Would you like to hear a quick, easy way to assess, correct, and strengthen students' ability to count atoms?

It's faster than students writing on a whiteboard and checking the data on a digital activity 😊

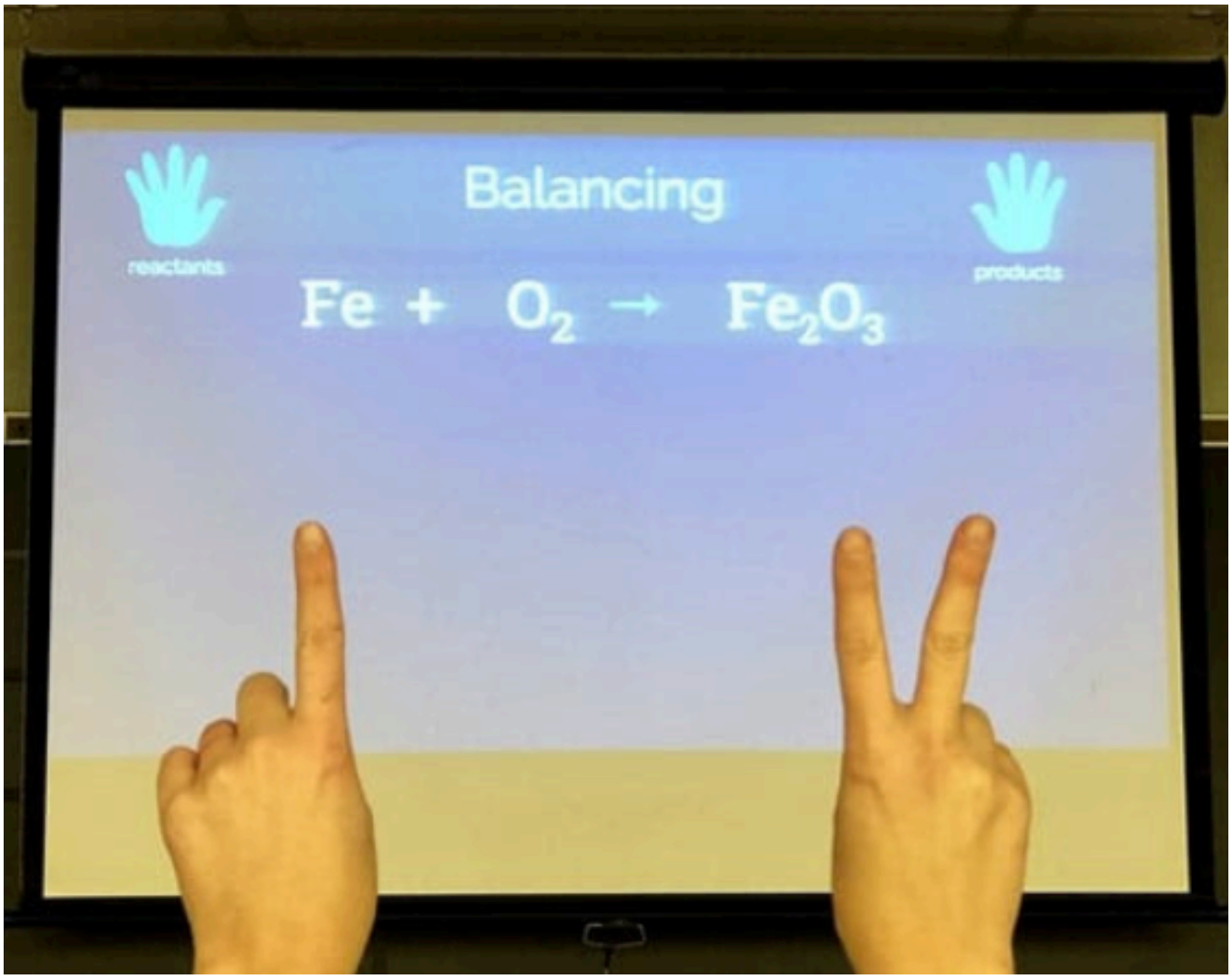
I think you'll love it too!

We've balanced so many equations, we do this automatically.

But students?

We need to see what they see.

And one of my favorite tips for balancing with students in class is this way:



Ask students, "How many do you see?"
With an equation in front of your students, assign students' *left hands to the reactant side* and *right hands to the product side.*
Working *left to right* in the equation, beginning with iron, ask them to show you how many are on the left and right sides.
As students begin to show you their answers, say aloud the survey of answers that you see *without telling them if it's right or wrong yet*. I say, "I see 1 and 1. I see 1 and 2." This helps students become comfortable with trying.
Students who have it wrong may correct themselves as they consider the other option 

Identify that there are 1 and 2 irons. They are not equal, so ask, "What is the l*east common multiple* that both can go into?" *You're laying the groundwork that coefficients are* ***multipliers***. "2," they say. So you add the multiple 2 in front of Fe.

$$\mathbf{2}\ Fe + O_2 \rightarrow Fe_2O_3$$

What I love about this equation example is that once you hit the arrow, remind students that they should always go back and check previous elements, This example brings up:

- Coefficients go i*n front of the entire formula*, not between elements: $Fe_2\mathbf{2}O_3 =$ but $\mathbf{2}\ Fe_2O_3 =$
- Subscripts have *small* impacts, multiplying only what they are beside, whereas coefficients have *large* impacts, distributing among all elements.
- It's always worth your time to check your work once you hit the arrow. $\mathbf{4}\ Fe + 3\ O_2 \rightarrow 2\ Fe_2O_3$

And my favorite part of all?

- Students are *OK with making mistakes,* especially while learning something new. Incorrect counting of atoms this way can be easily fixed and they'll see themselves getting better the more practice they do. As with *all* chemistry - whether learning or teaching