

Welcome!



SOUTH KERN MATHEMATICS PARTNERSHIP

Day 5 Schedule

Wednesday	
8:00 - 8:15	Welcome
8:15 - 10:30	Assessment
10:30 - 12:00	Revise Previous Assessment
1:00 - 2:30	Surveys
2:30 - 3:30	Mathematics

Math Anchor Tasks

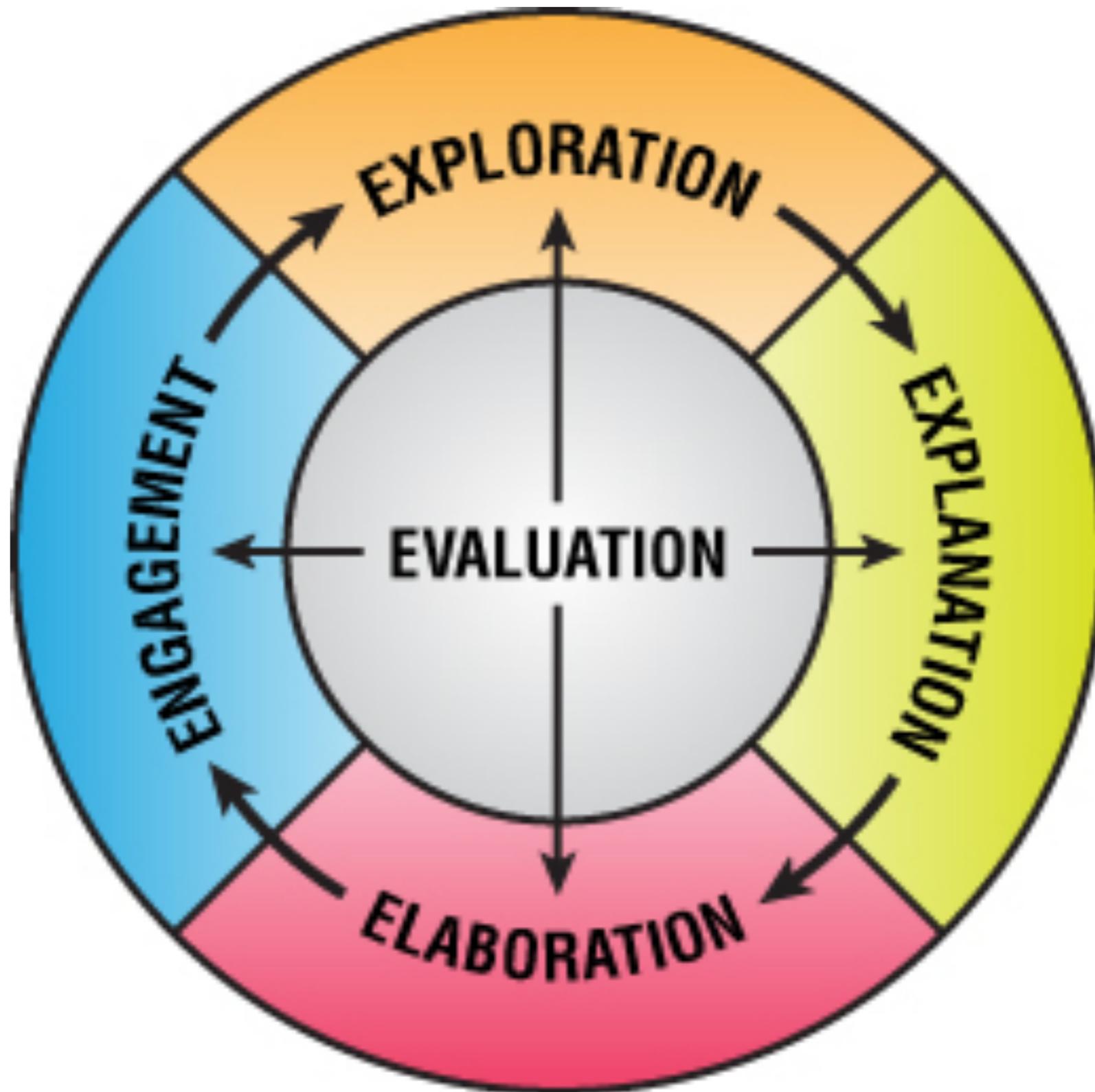
KHSD Instructional Design Template



1	Students will be presented with a context or situation where they will be asked to guess or predict: <i>“What happens next?”</i>
2	Students will explore the task’s context, make observations, and gather relevant information.
3	Students will organize the information with tables and graphs. They will then mathematically model the situation with diagrams, numerical quantities, variables, expressions, and/or equations.
4	Students will formulate evidence-based predictions based on their multiple representations. They will evaluate their original guess.
5	Students will precisely summarize their mathematical reasoning in words. They will share or present their solution pathway to others.
6	The teacher will use direct instruction to generalize the various student approaches. The mathematics will be formalized in a rigorous manner, as required by the content standards.
7	The teacher and students can extend the discussion, pushing the mathematics above and beyond the learning targets of the task.

