way is good- like using the forearms). It works well if you allow no talking, bhere may come a point where someone gets stuck, and at that point I allow for some talking if needed.

**What to expect:** Students will begin passing using different body parts (upper arms, neck, elbow, legs, ect…\_). Someone will use their part of their clothing, which leads to a new level (hat, shoe, ect). Eventually, someone will think to use an object that they find in the room, such as a pencil or paper. This will be the big “breakthrough” moment and from that point it is passed in many creative ways.

**Rationale/Discussion:** This is a good critical thinking exercise. They also must pay close attention to make sure that they do not repeat a pass that was already completed. At some point, a student will make a “breakthrough” when they realize they can use other objects to pass it. This process can be related to breakthroughs that occur in science and technology. Sometimes people will “discover” something new, and it can be a major step forward that will allow others to continue to progress. Often discoveries will happen at the same time in completely different parts of the world (just as more than one student may realize at the same time that the rules do not ban other objects). You can facilitate discussion along these lines.