Bret Hern
2/22/2020

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 use their individual and collective measurements of a circle to calculate/derive the important mathematical constant pi (π).

Materials Needed:

Powerpoint/Computer
Lengths of string/cord (shoelaces) for measuring non-linear objects
Metric rulers
Paper for notes
Calculator (smartphone) for performing division
Whiteboard/poster paper to display/tabulate results

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 I will ask a question: Did you know that circles are sacred? I will then display a description of an element of Solomon's temple from the Bible/Torah (1 Kings 7:23) that describes the size of a circular space.**

This will be Teaching with the Student in Mind due to the novelty of this particular reference. Using the Bible as a mathematical textbook is unusual to say the least, which may make it memorable. (Teaching with the Brain in Mind)

2. **I will then show a graphic of a 2X2 unit square inscribed by a unit circle, and outline the challenge of figuring out perimeter/circumference and area when dealing with circles instead of more conventional shapes. How can we solve this problem?**

We will return to this view at the end to see if we have accomplished this task.

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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 With the graphic of our unit circle and square visible, I will remind the students of the way perimeter and area are calculated for rectangular figures, and wonder if there is a way to do this for circles.**

   I will briefly outline the key terms "circumference," "radius" and "diameter."

4. **I will then MODEL the measurement exercise on an example circle, to demonstrate the task they will be performing momentarily.**

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 to measure the circumference and diameter of their selected circles, and note the requested results on the sticky poster that will be set up with a table for each circle. I will review the CHAMPS expectations of this exercise with them at this time.**

Working together will make this exercise more efficient, and produce higher quality results. This will also bring home the challenge of "eyeballing" a curved surface to determine circumference. 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 also divide their respective circumference by the diameter to see what results we get for that column on our poster.**

This final bit will lead to a bit of "delayed input" on my part that we will use to close the lesson: this calculated value is in fact the mathematical constant pi.

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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 review with the students our learnings from today about pi, with a brief formative assessment ("thumbs up/down") on the key concepts.**
8. **We will then close with the "pi-based" formulae for area and circumference of a circle, which sets the stage for a presumed follow-on lesson.**

Reviewing the main point of the lesson is important at this point because of the primacy/recency bias of the brain, and doing the formative assessment is a good way to confirm absorption.