

# Formative Assessment in Secondary Life Science

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# Foundations in assessment

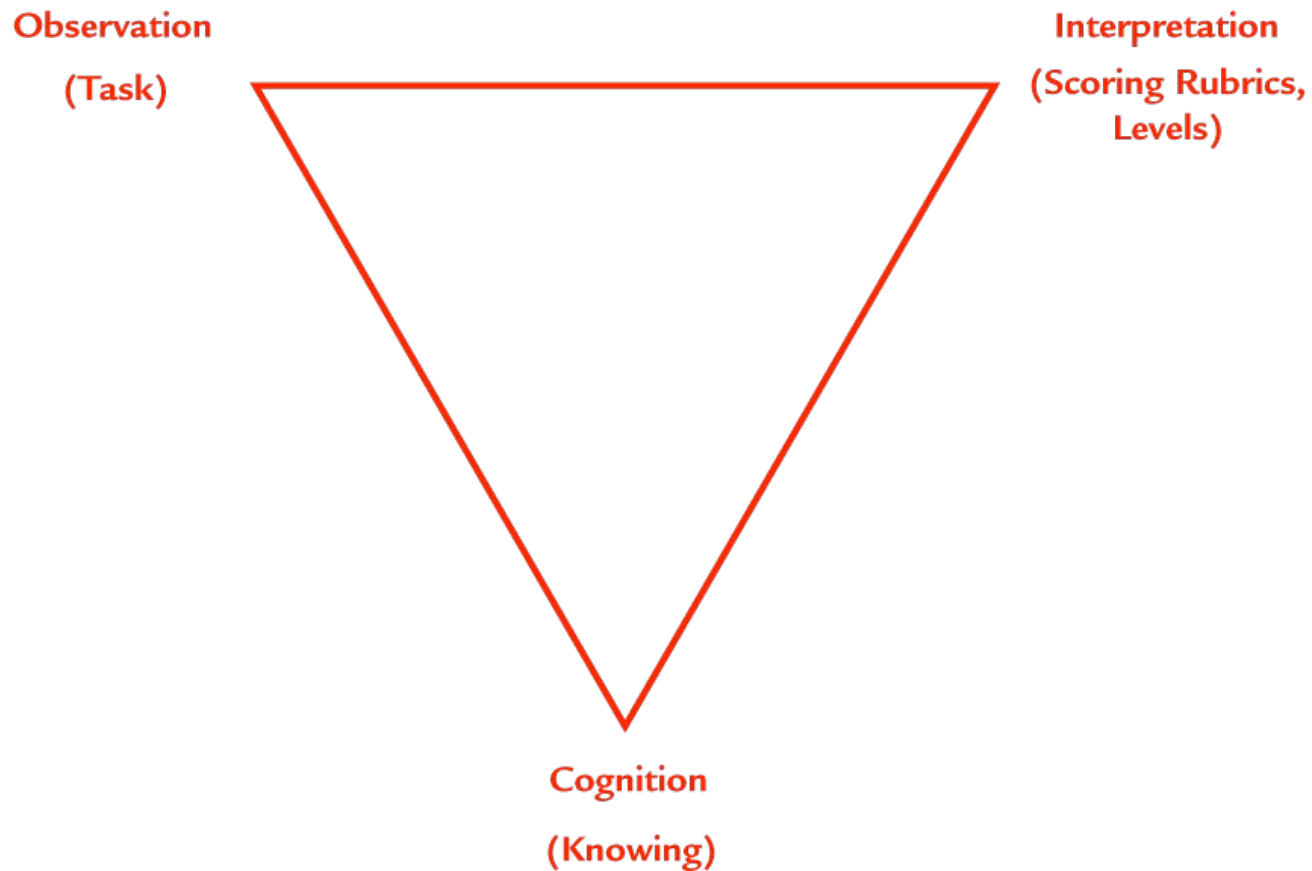
- Assessment can be loosely defined as the search to determine how well students are learning
- *Formative* assessments are used to inform instruction and guide student learning
- *Summative* assessments are used to evaluate students with grades, placement, promotion, or other types of accountability

# The SEPUP Assessment System

- The SEPUP assessment system was developed with UC Berkeley's Graduate School of Education
- It is embedded within student and teacher materials but only identified in the Teacher's Guide
- It has appeared in numerous journal articles, meeting papers, and in national publications on assessment

# Assessment Triangle

(from *Knowing What Students Know*, NRC, 2001)



# Assessment Targets

- For these activities:
  - Understanding concepts about antibiotic resistance (UC)
  - Using this understanding to make decisions about situations that involve trade-offs (ET)

