Objectives

By the end of this presentation, you will be able to:

- Identify purposes and uses for formative assessment;
- Understand how formative and summative assessment can work together;
- Consider ways to make formative assessment systematic and integrated with instruction.

Types of Assessments

Summative
- Measure and document the extent to which students have achieved a learning target

Formative
- Inform instruction and provide feedback to students on their learning

Diagnostic
- Identify underlying reasons for learning difficulties
- Become formative when data is used to inform instruction

K-W-L

With a partner discuss...

- What you already KNOW about assessment.
- What you WANT to learn about assessment.
All assessments are designed to answer specific questions.

Formative Assessments
- Provide data which are used FOR instruction
- Conducted throughout the instruction cycle
- Can be both formal and informal
- Used to plan or redirect instruction and intervention

Summative Assessments
- Provide evidence OF student learning
- Typically conducted at the end of a learning cycle
- Used to assign grades, evaluate programs, or for student placement

Formative and Summative Assessments
- Answer different types of questions
- Provide data which are utilized for different purposes
- Are both important as part of a complete assessment package
Formative assessment is defined by **use**, not the assessment method

- Assessments are only formative if the data is used to inform and redirect instruction

- Even traditionally regarded summative assessments can be used in a formative application

Formative assessment is essential to **ALL** steps of the problem solving process

- **Problem Identification**
  - What is the difference between what students know, understand, and can do and expected levels?

- **Problem Analysis**
  - Why is there a difference between current levels and expected levels?

- **Instruction/Intervention Design and Implementation**
  - What will I do to address the underlying reasons for this discrepancy?

- **Response to Intervention**
  - How did it work?

Discussion Points

- What is the current ratio of summative to formative assessments in your classroom/school?

- Identify summative assessments that could be used in a formative application.

- What would need to occur in order for this transition to take place?

Moving from Summative to Formative Assessment

- **Planning**
- **Collecting**
- **Analyzing**
- **Data-based Decision Making**
- **Reporting**
Planning
- Determine questions that need to be answered throughout the learning cycle
- Prioritize and Sequence
- Determine the most efficient and least intrusive method of data collection
- Embed formative assessments into lesson plans
- Don't wait until the end to assess
- Integrate assessment with instruction
- Anticipate student needs and allow for differentiation during the lesson cycle

Collecting
- Questioning
- Observations
- Checklists
- Oral presentations
- Written responses
- Traditional tests
- Portfolios / work samples
- Student self-assessments
- Classroom tasks/ experiments
- Exit Slips

Analyzing
What does the data tell me regarding my students…
- Readiness for learning?
- Progress towards mastery?
- Ability to apply knowledge and skills to new contexts and situations?

Data-Based Decision Making
- What have I learned from analyzing the data?
- Do I need to redirect instruction?
  - For all or most students?
  - For some students?
  - For specific students?
- What instructional strategies or interventions will I utilize to meet the needs of my students?
Reporting

- Who needs to know the results of my assessments?
- How often will I provide the stakeholders with feedback?
- Which reporting format is best for various groups of stakeholders?
  - Written
  - Verbal
  - Graphs

Turn and Talk

Given what you have learned so far about the purpose and utility of formative assessment...

Teacher
- How will I incorporate more formative assessments within my instruction and planning?

Administrator/Coach
- How can I support the use of formative assessments within my district/school/department?

Instruction and Learning Cycle

- Student Misconceptions
- Engagement and Readiness
- Eliciting Prior Knowledge
- Exploration and Discovery
- Concept and Skill Development
- Concept and Skill Transfer
- Reflection and Self Assessment

Guiding Questions

<table>
<thead>
<tr>
<th>Guiding Questions</th>
<th>Science Examples</th>
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<tbody>
<tr>
<td>What are my students misconceptions?</td>
<td>Do my students believe that animal and plant cells are the same in terms of structure and function?</td>
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<tr>
<td>What are my students’ interest and level of preparation?</td>
<td>What do my students already know about plant and animal cells? Are my students interested in learning about cell structure and function?</td>
</tr>
<tr>
<td>Are my students developing an understanding of key terminology and concepts through the exploration and discovery activities?</td>
<td>Are my students beginning to challenge their own or others’ misconceptions regarding the structure and function of plant and animal cells?</td>
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<tr>
<td>Do my students understand key scientific terminology and concepts?</td>
<td>Can my students use scientific terminology and concepts to compare and contrast the structure and function of plant and animal cells?</td>
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<tr>
<td>Can my students apply ideas and skills in new contexts and situations?</td>
<td>Can my students apply the functions of cell organelles to human body parts?</td>
</tr>
<tr>
<td>Can my students reflect upon and assess their own understanding of the key scientific terminology and concepts</td>
<td>Can my students articulate how their understanding of cell structure and functions has developed utilizing specific examples and key terminology and concepts?</td>
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</tbody>
</table>
### Science Example Questions Formative Assessment Options

