

## Instructional Activity Plan Template

**Step 1:** What do you plan to teach? What materials will your students and you need?

Instructional Activity's Learning Objective:

**By the end of the lesson, students will understand the concept of sampling error/margin of error in polling data, and demonstrate their grasp by evaluating a poll and calculating the margin of error for it.**

**A stretch goal will be to also demonstrate the distinction between margin of error for a single proportion/result vs. the difference between two proportions/results.**

Materials Needed:

**Powerpoint/Computer  
Paper for exercises  
Whiteboard**

**Step 2:** How will you **introduce** what you plan to teach? How will you gain attention and interest? How will you make the objective relevant and meaningful? How will you build the necessary background knowledge for the activity's learning objective? How will you "Teach with the Brain AND Student in Mind?"

1. **HOOK** After leading in with a brief poll story on the New Hampshire primary, I will tell the story of "Dewey Defeats Truman" – the surprise result of the 1948 US presidential election, which has its roots in a type of polling error.

**This will be Teaching with the Student in Mind because it is (hopefully) relevant to students: the presidential campaign this year is an important current event. The picture of Harry Truman holding up the "Dewey Defeats Truman" is an iconic image that will appeal to visual learners, the story of the underdog coming out on top will be emotionally appealing to many, and the use of current events in a math class will be somewhat novel. (Teaching with the Brain in Mind)**

2. **To build necessary background knowledge about margin of error in polling, we will carry out a brief sampling exercise involving M&Ms.**

**The fun/appeal of free M&Ms will maintain interest in what might otherwise be some dry material about polls.**

**Step 3:** How will you **teach** the activity's objective? How will you model? What other techniques will you use to engage the learners? How will you provide guided practice of your objective? How will you "Teach with the Brain AND Student in Mind?"

3. **INPUT** Following the sampling exercise, as we all eat our M&Ms, I will explain the formula that calculates margin of error in a poll.
4. I will then **MODEL** the calculation process on a new real life example to demonstrate how it works.

This will be teaching with the Brain in Mind because I will give visual and auditory content that will hopefully reassure them that this is not as complicated as it looks at first glance.

5. Next, I will ask students to work with a partner on **GUIDED PRACTICE** on the original poll from the beginning of the lesson.

This bit of repetition will allow the students to become comfortable with the content and see how it applies. This also sets the stage for the final activity, which both reinforces the prior learning and introduces one last concept of interest. Rather than drop all of this into their heads at once, I am "chunking" my instruction into steps so that the activity is not overwhelming and will fit in with how the brain can only handle so many steps before processing. I will be working with the students so they see that I am part of the learning, too.

6. Finally, for **INDEPENDENT PRACTICE**, students will tackle a new calculation by themselves, a calculation of the margin of error in a difference between two proportions (as opposed to a single result).

I like the idea of learning one final thing at the end of class – it adds a bit of spice to the lesson and hopefully leaves the students hungry for more.

**Step 4:** How will you **close** or end the activity? How will you review the activity's objective? How will you encourage reflection and feedback? How will you "Teach with the Brain AND Student in Mind?"

7. To **CLOSE** the activity, I will ask students to explain what the margin of error in a poll is and how it is calculated – they will have the formulae in front of them so it will be more explanation than recitation. I will then ask show the initial poll one more time and ask, "Besides the margin of error, what else might be significant to know about this poll before we absorb it as fact?" I will then point to the dates the poll was taken, and show one that follows a couple of days later and the effect that the Iowa caucuses might have had.

Reviewing the main point of the lesson is important at this point because of the primacy/recency bias of the brain, and providing some "non-math color" hopefully reinforces the relevance of the underlying math, which is playing a huge role in our republic!