Resources
Visit s.uconn.edu/april27
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Welcome!

(projectbumpup.education.uconn.edu)
Differentiate Up!
A Guide to Plan and Organize Differentiation

April 27, 2024
9:00 a.m. – 12:00 p.m.
Susan Dulong Langley and Kenneth J. Wright
Project BUMP UP
University of Connecticut

www.projectbumpup.education.uconn.edu
Funded by Jacob K. Javits Gifted and Talented Students Education Program, U.S. Department of Education PR/Award # S206A190028
Resources abound!

Project BUMP UP Web Page – **Differentiation Resources tab**

https://projectbumpup.education.uconn.edu
Differentiation Planning Guide

- Math Example
- Student Data—Curriculum Compacting
- Differentiating through
  - Alternative standards
  - Supplemental sources
  - Tiering for cognitive complexity
    - Increasing Depth of Knowledge

Break: 10:30
Break Out 10:45 a.m. 12:00 p.m.

Why differentiate?

Classroom Ranges:
Math – Up to 7 grade levels (Peters)
ELA – Up to 9 grade levels (Reis et al.)

Standards do not eliminate the need for accelerative options (Assouline et al., 2013).

Skills, motivation, and perseverance to reach math potential (NCTM, 2000; Wilkins et al., 2016).

In an elementary classroom, what might be the range of achievement levels in:
- Math
- ELA
Six Principles of Differentiation

- Moderated level of challenge
- Students differ in skills and knowledge
- Interest fuels motivation, engagement
- The right to explore areas of interest
- Multifaceted learning profiles
- Safety, support, and value foster learning

— Tomlinson & Jarvis, 2009

DIFFERENTIATION IS NOT...

JUST WHEN YOU THINK YOUR WORK IS DONE ...

LOOK! MORE WORK, MORE WORK EVERYWHERE!
ADOPT Project BUMP UP
Differentiation Log

Advanced Differentiation Options Planning Tool

<table>
<thead>
<tr>
<th>Lesson or Unit</th>
<th>Date(s)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Standard(s)</td>
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<table>
<thead>
<tr>
<th>Differentiation of Current Curriculum</th>
<th>Advanced Differentiation Options</th>
<th>Alternative Standard</th>
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<tbody>
<tr>
<td></td>
<td>Supplemental Source</td>
<td>Grade Level Standard</td>
</tr>
<tr>
<td>Differentiation option from the textbook p.</td>
<td>Topic:</td>
<td>DOK Level 3 or 4</td>
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<td>Brief description of differentiated activity:</td>
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<tr>
<td>DOK Level 3 or 4 or 5</td>
<td>and/or</td>
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<tr>
<td>and/or DOK</td>
<td>Level 3 or 4</td>
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<td>DOK Differentialized math up to</td>
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Notes:
Selecting Standards

• Higher Standards or Those You Do Not Normally Reach
### Advanced Resources Units

<table>
<thead>
<tr>
<th>Concept-Based Units</th>
<th>Grade</th>
<th>K-1</th>
<th>2</th>
<th>3</th>
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</tr>
</tbody>
</table>

Open-ended, Real-world, Problem and Project-based Learning

https://education.wm.edu/centers/cge/curriculum/mathematics/materials/index.php
Tiering for Cognitive Complexity

**Steps for Leveling-up DOK**

1. **Analyze**
   - What is being asked of the students?
   - What is the DOK level?

2. **Determine**
   - **Where** do we see a similar concept in future standards?
   - Where can we provide less scaffolding?
   - What other questions can we ask about this problem?

3. **Construct**
   - Select from the standards and/or additional questions created.
   - **Rewrite** the problem to remove scaffolding and insert updated elements.

4. **Re-Evaluate**
   Now that you have leveled-up the question, re-evaluate what students are being asked to do at the new DOK level.
Student Data
Curriculum Compacting

<table>
<thead>
<tr>
<th>Exam Date</th>
<th>Exam Name</th>
<th>Total Possible</th>
<th>Highest Score</th>
<th>Lowest Score</th>
<th>Student Score</th>
<th>Proficiency Level</th>
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<tbody>
<tr>
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<tr>
<td>4/27/24</td>
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<td>10</td>
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**STUDENT A**

**STUDENT B**

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<tr>
<th>Exam Date</th>
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MEETING THE NEEDS OF EVERY STUDENT?