<p><i>Engagement</i></p>	<p>Object, event or question used to engage students.</p> <p>Connections facilitated between what students know and can do.</p>
<p><i>Exploration</i></p>	<p>Objects and phenomena are explored.</p> <p>Hands-on activities, with guidance.</p>
<p><i>Explanation</i></p>	<p>Students explain their understanding of concepts and processes.</p> <p>New concepts and skills are introduced as conceptual clarity and cohesion are sought.</p>
<p><i>Elaboration</i></p>	<p>Activities allow students to apply concepts in contexts, and build on or extend understanding and skill.</p>
<p><i>Evaluation</i></p>	<p>Students assess their knowledge, skills and abilities. Activities permit evaluation of student development and lesson effectiveness.</p>

Assessment happens continuously



The Engineering Design Process

```
graph TD; A["1. ASK  
• What are the Problems?  
• What are the Constraints?"] --> B["2. IMAGINE  
• Brainstorm Ideas  
• Choose the Best One"]; B --> C["3. PLAN  
• Draw a Diagram  
• Gather Needed Materials"]; C --> D["4. CREATE  
• Follow the Plan  
• Test It Out!"]; D --> E["5. IMPROVE  
• Discuss What Can Work Better  
• Repeat Steps 1-5 to Make Changes"]; E --> A;
```

1. ASK

- What are the Problems?
- What are the Constraints?