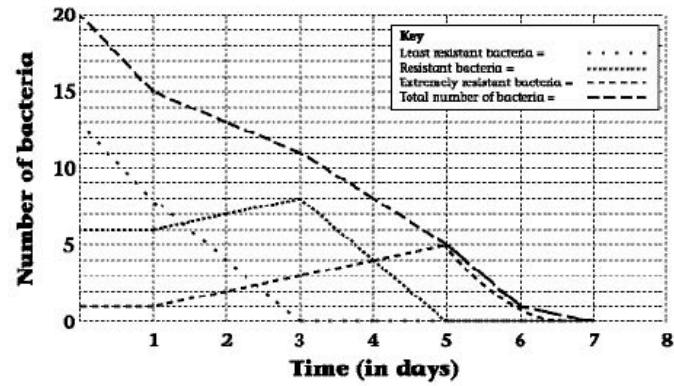
# Formative Assessment

- For this activity, we are using a strategy called an Anticipation Guide and the Analysis Questions embedded in the activity.
- Anticipation Guides are used as a pre-reading strategy, but can also provide formative assessment information before and after an activity or reading.

# Activity 51

- Complete the Before column of the Anticipation Guide
- Do Activity 51 and discuss the Analysis Questions with your group
- Discuss Activity 51

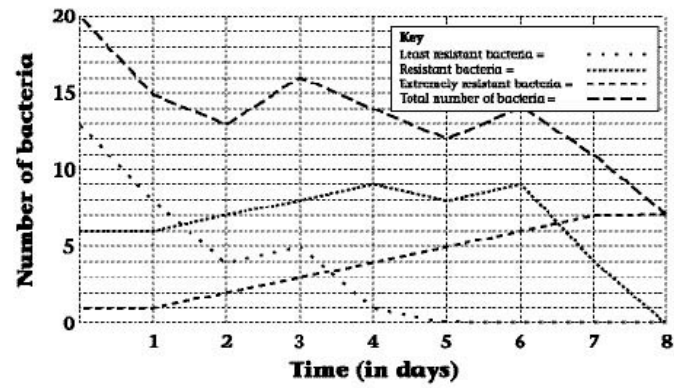
Bacteria Graph Sample 1



Toss Number	Least Resistant Bacteria	Resistant Bacteria	Extremely Resistant Bacteria	Total
Initial	13	6	1	20
1	8	6	1	15
2	4	7	2	13
3	0	8	3	11
4	0	4	4	8
5	0	0	5	5
6	0	0	1	1
7	0	0	0	0
8				

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Bacteria Graph Sample 2



Toss Number	Least Resistant Bacteria	Resistant Bacteria	Extremely Resistant Bacteria	Total
Initial	13	6	1	20
1	8	6	1	15
2	4	7	2	13
3 (forgot)	5	8	3	16
4	1	9	4	14
5	0	7	5	12
6 (forgot)	0	8	6	14
7	0	4	7	11
8	0	0	7	7

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# Activity 52

- Read Activity 52
- Complete the After column of the Anticipation Guide
- Complete the Reflection Question on the bottom of the Anticipation Guide.

# Assessment Item

- Rita began taking a ten-day treatment of antibiotics three days ago. The antibiotics worked quickly, and Rita feels better after only three days. Antibiotics upset Rita's stomach, so she wants to stop taking them.

Should Rita stop taking the antibiotics or finish the treatment? Explain the advantages and disadvantages of stopping and of continuing the antibiotics.

*Be sure to include your final recommendation, any trade-offs involved, and your reasons for your decision.*

# Using the item for formative assessment

- What do you observe about the students' answers?
- How might you modify or enhance instruction to address concerns about students' learning?

# Scoring Guide (rubric) Levels

- 4 Above and beyond
- 3 Complete and correct
- 2 Almost there
- 1 On your way
- 0 No response

# Scoring vs. Grading

- Student responses can be scored for either formative or summative assessment.
- The goal is to see improvement in a student's work, such as initially getting mostly level 1 scores and gradually increasing the number of level 2 scores.
- Assessments should only be used for summative purposes (and grades) if students have had sufficient opportunity to learn before the assessment.
- Scores can be translated into grades in various ways, but should not correspond 1-to-1 with letter grades. In other words, a 4 should not be required for an A.

# Conclusions

Many strategies can be used for formative assessment.

Plan formative assessments into your teaching to find out what students know and think before beginning an instructional sequence.

Be sure to sample a wide range of students when you conduct formative assessments.