Problem Solving Lesson-Morris 5th Grade

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**CONTENT:** We will be allowing the students to explore the concept of heat transfer by means of conduction, convection, and radiation. Following the Problem-Solving Model, we will allow them to experiment with making cakes and testing the way of baking them by choosing a means of heat transfer.

**TIME:** 90 min block

**ALCOS :**

**OBJECTIVES**: The students will be able to understand the handouts provided on heat transfer and fill in the blanks as we review it. The students will also be able to work in a group to prepare a cake mix and decide how to bake it. Then, the students will be able to use their deductive reasoning to figure out which type of heat the cake mixed used. In the end, the students will be able to apply their knowledge to a quiz that makes them match terms and definitions.

**MATERIALS:** Handout, YouTube video, cake mix, bowls, water, measuring cups, spoons, napkins, quiz

**HOOK:** Show video with song about heat transfer. Then review the three concepts shown in the video by asking questions.

**PROCEDURE:**

*Teacher-* Present students with problem: how should we cook the cake?

*Student*- Come up with predictions on how we should make it

*Teacher*- Give directions on how we should make the cake from the mix

*Student*- Make mix and choose how they will cook it

*Teacher*: (1) teacher walks around groups to observe while (1) other stands at baking stations

*Student*- Watch as their selected mode of baking takes place

*Teacher*- Give finished product to Mr. Harriott to taste. He "only enjoys" the correct one.

*Student*- Returns to seat and records findings

*Teacher-* Goes over results and what they found, reviews why the others don't work

*Teacher-* Gives quiz to students

**ACCOMODATIONS:** Made a clear chart on the handout that they can fill out individually, but also while getting help from peers. Made the quiz a matching one that easily explained the concepts. All students have same amount of cake mix. Make desks square groups ahead of time so that students can already be in groups.

**REVIEW/CLOSURE:**

*Teacher-* Goes over results and what they found, reviews why the others don't work

*Students*- Shares what they put on their handout and what actually happened

**ASSESSMENT:** Give matching quiz to students and allow them to work on it quietly. After the quiz is taken up, review the correct answers and go over the concepts again. Did students interact in their groups? Did they follow directions? Did they make intelligent predictions on their handouts as to what would happen or did they just blindly guess? Also, did they understand why only one mode worked for cooking and that the other ways can cook other things (microwave=popcorn and hot plate=grilled cheese)?