Elementary and middle school teachers could eliminate between 40%-70% of the regular curriculum for 10%-15% of students in mixed ability classes

Reis et al. (1998)

What is compacting?

• Streamlines/eliminates regular curriculum
• Students who can complete content at a faster pace
• Time can be used to provide enrichment or acceleration

Reis et al., 2016
In the Classroom

• Class goals
  • Mastery of benchmark
  • Differentiated learning according to student level

• Meeting students’ needs
  • Pre-tests to guide instruction
  • Students who show mastery will compact out
  • Compacted students receive grades based on their demonstrated mastery and alternative work.

Name it

• What is in the unit?
• Deconstruct the standard(s)
Prove it

• Measure mastery* of content and skills

*Mastery does not mean they know everything

Prove It Examples

• Pre-test (version of the post-test)
• Open-ended large concept question
• Pre-unit challenge lesson
• Verbal questioning
• Probes
• Asking students to perform a skill
• Answer the essential question(s)
Pre-assessment

80% or above on all standards
Or
80% or above on most standards
One way the data could present
• 80% or above on all standards
  • Would benefit from instruction and practice for those elements they need
    • Formative assessment success – go on to something else
    • Formative assessment not yet – full curriculum and instruction

Another way the data could present
• Over 80% or above on 3 out of 5 standards
  • Compact out of those 3 standards
  • Provide instruction and limited practice for the additional 2 standards
    • Formative assessment success – go on to something else
    • Formative assessment not yet – full curriculum and instruction
Change it

1. Advanced standards
2. Supplemental sources
3. Tiering for cognitive complexity
4. Increasing Depth of Knowledge

Selecting Advanced Resources
Published Supplemental Resources

Ex. William & Mary Units

Project- and Problem-Based Learning

Both

- Open-ended
- Authentic tasks
- Build 21st century skills
- Longer than usual lessons and assignments

https://www.edutopia.org/blog/pbl-vs-pbl-vs-xbl-john-farmer
Not necessary to reinvent . . .

- https://www.youcubed.org/tasks/
- https://robertkaplinsky.com/lessons/

Alternative standards
Can we can go further or deeper?
Selecting Standards You Do Not Normally Reach

- Sub-standards you do not have as much time to address
- Standards at the end of the year

Progression of Strands

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<tr>
<th>K</th>
<th>1</th>
<th>2</th>
<th>3</th>
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<th>6</th>
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For example...

• Gr. 4.NSO.1.1: Express how the value of a digit in a multi-digit whole number changes if the digit moves one place to the left or right.

• Gr. 5.NSO.1.1: Express the value of a digit in a multi-digit number with decimals to the thousandths changes if the digit moves one or more places to the left or right.

• Gr. 6.NSO.1.1: 1.1: Extend previous understanding of numbers to define rational numbers. Plot, order, and compare rational numbers.

Tiering for cognitive complexity

Bloom’s Taxonomy
Webb’s Depth of Knowledge
Bloom’s Revised Taxonomy
(Anderson & Krathwohl, 2002)

**Higher Order Thinking Skills**
- Create
- Evaluate
- Analyze
- Apply
- Understand
- Remember

**Lower Order Thinking Skills**
- Apply
- Understand
- Remember

**Overlap**

**Context matters: DOK**

REVISED Bloom’s Taxonomy Action Verbs

<table>
<thead>
<tr>
<th>Definitions</th>
<th>I. Remembering</th>
<th>II. Understanding</th>
<th>III. Applying</th>
<th>IV. Analyzing</th>
<th>V. Evaluating</th>
<th>VI. Creating</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bloom’s Application</td>
<td>Exhibit memory of previously learned material by recalling facts, concepts, and answers.</td>
<td>Demonstrate understanding of facts and ideas by organizing, summarizing, interpreting, giving definitions, and stating main ideas.</td>
<td>Solve problems by applying acquired knowledge, facts, rules, or methods in a different way.</td>
<td>Synthesize and break information into parts by identifying motives or reasons, relationships, and necessities to support generalizations.</td>
<td>Present and evaluate information and opinions by formulating solutions or judgments about validity of ideas or quality of work based on a set of criteria.</td>
<td>Complete information, together in a defined way by synthesizing elements in a new pattern or generating alternative solutions.</td>
</tr>
</tbody>
</table>

