MIND TREKKERS
Grape Crusher Lesson Plan

Amount of time Demo takes: 3min
# times per hr: 20

Materials:
1. Grape crusher (2)
2. Paper, post-it note sized squares (2/demo)
3. Toothpicks (1/2 box/hr)
4. Grapes (1/2 bag/hr)
5. Paper towels or regular towels to wipe up crushed grapes (1/4 roll/hr)
6. Trash bag (1/2/hr)
7. Sandpaper (sand down crusher at the end of the day)

Set up instructions:
1. Set up grape crushing contraption on table.
2. Set out paper squares, toothpicks, and grapes
3. Have cleaning supplies set out

SAFETY!
1. Make sure students get their hands/fingers out of the way before allowing the grape crusher to swing down.

What is the demo/lesson’s objective or big idea briefly?
Problem solving - how to construct something to protect the grape using just the paper and toothpick provided.

Instructional Procedure
1. Set out grape crusher in an area that is big enough to safely let the arm swing.
2. Challenge to give to public: Can you build something from a small piece of paper and a toothpick that will protect a grape from our grape crusher?
3. Hand out the grape, paper and toothpick to participant. They can do whatever they want with the 3 items that they think will protect the grape. When they are ready, set their contraption under the grape crusher. Make sure fingers are clear!
4. Check to see how your participant did. Is the grape safe? Is it crushed? If their grape got crushed, ask if they want to try one more time. Before you have them start, ask them what went wrong? What are they going to change? How will their new one be better?
5. Clean up after each crushed grape. Throw out participants’ failed designs. Wipe off table.
Assessment

Sample questions you can ask:
1. How did your design work?
2. If your crusher did not work, what could you do to make it better?
3. What are some shapes/design elements to consider?

Conclusion (Review concepts covered)
This is a problem solving activity. If the participant has tried a few times and they still can’t get it, guide them in the correct direction or ask leading questions to help them arrive at a better design. Some good examples include rolling the paper into cylinders (columns) or breaking the toothpick into 2-4 pieces (to skewer the grape in several places and protect it).

Clean Up
Clean up between demonstrations if needed. When completely finished gather all materials listed for this demonstration and make sure everything is accounted for. If something was used up, broken or damaged, let someone know so it can get replaced or fixed.

Clean up after each crushed grape - they can get pretty messy. Use towels and trash bags to keep the area clean. Sand the crusher at the end of the day.

National Standards:
K-12 Content standard A, Science as Inquiry