

Bloom's Taxonomy

Benjamin Bloom developed a classification of learning that increases students' depth of understanding, retention, and comprehension skills. Referred to as Bloom's Taxonomy, this classification describes learning as a process where students progress through six levels of learning that increase in complexity. The first and simplest level involves guiding students from no understanding of a concept to a basic understanding. The final and most complex level involves guiding students to a great understanding of a concept where they use critical thinking and problem-solving skills.

As students progress through the levels, they work more and more with the information, which increases their retention and understanding. Students also use specific skills at each level. As students use and learn these skills, the skills become tools that students can use in later learning.

As a teacher, I will use Bloom's Taxonomy to develop questions and activities that lead students through the six levels of learning from the simplest level to the most complex. This will increase students' depth of understanding, retention, and comprehension as well as provide them with a set of skills that they can use throughout their lives.

Sample Questions and Activities

Level One: Knowledge

Question

What is the formal definition of a circle? What is the radius and center?

Activity

Draw a circle. Mark and label its center. Draw a line from the center to the circle and label it the radius.

Prior Knowledge and Skills

- Basic shape of a circle

Level Two: Translate

Question

What can you say about all of the points on the circle in relation to the center?

Activity

Mark a point anywhere on the circle and draw a line from it to the center. Mark another point on the circle and draw another line from it to the center. What are these lines?

Prior Knowledge and Skills

- Formal definition of a circle

Level Three: Apply

Question

What would result if you plugged the center point and a point on the circle into the distance formula?

Activity

Apply the distance formula to calculate the radius of each circle with the indicated center point C, and point on the circle P. Draw a coordinate system and graph each circle.

Ex. C(0,0); P(4,7)

Prior Knowledge and Skills

- Coordinate system and plotting points
- Distance formula
- Formal definition of a circle

Level Four: Analyze

Question

How would you classify these equations?

Ex. $\sqrt{(3-1)^2 + (1-1)^2} = 2$

Activity

For each circle, enter the indicated center point C, point on the circle P, and radius r, into the distance formula without calculating. Examine the pattern of the resulting equations.

Ex. C(0,0); P(4,3); r = 5

Ans. $\sqrt{(4-0)^2 + (3-0)^2} = 5$

Prior Knowledge and Skills

- Distance formula for calculating radius
- Formal definition of a circle

Level Five: Synthesize

Question

How would you generate a general and standard equation for a circle?

Activity

Construct the standard formula for a circle using the distance formula, point P(x,y), center C(h,k), and radius r.

$$(x - h)^2 + (y - k)^2 = r^2$$

Prior Knowledge and Skills

- Distance formula for calculating radius
- Formal definition of a circle

Level Six: Evaluate

Question

Which of the following equations describe a circle? Justify your answer.

Ex. $[x^2 + y^2 = 36]$ and $[x^2 + y^2 + 8x + 4y + 16 = 0]$

Activity

Determine which of the following equations describe a circle. Complete the square if necessary. List the center and radius for each circle.

Ex. $[x^2 + y^2 = 49]$ and $[x^2 + y^2 + 6x + 2y + 6 = 0]$

Prior Knowledge and Skills

- Standard equation of a circle
- “Completing the Square” to solve quadratic equations