

**Table 2: Hess' Cognitive Rigor Matrix with Curricular Examples: Applying Webb's Depth-of-Knowledge Levels to Bloom's Cognitive Process Dimensions**

Revised Bloom's Taxonomy of Cognitive Process Dimensions	Webb's Depth-of-Knowledge (DOK) Levels			
	<b>Level 1 Recall &amp; Reproduction</b> Recall of a fact, information, or procedure	<b>Level 2 Skills &amp; Concepts</b> Use information or conceptual knowledge, two or more steps, etc.	<b>Level 3 Strategic Thinking/Reasoning</b> Requires reasoning, developing plan or a sequence of steps, some complexity, more than one possible answer	<b>Level 4 Extended Thinking</b> Requires an investigation, time to think and process multiple conditions of the problem
<b>Remember</b> Retrieve knowledge from long-term memory, recognize, recall, locate, identify	<ul style="list-style-type: none"> <li>Recall, recognize, or locate basic facts, ideas, principles</li> <li>Recall of identify conversions: between representations, numbers of units of measure</li> <li>Identify facts/details in texts</li> </ul>			
<b>Understand</b> Construct meaning, clarify, paraphrase, represent, translate, illustrate, give examples, classify, categorize, summarize, generalize, infer a logical conclusion (such as from examples given), predict, compare/contrast, match like ideas, explain, construct models	<ul style="list-style-type: none"> <li>Compose and decompose numbers</li> <li>Evaluate an expression</li> <li>Locate points (grid/number line)</li> <li>Represent math relationships in words pictures, or symbols</li> <li>Write simple sentences</li> <li>Select appropriate word for intended meaning</li> <li>Describe/explain how or why</li> </ul>	<ul style="list-style-type: none"> <li>Specify and explain relationships</li> <li>Give non-examples/examples</li> <li>Make and record observations</li> <li>Take notes; organize ideas/data</li> <li>Summarize results, concepts, ideas</li> <li>Make basic inferences or logical predictions from data or texts</li> <li>Identify main ideas or accurate generalizations</li> </ul>	<ul style="list-style-type: none"> <li>Explain, generalize, or connect ideas using supporting evidence</li> <li>Explain thinking when more than one response is possible</li> <li>Explain phenomena in terms of concepts</li> <li>Write full composition to meet specific purpose</li> <li>Identify themes</li> </ul>	<ul style="list-style-type: none"> <li>Explain how concepts or ideas specifically relate to other content domains or concepts</li> <li>Develop generalizations of the results obtained or strategies used and apply them to new problem situations</li> </ul>
<b>Apply</b> Carry out or use a procedure in a given situation; carry out (apply to a familiar task), or use (apply) to an unfamiliar task	<ul style="list-style-type: none"> <li>Follow simple/routine procedure (recipe-type directions)</li> <li>Solve a one-step problem</li> <li>Calculate, measure, apply a rule</li> <li>Apply an algorithm or formula (area, perimeter, etc.)</li> <li>Represent in words or diagrams a concept or relationship</li> <li>Apply rules or use resources to edit spelling, grammar, punctuation, conventions</li> </ul>	<ul style="list-style-type: none"> <li>Select a procedure according to task needed and perform it</li> <li>Solve routine problem applying multiple concepts or decision points</li> <li>Retrieve information from a table, graph, or figure and use it to solve a problem requiring multiple steps</li> <li>Use models to represent concepts</li> <li>Write paragraphs using appropriate organization, text structure, and signal words</li> </ul>	<ul style="list-style-type: none"> <li>Use concepts to solve non-routine problems</li> <li>Design investigation for a specific purpose or research question</li> <li>Conduct a designed investigation</li> <li>Apply concepts to solve none-routine problems</li> <li>Use reasoning, planning, and evidence</li> <li>Revise final draft for meaning or progression of ideas</li> </ul>	<ul style="list-style-type: none"> <li>Select or devise an approach among many alternatives to solve a novel problem</li> <li>Conduct a project that specifies a problem, identifies solution paths, solves the problem, and reports results</li> <li>Illustrate how multiple themes (historical, geographic, social) may be interrelated</li> </ul>
<b>Analyze</b> Break into constituent parts, determine how parts relate, differentiate between relevant-irrelevant, distinguish, focus, select, organize, outline, find coherence, deconstruct (e.g. for bias or point of view)	<ul style="list-style-type: none"> <li>Retrieve information from a table or graph to answer a question</li> <li>Identify or locate specific information contained in maps, charts, tables, graphs, or diagrams</li> </ul>	<ul style="list-style-type: none"> <li>Categorize, classify materials</li> <li>Compare/contrast figures or data</li> <li>Select appropriate data display</li> <li>Organize or interpret (simple) data</li> <li>Extend a pattern</li> <li>Identify use of literary devices</li> <li>Identify text structure of paragraph</li> <li>Distinguish: relevant-irrelevant information; fact/opinion</li> </ul>	<ul style="list-style-type: none"> <li>Compare information within or across data sets or texts</li> <li>Analyze and draw conclusions from more complex data</li> <li>Generalize a pattern</li> <li>Organize/interpret data: complex graph</li> <li>Analyze author's craft, viewpoint, or potential bias</li> </ul>	<ul style="list-style-type: none"> <li>Analyze multiple sources of evidence or multiple works by the same author, or across genres, or time periods</li> <li>Analyze complex/abstract themes</li> <li>Gather, analyze, and organize information</li> <li>Analyze discourse styles</li> </ul>
<b>Evaluate</b> Make judgments based on criteria, check, detect inconsistencies or fallacies, judge, critique			<ul style="list-style-type: none"> <li>Cite evidence and develop a logical argument for concepts</li> <li>Describe, compare, and contrast solution methods</li> <li>Verify reasonableness of results</li> <li>Justify conclusions made</li> </ul>	<ul style="list-style-type: none"> <li>Gather, analyze, and evaluate relevancy and accuracy</li> <li>Draw and justify conclusions</li> <li>Apply understanding in a novel way, provide argument or justification for the application</li> </ul>
<b>Create</b> Reorganize elements into new patterns/structures, generate, hypothesize, design, plan, construct, produce	<ul style="list-style-type: none"> <li>Brainstorm ideas, concepts, or perspectives related to a topic or concept</li> </ul>	<ul style="list-style-type: none"> <li>Generate conjectures or hypotheses based on observations or prior knowledge</li> </ul>	<ul style="list-style-type: none"> <li>Synthesize information within one source or text</li> <li>Formulate an original problem, given a situation</li> <li>Develop a complex model for a given situation</li> </ul>	<ul style="list-style-type: none"> <li>Synthesize information across multiple sources or texts</li> <li>Design a model to inform and solve a real-world, complex, or abstract situation</li> </ul>