**Verbs**
- Choose
- Define
- Hold
- How
- Label
- List
- Match
- Name
- Decide
- Recall
- Select
- Show
- Spell
- Tell
- Where
- Where
- Where
- Who

**BUILD**
- Analyze
- Assume
- Calculate
- Compare
- Conclude
- Construct
- Discover
- Organize
- Prioritize
- Reduce
- Describe
- Evaluate
- Examine
- Function
- Infer
- Imply
- List
- Match
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- Reflect
- Suggest
- Test
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- Theme

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**EXPLAIN**
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Webb’s Depth of Knowledge (Webb, 1997)

- Number of connections of concepts
- Factors that influence cognitive demands

- One step
- Recall or find
- Simple algorithm or a formula
- Key words “identify,” “recall,” “recognize,” “use,” and “measure.” (Webb, 2002, p. 3)

**EXAMPLE:**
Recognize that $700 \div 70 = 10$ by applying concepts of place value and division
- Processing beyond a habitual response
- Decisions on solving
- Not just more than one step; more than one concept
- Visualization and probability skills (Webb, 2002, p. 4)

**EXAMPLE:**

**DOK Level 2:** Jess uses powers of 10 and exponents to find the product of the following terms.

What are the products?

\[
0.5 \times 10^5 = \underline{\hspace{2cm}} \\
0.05 \times 10^5 = \underline{\hspace{2cm}}
\]

- Requires reasoning, planning, using evidence, and a higher level of thinking
- Complex and abstract
- More than one possible answer
- Justify the response
- Draw conclusions
- Cite evidence (Webb, 2002, p. 4)

**EXAMPLE:**

**DOK Level 3:** Explain why \(700 \div 70 = 10\), including the role of place value in doing the division.
• Complex reasoning
• Extended time
• High cognitive demands
• Several connections
• Synthesizing (Webb, 2002, p. 4)

EXAMPLE:

DOK Level 4: For our annual food drive, we must figure out how to ship over 400 cans. Decide the best shipping method (crates, cases, or individual boxes) to use as few packages as possible. Write a letter to the principal projecting the amount of money the school will spend shipping the packages. Justify the most efficient packaging and shipping methods. (DeKalb County School District, n.d.)
DOK at a Glance

One Correct Answer?
DOK 1
• Know or can find it (or not)
DOK 2
• More than one concept
  • If/then; cause/effect

More than one correct answer requiring evidence?
DOK 3
• Interpret
• Reasoning (how and why)
DOK 4
• DOK 3
• Additional sources
• Initiate and complete project

Turn and Talk
What is the DOK Level?

A. Given a rectangle of 8 units by 4 units, calculate the area and perimeter.
B. What is the perimeter of a rectangle that measures 8 units by 4 units?

C. Of all the rectangles with a perimeter of 24 units, which one has the most area and why?
Standard and Samples

Whole Numbers – Gr. 4
- Use place value understanding to round multi-digit whole numbers to any place.

Q: What is the highest DOK Level?
A: DOK 1: Recall
Whole Numbers – Gr. 4

DOK Level 1: What is 62,891 rounded to the nearest thousands?
(a) 60,000
(b) 62,000
(c) 62,900
(d) 63,000
(e) 70,000

DOK Level 2: Round the following numbers to the nearest tenth: 10.892 and 112.429

DOK Level 3: A teacher asked her students to use estimation to decide if the sum of the problem below is closer to 4,000 or 5,000.

496 + 1,404 + 2,605 + 489 =

One student replied that she thinks the sum is closer to 4,000. She used the estimation shown below to support her reasoning.

Is the student’s reasoning correct? Explain why or why not. If the reasoning is incorrect, explain how she should have estimated it.