2. IMAGINE

- Brainstorm Ideas
- Choose the Best One

3. PLAN

- Draw a Diagram
- Gather Needed Materials

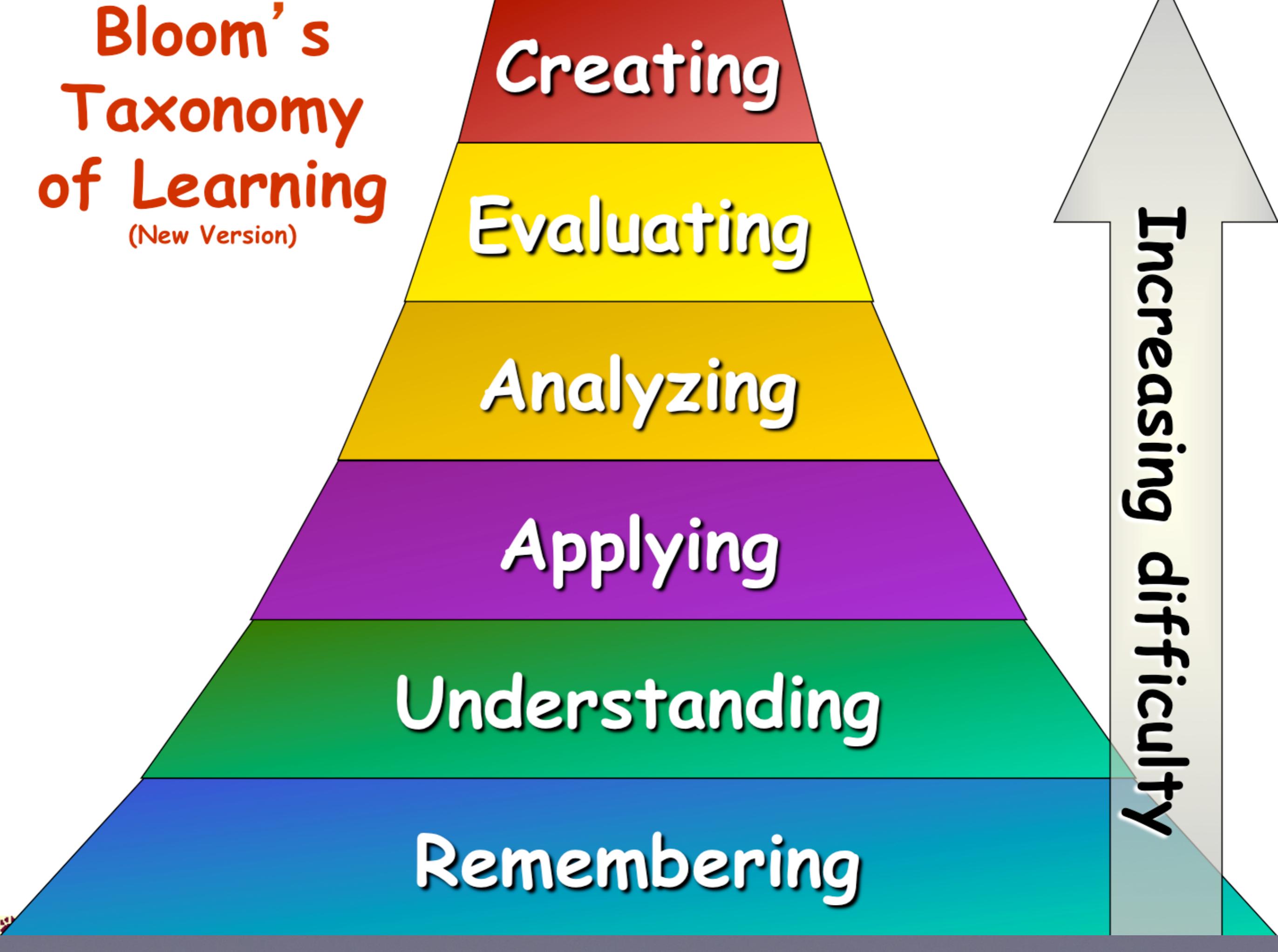
4. CREATE

- Follow the Plan
- Test It Out!

5. IMPROVE

- Discuss What Can Work Better
- Repeat Steps 1-5 to Make Changes

**Bloom's
Taxonomy
of Learning**
(New Version)



Creating

Evaluating

Analyzing

Applying

Understanding

Remembering

Increasing difficulty

What level do traditional math assessments reach?

- Level 1

- Memorize
- Calculate
- Define
- Measure

- Level 2

- Identify patterns
- Graph

- Level 3

- Develop a logical argument
- Draw conclusions

- Level 4

- Design
- Synthesize

What gets tested is what gets learned

Formative

Summative

“For” Learning

“Of” Learning

Drives Instruction

Measures effectiveness
of instruction

Continuous

At the end

Never graded

Graded

How can we move assessment to Levels 3-4?

- **Level 3**

- Develop a logical argument
- Draw conclusions

- **Level 4**

- Design
- Synthesize

- Use data to identify patterns and draw conclusions
- Identify what data to collect in order to answer a question
- Use multiple equations together to solve for a new variable

Objectives

Specific

Measurable

Attainable

Relevant

Time-based

Write two objectives you would have for students if they were exploring the circuit activities from yesterday.

Brainstorm how you could assess each of these objectives at Levels 1-4

Share your ideas with
someone from the table
next to you

Should you only
assess at one level?

Write an assessment item
and share with a partner
from another table.

Provide feedback to your
partner

How do you grade these higher level assessments?

- Do you award more credit to the “right answer” or the process?
- Can you get full credit for the wrong answer?

Rubrics

<http://rubistar.4teachers.org>

Score	Response
3	Correct
2	Partially correct
1	Incorrect
0	Off task or not attempted

Score	Response
4	Complete, correct, and beyond
3	Complete and correct
2	Partially correct and/or incomplete
1	Incorrect
0	Off task or not attempted

Rubrics - Feedback

- Think about the jump from one level to the next
- Make a feedback rubric

Level you are at	Next Level
<p data-bbox="332 1277 1278 1340">You have mastered</p> <p data-bbox="249 1443 1363 1590">You have mastered recognizing the patterns in your observations</p>	<p data-bbox="1602 1277 2469 1340">Your next step is to</p> <p data-bbox="1457 1443 2617 1753">Now you need to start to think about what those patterns are a result from. What ideas in class explain these patterns?</p>

Feedback

You can also make a code sheet for feedback

Number your comments on the code-sheet and then just write the # or letter on students work

-they can interpret these with the code-sheet

Feedback

Peers can provide feedback as part of the process

Research has shown that when students critique and evaluate others ideas they increase their own learning gains

Cycle of Formative Assessment

(adapted from Skip Fennell)

Formative Assessment

- Clarifying Learning Intentions
- Engineering Interactions
- Providing Feedback
- Creating Owners
- Activating Students as Resources

Observations

Observations

- What would you hope to observe?
- How would you know if you saw it?
- How will you record/note the observation?
- What misconceptions might you observe?

Interviews

Interviews

- What questions will you ask?
- What are you anticipating students to say?
- What follow-up questions might you ask?

Show Me

Show Me

- Provide a prompt that will allow students to demonstrate whether or not they understand the skill/idea.
- How will this be different from an interview question in terms of what you hope to observe?

Hinge Questions

Hinge Questions

- This question might be different in that it is a turning point in the lesson. It will help you decide what to do next.

Exit Task or Card

Exit Task or Card

- This is the capstone problem that informs you how to plan for the next day or after the assessment.