<table>
<thead>
<tr>
<th>Question</th>
<th>Four Corners Fist of Five</th>
<th>FIRST WORD-LAST WORD Acrostic</th>
<th>FIRST WORD-LAST WORD Acrostic</th>
<th>FIRST WORD-LAST WORD Acrostic</th>
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<tbody>
<tr>
<td>Do my students believe that animal and plant cells are the same in terms of structure and function?</td>
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<tr>
<td>What do my students already know about plant and animal cells?</td>
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<td>Are my students beginning to challenge their own or others’ misconceptions regarding the structure and function of plant and animal cells?</td>
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<tr>
<td>Can my students use scientific terminology and concepts to compare and contrast the structure and function of plant and animal cells?</td>
<td></td>
<td>VENN Diagram</td>
<td>T-Chart</td>
<td>Three Minute Pause KWL</td>
</tr>
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### Data-Based Decision Making

<table>
<thead>
<tr>
<th>Question</th>
<th>Data</th>
<th>Decision</th>
</tr>
</thead>
<tbody>
<tr>
<td>What do my students already know about plant and animal cells?</td>
<td>All students know…</td>
<td>Focus on…</td>
</tr>
<tr>
<td></td>
<td>Animal and plant cells have some structural differences</td>
<td>specifics of cell structural differences</td>
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<td></td>
<td>Plant cells make their own food</td>
<td>Expand knowledge of differences in cell function</td>
</tr>
<tr>
<td>Can my students use scientific terminology and concepts to compare and contrast the structure and function of plant and animal cells?</td>
<td>All students can compare and contrast plant and animal cell function but few can use scientific terminology to identify and describe cell structures and functions</td>
<td>Expand knowledge of photosynthesis</td>
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</tbody>
</table>

### Reporting

<table>
<thead>
<tr>
<th>Question</th>
<th>Data</th>
<th>Who Needs to Know? Why?</th>
</tr>
</thead>
<tbody>
<tr>
<td>What do my students already know about plant and animal cells?</td>
<td>All students know…</td>
<td>Students: Validate prior knowledge, develop curiosity, motivate</td>
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<tr>
<td></td>
<td>Animal and plant cells have some structural differences</td>
<td>Teacher: Determine instructional focus and concepts to emphasize</td>
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<tr>
<td></td>
<td>Plant cells make their own food</td>
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<td>Can my students use scientific terminology and concepts to compare and contrast the structure and function of plant and animal cells?</td>
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### The Power of Collective Inquiry

- Don’t go it alone!
- Work collaboratively with other teachers to implement a formative assessment system
- Develop and utilize common formative assessments
- Build time into team, school, department, and PLC meetings to examine and discuss formative assessment data
<table>
<thead>
<tr>
<th>Guiding Questions for Professional Learning Communities</th>
</tr>
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<tbody>
<tr>
<td><strong>What percent of our students have mastered the</strong></td>
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<tr>
<td><strong>benchmark?</strong></td>
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<tr>
<td><strong>Does our students’ data indicate that some</strong></td>
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<tr>
<td><strong>instructional approaches may be more effective than</strong></td>
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<tr>
<td><strong>others?</strong></td>
</tr>
<tr>
<td><strong>What common errors did our students make?</strong></td>
</tr>
<tr>
<td><strong>What will we do for students who have not mastered</strong></td>
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<tr>
<td><strong>the benchmark?</strong></td>
</tr>
<tr>
<td><strong>How will assess if students have mastered the</strong></td>
</tr>
<tr>
<td><strong>benchmark following re-teaching?</strong></td>
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**K-W-L**

**With a partner review…**

- What you already **KNEW** about formative assessment
  - Did you have any misconceptions?
- What you **WANTED** to learn about formative assessment
- What you **LEARNED** about formative assessment
  - that you did not already know