DOK Level 4: Create a plan to reach out to family, friends, and neighborhood members to gather data about the number of pictures they have hanging in their homes. Create a table to display the information you collect. Then decide what place value you should round to that would allow you to showcase who has most pictures and least pictures hung up in their house. Construct a poster to share your findings.

Project BUMP UP’s Leveling Up DOK 3-Step Approach

<table>
<thead>
<tr>
<th>Grade 4</th>
<th>Grade 5</th>
</tr>
</thead>
<tbody>
<tr>
<td>28 Standards</td>
<td>26 Standards</td>
</tr>
<tr>
<td>Level 1 — 9</td>
<td>Level 1 — 8</td>
</tr>
<tr>
<td>Level 2 — 18</td>
<td>Level 2 — 17</td>
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<tr>
<td>Level 3 — 1</td>
<td>Level 3 — 1</td>
</tr>
<tr>
<td>Level 4 — 0</td>
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Steps for Leveling-up DOK

1. Analyze
   - What is being asked of the students?
   - What is the DOK level?

2. Determine
   - Where do we see a similar concept in future standards?
   - Where can we provide fewer supports?
   - What other questions can we ask about this problem?

3. Construct
   - Select from the standards and/or additional questions created.
   - Rewrite the problem to remove supports and insert updated elements.

4. Re-Evaluate
   Now that you have leveled-up the question, re-evaluate what students are being asked to do at the new DOK level.
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Original Problem

Myra read 45 pages of her 100-page book. Her sister read ½ of a 10-page book. Who read a greater fraction of her book, Myra or her sister? Show your work. 

*Hint: One fraction has a denominator of 100. The other fraction has a denominator of 10.*

Currently, what is this question asking the student to do?

- Compare fractions

Myra read 45 pages of her 100-page book. Her sister read ½ of a 10-page book. Who read a greater fraction of her book, Myra or her sister? Show your work. 

*Hint: One fraction has a denominator of 100. The other fraction has a denominator of 10.*
Currently, what is the DOK of this problem?

• DOK 2: Converting the fractions to those with similar denominators and then comparing the two fractions.

Who read a greater fraction of her book, Myra or her sister?
Show your work.
Hint: One fraction has a denominator of 100. The other fraction has a denominator of 10.

Looking Ahead: When will we see a similar concept like this in the future?
• Mixed fractions
• Conversions to decimals

Who read a greater fraction of her book, Myra or her sister?
Show your work.
Hint: One fraction has a denominator of 100. The other fraction has a denominator of 10.
Where can we provide fewer supports for students?

- Eliminate the hint

Myra read 45 pages of her 100-page book. Her sister read \( \frac{3}{5} \) of a 10-page book. Who read a greater fraction of her book, Myra or her sister? Show your work. 

**Hint:** One fraction has a denominator of 100. The other fraction has a denominator of 10.

What other questions can we ask about this problem?

- Show two ways to answer the question, “Who read the greater fraction of her book, Myra or her sister?”
- How many pages would one sister have to read to equal the fraction the other sister read?
- Justify which sister read a greater portion of her book with evidence.
- Change the numbers for more complexity (e.g., 73 pages out of 192-page book and 1/8 of a 212-page book.)
How can we implement these questions? (Building the new problem)

New Problem
• Who read a greater fraction of her book, Myra or her sister? Provide evidence for your answer.
The sister who read less wants to catch up and read the same fraction as the other sister.
• How many more pages would the sister need to read to catch up? Explain your answer in two ways.

Now, what is this question asking the student to do?
(This should be the same as the original question/task.)
• Compare fractions
Now, what is the DOK of this problem?

(DOK should increase & look at Bloom’s Taxonomy)

- DOK 3
  - Explain their thinking
  - Another way to approach the problem
  - Compare answers
  - Analyze their responses.
1. Examine the activity.

2. Decide if the activity is advanced. If it is not...

3. Advance!
   - Increase complexity
   - Select an advanced standard
   - Choose from a supplemental source
Textbook Activity

Write directions on how to draw a rectangle pp. 238-39

Advanced?

