LESSON PLAN

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5th Grade

LESSON: THE POWER OF THE SUN (HOW TO SET A NAUGHTY 5TH GRADER ON FIRE)

Engage,

The engagement question was; What would happen if the sun was switched off this very moment?

Answers were very variable ranging from things like, “we would switch on the lights and go on with our lives”, to more scarier things like “the earth would spin out of orbit and all of us would become space objects” (some kids actually resonated with this thought; that this would be more fun than going to school, and I concur)

Explore

The students were divided into four separate groups, each group was offered a piece of corrugated carton box and a 6 inch magnifying glass. The instructions were that the students should go outside, observe what happened when the sun's rays passed through the magnifying glass, determine whether the light could be focused onto a small spot and what would happen if that was done.

Within a minute or so of being outside, the students discovered that it appeared that the glass was very good at focusing the sun's rays on a single spot.

The next instructions were to focus the rays on the piece of carton box and observe what happened

After a few seconds of focusing the light, the piece of carton box burst into flames. The students were very excited.

The students also experimented on focusing the light on a lighter colored part of the carton box compared to a surface that had letters written in black ink on it and comparing the time it took for the box to burst into flames. They discovered that the surface with black letters appeared to burst into flames faster than lighter surfaces.

Now that the preliminary experiment was complete, the students were ready to burst their fellow colleague (who had voluntarily offered himself) into flames. At that specific point in time as we converged for the last experiment, a dark cumulonimbus cloud partly covered the sun and we transitioned to the next topic of the day which is cloud formation.

Explanation

- The sun is a powerful source of energy that supplies us with an unlimited amount of "free" energy.
- Light from the sun contain energy in the form of heat.
- The magnifying glass can focus the sun's rays onto a smaller more intense beam with even higher heat energy causing a fire.
- The darker/printed parts of the carton box are better at absorbing sun's rays than the lighter parts and therefore burst into flames easier.

Elaboration

The principle of converging the sun’s rays onto a single point is used in many applications such

- The manufacture of solar powered cookers that you basically put food inside the cooker and leave it in the sun to cook
- The art of making eye glasses for people who are near of far sighted.

Evaluation

The students were challenged to think and design unique equipment that can use solar power as a source of energy.