Observations

Interviews

Show Me

Hinge Questions

Exit Task or Card

How does the cycle of formative assessment align with our lesson structures?

Feedback

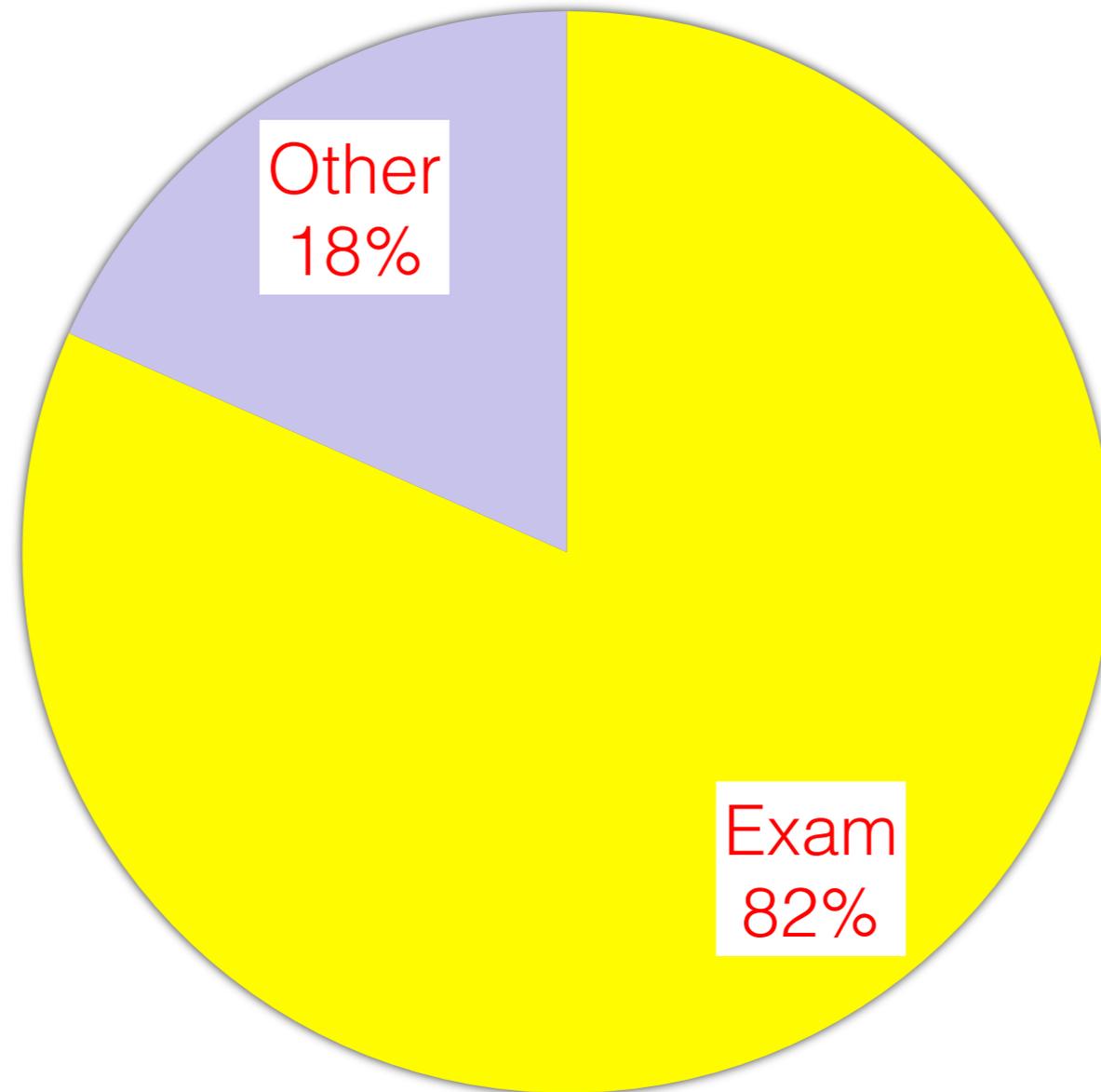
vs.

Grades

Feedback vs.

Feedback
and
Grades

What motivates change?



Largely motivated by exam requirements

What motivates change?

“...now that I know the tests are not really focused on memorization and actually learning concepts its more like applying things”

When does change occur?

- It was not all at once
- Usually after the second or third midterm...

“I made some changes after the second midterm and then a few after the third and then like after this fourth one because I calculated all the stuff and what I need to get a B in this class so like all that so that has influenced me to study more.”

Revision

- Look at the assessment you designed and submitted online
- Think about how you could modify it to assess at different levels
- Using your original make revisions and then write a reflection on what revisions you would make and why

Lunch

Final Surveys

Thank You



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