No! Six scaffolds provide students important details on rectangles. Makes it too easy.

Advance

Make it more challenging?

Reduce scaffolding provided in parts a-f.

---

Advanced Differentiation Options

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</tr>
<tr>
<td>Brief description of differentiated activity: Lesson 1 - Removed scaffolding</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

---

Grade ____ Standard ______

DOK Level 3 ____ or 4 ______

Brief description of differentiated activity:
<table>
<thead>
<tr>
<th>Textbook Activity</th>
<th>Advanced?</th>
<th>Make it more challenging?</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sorting Shapes on Side and Angles pp. 352-355</td>
<td>Parallel and perpendicular sort: lower-level questions; Repetitive of sorting activities on pp. 352, 354</td>
<td>2.2 Advanced Activity: Gr. 5 Ready Textbook pp. 323-324</td>
</tr>
</tbody>
</table>

### Advanced Differentiation Options

<table>
<thead>
<tr>
<th>Differentiation of Current Curriculum</th>
<th>Supplemental Source</th>
<th>Alternative Standard</th>
</tr>
</thead>
<tbody>
<tr>
<td>Differentiation option from the textbook p. _____ # _____</td>
<td>Topic: ________________</td>
<td>Grade 5 Standard <strong>G.2.3</strong></td>
</tr>
<tr>
<td>DOK Level 3 _____ or 4 _____ and/or</td>
<td>Source: ________________</td>
<td>DOK Level 3 _____ or 4 _____</td>
</tr>
<tr>
<td>DOK Differentiated math up to 10</td>
<td>DOK Level 3 _____ or 4 _____</td>
<td>Brief description of differentiated activity:</td>
</tr>
<tr>
<td>Level 3 _____ or 4 _____</td>
<td>Brief description of differentiated activity:</td>
<td>Lesson 2 - Gr. 5 Textbook pp. 323-324</td>
</tr>
</tbody>
</table>
### Examine

#### Textbook Activity


#### Decide

#### Advanced?

No: Describing/recognizing features. Not developing/discovering new information to deepen learning.

#### Make it more challenging?

W&M Grade 4 Lesson 5.2 pp. 207-209 - develop methods for finding trapezoid area

---

#### Advanced Differentiation Options

<table>
<thead>
<tr>
<th>Differentiation of Current Curriculum</th>
<th>Supplemental Source</th>
<th>Alternative Standard</th>
</tr>
</thead>
<tbody>
<tr>
<td>Differentiation option from the textbook p. ___ # ___</td>
<td><strong>Symmetry</strong></td>
<td>Grade ___ Standard _______</td>
</tr>
<tr>
<td>DOK Level 3 ___ or 4 ___ and/or</td>
<td>Source: <strong>W&amp;M Beyond Polygons</strong></td>
<td>DOK Level 3 ___ or 4 ___</td>
</tr>
<tr>
<td>DOK Differentiated math up to</td>
<td>Brief description of differentiated activity:</td>
<td>Brief description of differentiated activity:</td>
</tr>
<tr>
<td>Level 3 ___ or 4 X ___</td>
<td>Lesson 3 Gr. 3 Lesson 5.2 pp. 207-209: Analyzing lines of symmetry and formulating a pattern/rule about lines of symmetry and the number of sides shapes have.</td>
<td></td>
</tr>
</tbody>
</table>
### Textbook Activity

<table>
<thead>
<tr>
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<th>Advanced?</th>
<th>Make it more challenging?</th>
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</thead>
<tbody>
<tr>
<td>Introduction, modeled and guided practice of folding shapes.</td>
<td>Quick exploration of folding shapes is an introduction to symmetry. Not much opportunity to understand a real-world example.</td>
<td>MiA Advanced Activity: Georgia Culminating Task Geometry Town pp. 90-97</td>
</tr>
<tr>
<td>Independent Practice of polygon question</td>
<td>Questions are regular-polygon specific and involve identification.</td>
<td></td>
</tr>
</tbody>
</table>
After Break – 10:45 a.m.
• Level Up DOK
• Analyze ADOPT
• Punctuate Our Thinking

*What is one approach you can use on Monday?*

Resources
Visit s.uconn.edu/april27

susan.langley@uconn.edu

See you in 15!
Welcome back!

Leveling Up DOK!
Work with your tablemates to level up the following question.

Gr. 4 Problem
Carter has a pack of 800 rubber bands. Alicia has twice as many rubber bands as Carter. They combine their rubber bands so that they can make bracelets. Each bracelet needs 100 rubber bands. Which equation below can be used to find how many bracelets they can make?

A \(\frac{800 \times 2}{100}\)
B \(\frac{800 \times 3}{100}\)
C \(\frac{800 + 100}{2}\)
D \(\frac{800 \times 100}{3}\)

Jon chose A as the correct answer. How did he get that answer?

Steps for Leveling-up DOK

1. Analyze
   - What is being asked of the students?
   - What is the DOK level?

2. Determine
   - Where do we see a similar concept in future standards?
   - Where can we provide fewer supports?
   - What other questions can we ask about this problem?

3. Construct
   - Select from the standards and/or additional questions created.
   - Rewrite the problem to remove supports and insert updated elements.

4. Re-Evaluate
   Now that you have leveled-up the question, re-evaluate what students are being asked to do at the new DOK level.
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Debrief

How did you level this up?

Gr. 4 Problem

Carter has a pack of 800 rubber bands. Alicia has twice as many rubber bands as Carter. They combine their rubber bands so that they can make bracelets. Each bracelet needs 100 rubber bands. Which equation below can be used to find how many bracelets they can make?

A \((800 \times 2) \div 100\)
B \(800 \times 3 \div 100\)
C \((800 \div 100) \times 2\)
D \((800 \times 100) \div 3\)

Jon chose A as the correct answer. How did he get that answer?
Advanced Differentiation Options Planning Tool

Lesson or Unit: __________ Date(s): __________
Standard(s): 

<table>
<thead>
<tr>
<th>Advanced Differentiation Options</th>
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<th>Alternative Standard</th>
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<td>Topic: __________</td>
<td>Grade ___ Standard ______</td>
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<tr>
<td>DOK Level 3 ______ or 4 ______ and/or</td>
<td>Source: __________</td>
<td>DOK Level 3 ______ or 4 ______</td>
</tr>
<tr>
<td>DOK Differentiated much up to Level 3 ______ or 4 ______</td>
<td>Brief description of differentiated activity:</td>
<td>Brief description of differentiated activity:</td>
</tr>
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</table>

Notes:

89

Plus-Minus-Interesting

Work with your tablemates to determine what is a plus, minus, or interesting about each differentiation option on ADOPT Differentiation Log.

<table>
<thead>
<tr>
<th>Differentiation Option</th>
<th>Plus</th>
<th>Minus</th>
<th>Interesting</th>
</tr>
</thead>
<tbody>
<tr>
<td>Higher Curriculum Standard or One You Do Not Typically Teach</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Advanced Differentiation Option in Textbook</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Leveling Depth of Knowledge (DOK) to Level 3 or Level 4</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Alternative Resources (Printed Curriculum or Variety Online Sources)</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Debrief

<table>
<thead>
<tr>
<th>Differentiation Strategies</th>
<th>Plus</th>
<th>Minus</th>
<th>Interesting</th>
</tr>
</thead>
<tbody>
<tr>
<td>Higher Curriculum Standards or One Level above Typically Reached</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Advanced Differentiation Options in Textbook</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Leveling Up: Deeper Understanding (3OK: 1s, 2s, 3s or Level 3)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Alternative Resources (Outdoor Curriculum or Visual/Digital Sources)</td>
<td></td>
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</table>

Punctuate Your Thinking

*Write one per sticky note and post to the accompanying chart.*

! Something I am eager to try…

? Something I wonder…

, Something that gives me pause

■ Something that is essential. Period.
Debrief

! Something I am eager to try…

? Something I wonder…

Something that gives me pause

Something that is essential. Period.

Working Time

- Review your upcoming units/standards
- Consider the ADOPT Differentiation Log options
- *What is one thing you could implement for Monday?*